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Identification of Potential Drug for Dengue Hemorrhagic Fever by Network-Based Drug Reprofiling Approach

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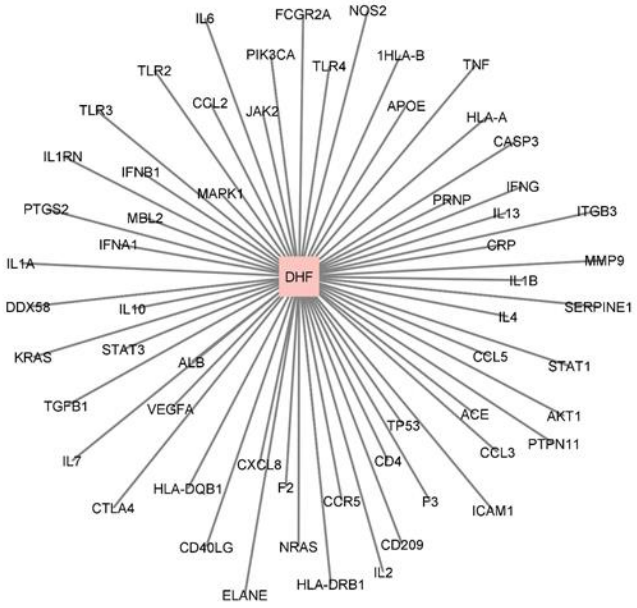
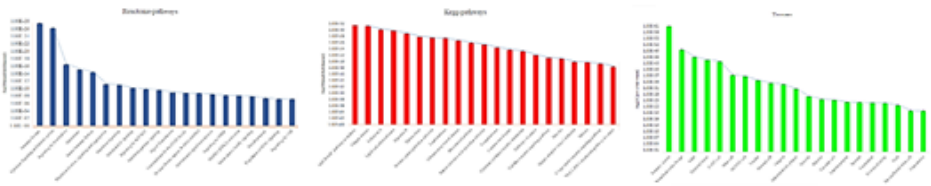
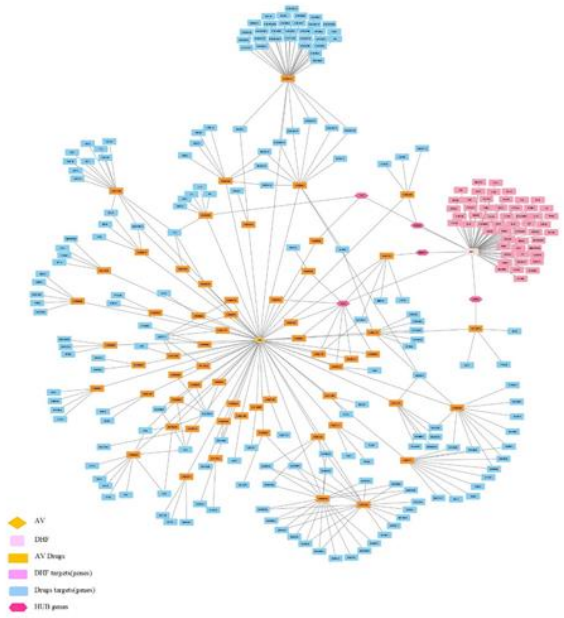
Supplementary Material



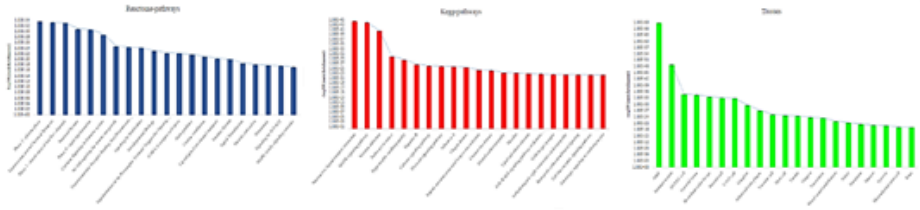
Supplementary Figure 1a: Human-DHF gene interacting network.



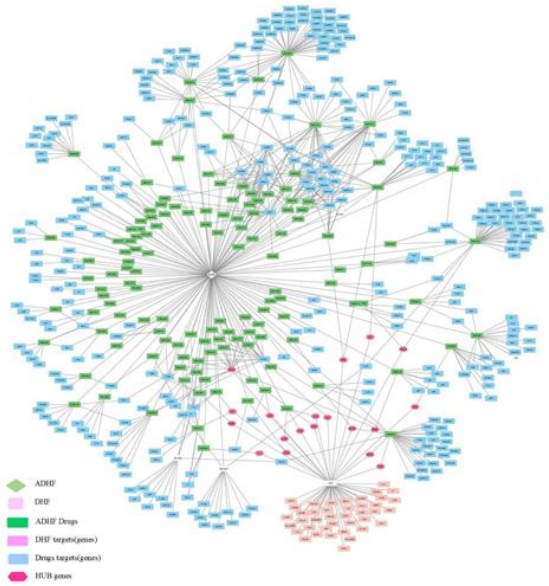
Supplementary Figure 1b: A Functional gene enrichment of human DHF interacting virus.



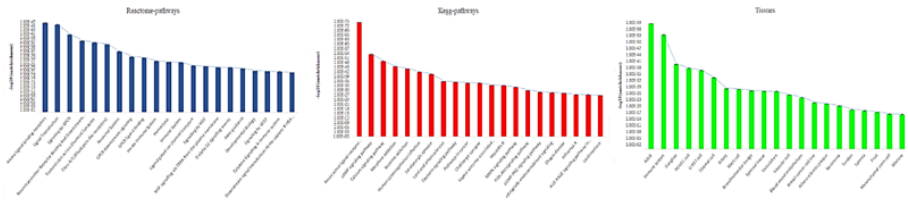
Supplementary Figure 2a: Human gene-DHF-AVD-interacting network.



Supplementary Figure 2b: Functional gene enrichment of human-DHF-Antiviral drug.



Supplementary Figure 3a: Human gene-DHF-ADHFD interacting network.



Supplementary Figure 3b: Functional gene enrichment of human-DHF-ADHFD.

Supplementary Table 1: DHF interacting human gene.

Symbol	Description	Category	GIFtS	GC id	Score
IL6	Interleukin 6	Protein Coding	48	C07P022725	137.61
TNF	Tumor Necrosis Factor	Protein Coding	49	GC06P061170	136.4
TP53	Tumor Protein P53	Protein Coding	52	GC17M007661	125.62
IL10	Interleukin 10	Protein Coding	46	GC01M206767	110.92
IFNG	Interferon Gamma	Protein Coding	46	GC12M068154	107.33
CD209	CD209 Molecule	Protein Coding	42	GC19M007	105.12

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IL1B	Interleukin 1 Beta	Protein Coding	47	GC02 M112 829	90.62
HLA-DRB1	Major Histocompatibility Complex, Class II, DR Beta 1	Protein Coding	46	GC06 M032 578	88.76
F2	Coagulation Factor II, Thrombin	Protein Coding	47	GC11 P0467 20	82.5
ALB	Albumin	Protein Coding	48	GC04 P0733 97	81.38
KRAS	KRAS Proto-Oncogene, GTPase	Protein Coding	50	GC12 M025 204	78.3
TGFB1	Transforming Growth Factor Beta 1	Protein Coding	50	GC19 M041 301	77.46
CXCL8	C-X-C Motif Chemokine Ligand 8	Protein Coding	40	GC04 P0737 40	76.51
VEGFA	Vascular Endothelial Growth Factor A	Protein Coding	47	GC06 P0437 70	75.77
1HLA-B	Major Histocompatibility Complex, Class I, B	Protein Coding	46	GC06 M051 345	73.68
ICAM1	Intercellular Adhesion Molecule 1	Protein Coding	49	GC19 P0102 70	73.22
PIK3CA	Phosphatidylinositol-4,5-Bisphosphate 3-Kinase Catalytic Subunit Alpha	Protein Coding	52	GC03 P1791 48	72.42
APOE	Apolipoprotein E	Protein Coding	49	GC19 P0449 06	72.38
AKT1	AKT Serine/Threonine Kinase 1	Protein Coding	52	GC14 M104 769	71.17
CCL2	C-C Motif Chemokine Ligand 2	Protein Coding	48	GC17 P0342 55	70.55

ACE	Angiotensin I Converting Enzyme	Protein Coding	49	GC17 P063477	70.49
TLR4	Toll Like Receptor 4	Protein Coding	50	GC09 P117704	69.52
JAK2	Janus Kinase 2	Protein Coding	52	GC09 P004985	69.18
CRP	C-Reactive Protein	Protein Coding	45	GC01 M159721	68.59
CCL5	C-C Motif Chemokine Ligand 5	Protein Coding	42	GC17 M035871	67.96
IFNA1	Interferon Alpha 1	Protein Coding	38	GC09 P021543	65.24
CD4	CD4 Molecule	Protein Coding	48	GC12 P006786	63.97
TLR3	Toll Like Receptor 3	Protein Coding	50	GC04 P186059	63.79
CCR5	C-C Motif Chemokine Receptor 5	Protein Coding	45	GC03 P046383	63.36
SERPINE1	Serpin Family E Member 1	Protein Coding	49	GC07 P101127	62.92
IL2	Interleukin 2	Protein Coding	44	GC04 M122451	62.91
IL4	Interleukin 4	Protein Coding	44	GC05 P132673	62.76
HLA-A	Major Histocompatibility Complex, Class I, A	Protein Coding	46	GC06 P061131	62.4
STAT3	Signal Transducer And Activator Of Transcription 3	Protein Coding	51	GC17 M042313	61.84
STAT1	Signal Transducer And Activator Of Transcription	Protein	52	GC02	61.84

	1	Coding		M190908	
F3	Coagulation Factor III, Tissue Factor	Protein Coding	44	GC01M094530	60.07
CCL3	C-C Motif Chemokine Ligand 3	Protein Coding	38	GC17M036088	58.44
CTLA4	Cytotoxic T-Lymphocyte Associated Protein 4	Protein Coding	44	GC02P203867	58.01
CASP3	Caspase 3	Protein Coding	49	GC04M184627	57.61
MAPK1	Mitogen-Activated Protein Kinase 1	Protein Coding	51	GC22M021759	57.34
PTGS2	Prostaglandin-Endoperoxide Synthase 2	Protein Coding	48	GC01M186640	57.1
ELANE	Elastase, Neutrophil Expressed	Protein Coding	45	GC19P000889	57.07
FCGR2A	Fc Fragment Of IgG Receptor IIa	Protein Coding	45	GC01P161505	56.55
IL13	Interleukin 13	Protein Coding	43	GC05P132656	56.36
HLA-DQB1	Major Histocompatibility Complex, Class II, DQ Beta 1	Protein Coding	42	GC06M051466	56.18
IFNB1	Interferon Beta 1	Protein Coding	40	GC09M021077	56.06
PRNP	Prion Protein	Protein Coding	45	GC20P004686	55.56
TLR2	Toll Like Receptor 2	Protein Coding	50	GC04P153684	55.13
IL1RN	Interleukin 1 Receptor Antagonist	Protein Coding	47	GC02P1180	54.84

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PTPN11	Protein Tyrosine Phosphatase Non-Receptor Type 11	Protein Coding	52	GC12P112418	54.39
ITGB3	Integrin Subunit Beta 3	Protein Coding	49	GC17P047261	53.42
NOS2	Nitric Oxide Synthase 2	Protein Coding	49	GC17M027756	52.62
DDX58	DExD/H-Box Helicase 58	Protein Coding	46	GC09M032455	52.3
CD40LG	CD40 Ligand	Protein Coding	46	GC0XP136649	52.24
MMP9	Matrix Metallopeptidase 9	Protein Coding	52	GC20P046008	52.21
MBL2	Mannose Binding Lectin 2	Protein Coding	46	GC10M052760	51.39
IL1A	Interleukin 1 Alpha	Protein Coding	42	GC02M112773	50.7
NRAS	NRAS Proto-Oncogene, GTPase	Protein Coding	48	GC01M114704	50.38
IL7	Interleukin 7	Protein Coding	41	GC08M078689	50.2
GPT	Glutamic--Pyruvic Transaminase	Protein Coding	41	GC08P144502	49.07
HLA-C	Major Histocompatibility Complex, Class I, C	Protein Coding	44	GC06M051344	48.99
NFKB1	Nuclear Factor Kappa B Subunit 1	Protein Coding	51	GC04P102501	48.84
BCL2	BCL2 Apoptosis Regulator	Protein Coding	49	GC18M063123	48.7

MTOR	Mechanistic Target Of Rapamycin Kinase	Protein Coding	53	GC01 M011 106	48.63
FGA	Fibrinogen Alpha Chain	Protein Coding	46	GC04 M154 583	48.63
THPO	Thrombopoietin	Protein Coding	41	GC03 M184 371	48.62
SOD1	Superoxide Dismutase 1	Protein Coding	50	GC21 P0316 59	48.54
STAT2	Signal Transducer And Activator Of Transcription 2	Protein Coding	47	GC12 M056 341	48.39
CST3	Cystatin C	Protein Coding	43	GC20 M023 627	48.04
SLC2A1	Solute Carrier Family 2 Member 1	Protein Coding	52	GC01 M042 925	47.86
TYR	Tyrosinase	Protein Coding	46	GC11 P0891 77	47.83
THBD	Thrombomodulin	Protein Coding	43	GC20 M023 026	47.81
AR	Androgen Receptor	Protein Coding	52	GC0X P0675 44	47.7
SERPINC 1	Serpin Family C Member 1	Protein Coding	47	GC01 M174 312	47.53
F10	Coagulation Factor X	Protein Coding	48	GC13 P1131 22	47.44
CFH	Complement Factor H	Protein Coding	45	GC01 P1966 21	46.43
IGF2	Insulin Like Growth Factor 2	Protein Coding	46	GC11 M002 130	46.36
MMP2	Matrix Metallopeptidase 2	Protein	52	GC16	46.24

		Coding		P055390	
MYD88	MYD88 Innate Immune Signal Transduction Adaptor	Protein Coding	48	GC03P038139	46.19
IFIH1	Interferon Induced With Helicase C Domain 1	Protein Coding	46	GC02M162267	46.11
IL2RA	Interleukin 2 Receptor Subunit Alpha	Protein Coding	49	GC10M006010	46.04
CALR	Calreticulin	Protein Coding	49	GC19P012938	45.81
CYP3A4	Cytochrome P450 Family 3 Subfamily A Member 4	Protein Coding	50	GC07M099759	45.3
MIR21	MicroRNA 21	RNA Gene	24	GC17P059841	45.07
JUN	Jun Proto-Oncogene, AP-1 Transcription Factor Subunit	Protein Coding	48	GC01M058780	44.99
EDN1	Endothelin 1	Protein Coding	46	GC06P012256	44.75
IL18	Interleukin 18	Protein Coding	42	GC11M112143	44.75
G6PD	Glucose-6-Phosphate Dehydrogenase	Protein Coding	49	GC0XM154531	44.74
FN1	Fibronectin 1	Protein Coding	49	GC02M215360	44.48
VCAM1	Vascular Cell Adhesion Molecule 1	Protein Coding	44	GC01P100719	43.78
MIF	Macrophage Migration Inhibitory Factor	Protein Coding	48	GC22P023894	43.54
CXCL10	C-X-C Motif Chemokine Ligand 10	Protein Coding	43	GC04M076	43.28

				021	
TFRC	Transferrin Receptor	Protein Coding	47	GC03 M196 027	43.23
PLAT	Plasminogen Activator, Tissue Type	Protein Coding	48	GC08 M042 174	43.17
CD8A	CD8a Molecule	Protein Coding	45	GC02 M086 784	43.02
MAPK14	Mitogen-Activated Protein Kinase 14	Protein Coding	50	GC06 P0613 07	42.84
IL4R	Interleukin 4 Receptor	Protein Coding	46	GC16 P0273 25	42.82
CSF2	Colony Stimulating Factor 2	Protein Coding	42	GC05 P1320 73	42.72
CREBBP	CREB Binding Protein	Protein Coding	51	GC16 M004 352	42.53
TGFBR1	Transforming Growth Factor Beta Receptor 1	Protein Coding	52	GC09 P0991 04	42.38
HMOX1	Heme Oxygenase 1	Protein Coding	51	GC22 P0353 80	42.33
NFKBIA	NFKB Inhibitor Alpha	Protein Coding	49	GC14 M035 401	42.04
IRF3	Interferon Regulatory Factor 3	Protein Coding	45	GC19 M049 659	41.79
CCL4	C-C Motif Chemokine Ligand 4	Protein Coding	39	GC17 P0361 03	41.75
SDHB	Succinate Dehydrogenase Complex Iron Sulfur Subunit B	Protein Coding	47	GC01 M017 437	41.12
IL17A	Interleukin 17A	Protein Coding	41	GC06 P0521 86	40.97

VDR	Vitamin D Receptor	Protein Coding	50	GC12 M047 841	40.79
CYP19A 1	Cytochrome P450 Family 19 Subfamily A Member 1	Protein Coding	48	GC15 M051 208	40.78
PIK3C2A	Phosphatidylinositol-4-Phosphate 3-Kinase Catalytic Subunit Type 2 Alpha	Protein Coding	46	GC11 M017 336	40.68
TTR	Transthyretin	Protein Coding	48	GC18 P0315 57	40.42
HSPA5	Heat Shock Protein Family A (Hsp70) Member 5	Protein Coding	46	GC09 M125 234	40.37
HSPD1	Heat Shock Protein Family D (Hsp60) Member 1	Protein Coding	46	GC02 M197 486	40.33
IL1R1	Interleukin 1 Receptor Type 1	Protein Coding	44	GC02 P1021 36	40.3
ERVW-1	Endogenous Retrovirus Group W Member 1, Envelope	Protein Coding	33	GC07 M092 468	39.98
KDR	Kinase Insert Domain Receptor	Protein Coding	52	GC04 M055 078	39.66
FCGR2B	Fc Fragment Of IgG Receptor IIb	Protein Coding	46	GC01 P1616 63	39.62
HP	Haptoglobin	Protein Coding	43	GC16 P0720 89	39.41
APOB	Apolipoprotein B	Protein Coding	45	GC02 M020 956	39.36
CAV1	Caveolin 1	Protein Coding	47	GC07 P1165 24	39.26
H2AC18	H2A Clustered Histone 18	Protein Coding	26	GC01 M150 279	38.67
ADIPOQ	Adiponectin, C1Q And Collagen Domain	Protein	44	GC03	38.26

	Containing	Coding		P186842	
SLC6A4	Solute Carrier Family 6 Member 4	Protein Coding	47	GC17M030194	38.26
MAPK3	Mitogen-Activated Protein Kinase 3	Protein Coding	48	GC16M032181	37.4
MIR146A	MicroRNA 146a	RNA Gene	22	GC05P160485	37.28
HCFC1	Host Cell Factor C1	Protein Coding	46	GC0XM153947	37.25
CASP1	Caspase 1	Protein Coding	49	GC11M105025	37.18
MX1	MX Dynamin Like GTPase 1	Protein Coding	41	GC21P041420	37.17
MIR126	MicroRNA 126	RNA Gene	22	GC09P136670	37.15
PML	PML Nuclear Body Scaffold	Protein Coding	45	GC15P073994	36.88
VIM	Vimentin	Protein Coding	49	GC10P017227	36.77
ITGB1	Integrin Subunit Beta 1	Protein Coding	49	GC10M032899	36.7
CD79A	CD79a Molecule	Protein Coding	45	GC19P041877	36.56
MC1R	Melanocortin 1 Receptor	Protein Coding	47	GC16P089912	36.43
MAPK8	Mitogen-Activated Protein Kinase 8	Protein Coding	49	GC10P048306	36.38
FLT1	Fms Related Receptor Tyrosine Kinase 1	Protein Coding	49	GC13M028	36.3

				300	
SYK	Spleen Associated Tyrosine Kinase	Protein Coding	49	GC09 P091527	36.23
LTA	Lymphotoxin Alpha	Protein Coding	41	GC06 P061168	35.84
GP1BA	Glycoprotein Ib Platelet Subunit Alpha	Protein Coding	45	GC17 P004932	35.77
PIK3R1	Phosphoinositide-3-Kinase Regulatory Subunit 1	Protein Coding	50	GC05 P068215	35.77
CD46	CD46 Molecule	Protein Coding	45	GC01 P207752	35.64
SP1	Sp1 Transcription Factor	Protein Coding	44	GC12 P053380	35.54
ADAR	Adenosine Deaminase RNA Specific	Protein Coding	44	GC01 M154582	35.5
EIF2AK2	Eukaryotic Translation Initiation Factor 2 Alpha Kinase 2	Protein Coding	46	GC02 M037099	35.49
HTR2A	5-Hydroxytryptamine Receptor 2A	Protein Coding	47	GC13 M046831	35.34
HMGB1	High Mobility Group Box 1	Protein Coding	44	GC13 M030456	35.17
PLG	Plasminogen	Protein Coding	48	GC06 P160702	34.93
TLR7	Toll Like Receptor 7	Protein Coding	46	GC0X P012867	34.87
HLA-DPB1	Major Histocompatibility Complex, Class II, DP Beta 1	Protein Coding	43	GC06 P061206	34.86
NPM1	Nucleophosmin 1	Protein Coding	48	GC05 P171387	34.78

LPL	Lipoprotein Lipase	Protein Coding	48	GC08 P019901	34.71
HGF	Hepatocyte Growth Factor	Protein Coding	50	GC07 M081699	34.65
PTPRC	Protein Tyrosine Phosphatase Receptor Type C	Protein Coding	49	GC01 P198607	34.64
SLC17A5	Solute Carrier Family 17 Member 5	Protein Coding	44	GC06 M073593	34.33
MMP3	Matrix Metallopeptidase 3	Protein Coding	50	GC11 M102835	34.32
KRT14	Keratin 14	Protein Coding	46	GC17 M041582	34.27
VCP	Valosin Containing Protein	Protein Coding	48	GC09 M035056	34.21
IL11	Interleukin 11	Protein Coding	40	GC19 M055364	33.98
RANBP2	RAN Binding Protein 2	Protein Coding	45	GC02 P108719	33.78
IFNAR1	Interferon Alpha And Beta Receptor Subunit 1	Protein Coding	44	GC21 P033324	33.77
MME	Membrane Metalloendopeptidase	Protein Coding	49	GC03 P155024	33.58
CD40	CD40 Molecule	Protein Coding	46	GC20 P046118	33.47
SQSTM1	Sequestosome 1	Protein Coding	47	GC05 P179806	33.42
RHOA	Ras Homolog Family Member A	Protein Coding	46	GC03 M049359	33.36
PECAM1	Platelet And Endothelial Cell Adhesion Molecule 1	Protein	40	GC17	33.16

		Coding		M064319	
DRD2	Dopamine Receptor D2	Protein Coding	49	GC11M113409	33.15
IL2RB	Interleukin 2 Receptor Subunit Beta	Protein Coding	47	GC22M037125	33.12
PARP1	Poly(ADP-Ribose) Polymerase 1	Protein Coding	48	GC01M226360	33.06
FURIN	Furin, Paired Basic Amino Acid Cleaving Enzyme	Protein Coding	45	GC15P090868	33.06
ANXA5	Annexin A5	Protein Coding	45	GC04M121667	32.97
RAC1	Rac Family Small GTPase 1	Protein Coding	48	GC07P006377	32.89
RNASEL	Ribonuclease L	Protein Coding	45	GC01M182542	32.81
BCL2L1	BCL2 Like 1	Protein Coding	46	GC20M031664	32.66
CD55	CD55 Molecule (Cromer Blood Group)	Protein Coding	46	GC01P207321	32.61
CASP9	Caspase 9	Protein Coding	47	GC01M015491	32.56
IL6R	Interleukin 6 Receptor	Protein Coding	48	GC01P154405	32.26
MT-CO1	Mitochondrially Encoded Cytochrome C Oxidase I	Protein Coding	33	GCMTP005906	32.24
PCNA	Proliferating Cell Nuclear Antigen	Protein Coding	50	GC20M005114	32.22
ANGPT2	Angiopoietin 2	Protein Coding	44	GC08M006	32.07

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HSPA4	Heat Shock Protein Family A (Hsp70) Member 4	Protein Coding	41	GC05P133051	32.01
RELA	RELA Proto-Oncogene, NF-KB Subunit	Protein Coding	50	GC11M065653	31.98
HSP90AA1	Heat Shock Protein 90 Alpha Family Class A Member 1	Protein Coding	46	GC14M102080	31.97
TBK1	TANK Binding Kinase 1	Protein Coding	48	GC12P064451	31.94
IFNGR1	Interferon Gamma Receptor 1	Protein Coding	48	GC06M137197	31.5
MT-CYB	Mitochondrially Encoded Cytochrome B	Protein Coding	32	GCMTP014749	31.33
IRF7	Interferon Regulatory Factor 7	Protein Coding	46	GC11M000612	31
TLR9	Toll Like Receptor 9	Protein Coding	44	GC03M052222	30.96
TRPV4	Transient Receptor Potential Cation Channel Subfamily V Member 4	Protein Coding	49	GC12M109783	30.84
IL12B	Interleukin 12B	Protein Coding	42	GC05M159314	30.75
JAK1	Janus Kinase 1	Protein Coding	52	GC01M064833	30.65
GAPDH	Glyceraldehyde-3-Phosphate Dehydrogenase	Protein Coding	47	GC12P014190	30.5
SDHA	Succinate Dehydrogenase Complex Flavoprotein Subunit A	Protein Coding	47	GC05P000208	30.49
IRF1	Interferon Regulatory Factor 1	Protein Coding	46	GC05M132440	30.47

MIR223	MicroRNA 223	RNA Gene	21	GC0XP066018	30.39
SAMHD1	SAM And HD Domain Containing Deoxynucleoside Triphosphate Triphosphohydrolase 1	Protein Coding	42	GC20M036890	30.28
KIR3DL1	Killer Cell Immunoglobulin Like Receptor, Three Ig Domains And Long Cytoplasmic Tail 1	Protein Coding	40	GC19P057729	30.18
TNFSF10	TNF Superfamily Member 10	Protein Coding	45	GC03M172505	30
SMPD1	Sphingomyelin Phosphodiesterase 1	Protein Coding	46	GC11P006390	29.85
ABCG2	ATP Binding Cassette Subfamily G Member 2 (Junior Blood Group)	Protein Coding	49	GC04M088090	29.76
FCGR1A	Fc Fragment Of IgG Receptor Ia	Protein Coding	40	GC01P149754	29.6
IL15	Interleukin 15	Protein Coding	40	GC04P141636	29.49
CCR1	C-C Motif Chemokine Receptor 1	Protein Coding	44	GC03M046218	29.43
CLU	Clusterin	Protein Coding	45	GC08M027596	29.37
RSAD2	Radical S-Adenosyl Methionine Domain Containing 2	Protein Coding	40	GC02P006865	29.26
GZMB	Granzyme B	Protein Coding	45	GC14M024630	29.23
IFNA2	Interferon Alpha 2	Protein Coding	41	GC09M021384	29
IVNS1ABP	Influenza Virus NS1A Binding Protein	Protein Coding	39	GC01M185302	28.94
NFE2L2	Nuclear Factor, Erythroid 2 Like 2	Protein	48	GC02	28.81

		Coding		M177227	
CXCR3	C-X-C Motif Chemokine Receptor 3	Protein Coding	44	GC0XM071615	28.78
EZH2	Enhancer Of Zeste 2 Polycomb Repressive Complex 2 Subunit	Protein Coding	53	GC07M148807	28.68
C4B	Complement C4B (Chido Blood Group)	Protein Coding	42	GC06P032014	28.6
CDC42	Cell Division Cycle 42	Protein Coding	50	GC01P022152	28.56
EIF2AK4	Eukaryotic Translation Initiation Factor 2 Alpha Kinase 4	Protein Coding	44	GC15P039934	28.47
CTSB	Cathepsin B	Protein Coding	50	GC08M011842	28.39
TLR1	Toll Like Receptor 1	Protein Coding	46	GC04M038793	28.3
IL12A	Interleukin 12A	Protein Coding	42	GC03P159988	28.25
SULT1A3	Sulfotransferase Family 1A Member 3	Protein Coding	37	GC16P030199	28.17
TRAF3	TNF Receptor Associated Factor 3	Protein Coding	46	GC14P107001	28.07
IFI27	Interferon Alpha Inducible Protein 27	Protein Coding	38	GC14P094104	28.07
MIR30E	MicroRNA 30e	RNA Gene	21	GC01P040754	27.82
SLC12A3	Solute Carrier Family 12 Member 3	Protein Coding	45	GC16P056865	27.78
HAVCR2	Hepatitis A Virus Cellular Receptor 2	Protein Coding	42	GC05M157	27.64

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CXCL1	C-X-C Motif Chemokine Ligand 1	Protein Coding	42	GC04 P073869	27.38
HMGCR	3-Hydroxy-3-Methylglutaryl-CoA Reductase	Protein Coding	45	GC05 P075336	27.31
IDO1	Indoleamine 2,3-Dioxygenase 1	Protein Coding	44	GC08 P039891	27.21
NEU1	Neuraminidase 1	Protein Coding	43	GC06 M031857	27.19
DICER1	Dicer 1, Ribonuclease III	Protein Coding	47	GC14 M095086	27.11
CD27	CD27 Molecule	Protein Coding	44	GC12 P014167	27.09
TICAM1	Toll Like Receptor Adaptor Molecule 1	Protein Coding	44	GC19 M004815	27.01
HSPA8	Heat Shock Protein Family A (Hsp70) Member 8	Protein Coding	46	GC11 M123057	26.83
TAP1	Transporter 1, ATP Binding Cassette Subfamily B Member	Protein Coding	46	GC06 M051473	26.81
IL1RAPL2	Interleukin 1 Receptor Accessory Protein Like 2	Protein Coding	37	GC0X P104566	26.73
PLA2G7	Phospholipase A2 Group VII	Protein Coding	48	GC06 M051706	26.73
MKI67	Marker Of Proliferation Ki-67	Protein Coding	44	GC10 M128096	26.72
ISG15	ISG15 Ubiquitin Like Modifier	Protein Coding	45	GC01 P001001	26.6
PRKG1	Protein Kinase CGMP-Dependent 1	Protein Coding	50	GC10 P050991	26.53

RPSA	Ribosomal Protein SA	Protein Coding	44	GC03 P039406	26.44
GSR	Glutathione-Disulfide Reductase	Protein Coding	48	GC08 M030678	26.17
MB	Myoglobin	Protein Coding	42	GC22 M035606	26.15
PROC	Protein C, Inactivator Of Coagulation Factors Va And VIIIa	Protein Coding	48	GC02 P127418	26.15
ITGA4	Integrin Subunit Alpha 4	Protein Coding	48	GC02 P181456	26.04
LTF	Lactotransferrin	Protein Coding	43	GC03 M046435	26.02
CLDN1	Claudin 1	Protein Coding	46	GC03 M190305	25.96
MBP	Myelin Basic Protein	Protein Coding	44	GC18 M076978	25.9
STING1	Stimulator Of Interferon Response CGAMP Interactor 1	Protein Coding	33	GC05 M139476	25.89
IL2RG	Interleukin 2 Receptor Subunit Gamma	Protein Coding	46	GC0X M071108	25.82
EIF2S1	Eukaryotic Translation Initiation Factor 2 Subunit Alpha	Protein Coding	44	GC14 P067359	25.78
ANGPT1	Angiopoietin 1	Protein Coding	45	GC08 M107246	25.73
GUCY2D	Guanylate Cyclase 2D, Retinal	Protein Coding	43	GC17 P008002	25.65
BST2	Bone Marrow Stromal Cell Antigen 2	Protein Coding	38	GC19 M017403	25.54
DDX3X	DEAD-Box Helicase 3 X-Linked	Protein	46	GC0X	25.52

		Coding		P041333	
ZAP70	Zeta Chain Of T Cell Receptor Associated Protein Kinase 70	Protein Coding	50	GC02P097714	25.4
IFITM3	Interferon Induced Transmembrane Protein 3	Protein Coding	41	GC11M000319	25.38
CCR7	C-C Motif Chemokine Receptor 7	Protein Coding	44	GC17M040556	25.3
F2R	Coagulation Factor II Thrombin Receptor	Protein Coding	46	GC05P076716	25.24
CLEC4M	C-Type Lectin Domain Family 4 Member M	Protein Coding	40	GC19P007763	25.15
GNB3	G Protein Subunit Beta 3	Protein Coding	46	GC12P006839	25.14
CLEC5A	C-Type Lectin Domain Containing 5A	Protein Coding	33	GC07M141927	25.05
NEAT1	Nuclear Paraspeckle Assembly Transcript 1	RNA Gene	23	GC11P067093	25.05
GSK3B	Glycogen Synthase Kinase 3 Beta	Protein Coding	49	GC03M119821	25.03
PF4	Platelet Factor 4	Protein Coding	40	GC04M073980	25.03
IRF5	Interferon Regulatory Factor 5	Protein Coding	46	GC07P128937	25.02
TRAF6	TNF Receptor Associated Factor 6	Protein Coding	46	GC11M036467	24.82
FADD	Fas Associated Via Death Domain	Protein Coding	46	GC11P070203	24.8
CDH5	Cadherin 5	Protein Coding	46	GC16P0663	24.77

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DNM1L	Dynamin 1 Like	Protein Coding	46	GC12 P0326 79	24.74
TCIRG1	T Cell Immune Regulator 1, ATPase H+ Transporting V0 Subunit A3	Protein Coding	44	GC11 P0680 41	24.61
TNFRSF 10B	TNF Receptor Superfamily Member 10b	Protein Coding	49	GC08 M023 020	24.6
PABPC1	Poly(A) Binding Protein Cytoplasmic 1	Protein Coding	42	GC08 M100 685	24.57
SOCS3	Suppressor Of Cytokine Signaling 3	Protein Coding	43	GC17 M078 356	24.46
ITGAL	Integrin Subunit Alpha L	Protein Coding	45	GC16 P0304 72	24.44
HNRNPK	Heterogeneous Nuclear Ribonucleoprotein K	Protein Coding	45	GC09 M087 363	24.43
KRT19	Keratin 19	Protein Coding	44	GC17 M041 523	24.19
TLR8	Toll Like Receptor 8	Protein Coding	47	GC0X P0129 24	24.01
NRP1	Neuropilin 1	Protein Coding	45	GC10 M033 177	24.01
CD80	CD80 Molecule	Protein Coding	40	GC03 M119 524	23.97
CMA1	Chymase 1	Protein Coding	43	GC14 M024 506	23.96
TUBB	Tubulin Beta Class I	Protein Coding	49	GC06 P0611 50	23.91
MIRLET 7C	MicroRNA Let-7c	RNA Gene	22	GC21 P0165 51	23.89

PLA2G2A	Phospholipase A2 Group IIA	Protein Coding	46	GC01M019975	23.81
MICB	MHC Class I Polypeptide-Related Sequence B	Protein Coding	40	GC06P061165	23.59
RPS6KB1	Ribosomal Protein S6 Kinase B1	Protein Coding	48	GC17P059893	23.46
PIK3R2	Phosphoinositide-3-Kinase Regulatory Subunit 2	Protein Coding	49	GC19P018153	23.46
PCSK9	Proprotein Convertase Subtilisin/Kexin Type 9	Protein Coding	49	GC01P055039	23.4
ACKR1	Atypical Chemokine Receptor 1 (Duffy Blood Group)	Protein Coding	36	GC01P159203	23.39
HBA1	Hemoglobin Subunit Alpha 1	Protein Coding	41	GC16P006709	23.34
ATP6V0A2	ATPase H+ Transporting V0 Subunit A2	Protein Coding	44	GC12P123712	23.27
GARS1	Glycyl-TRNA Synthetase 1	Protein Coding	36	GC07P030580	23.24
ANXA2	Annexin A2	Protein Coding	47	GC15M060347	23.17
TJP1	Tight Junction Protein 1	Protein Coding	43	GC15M029699	22.99
F13B	Coagulation Factor XIII B Chain	Protein Coding	40	GC01M197008	22.96
CSNK2A1	Casein Kinase 2 Alpha 1	Protein Coding	50	GC20M000472	22.81
PRDX1	Peroxiredoxin 1	Protein Coding	48	GC01M045511	22.78
P2RX7	Purinergic Receptor P2X 7	Protein	45	GC12	22.77

		Coding		P124172	
PTX3	Pentraxin 3	Protein Coding	41	GC03P157436	22.72
AARS1	Alanyl-TRNA Synthetase 1	Protein Coding	35	GC16M070393	22.68
PLCE1	Phospholipase C Epsilon 1	Protein Coding	42	GC10P093993	22.65
LYN	LYN Proto-Oncogene, Src Family Tyrosine Kinase	Protein Coding	48	GC08P055879	22.63
SOCS1	Suppressor Of Cytokine Signaling 1	Protein Coding	42	GC16M011255	22.61
MIR122	MicroRNA 122	RNA Gene	21	GC18P058451	22.51
EIF2AK3	Eukaryotic Translation Initiation Factor 2 Alpha Kinase 3	Protein Coding	48	GC02M088556	22.44
FYN	FYN Proto-Oncogene, Src Family Tyrosine Kinase	Protein Coding	46	GC06M111660	22.42
OAS3	2'-5'-Oligoadenylate Synthetase 3	Protein Coding	40	GC12P112938	22.4
IFNAR2	Interferon Alpha And Beta Receptor Subunit 2	Protein Coding	48	GC21P033229	22.36
HAVCR1	Hepatitis A Virus Cellular Receptor 1	Protein Coding	41	GC05M157028	22.34
S100A8	S100 Calcium Binding Protein A8	Protein Coding	41	GC01M153391	22.34
CEBPB	CCAAT Enhancer Binding Protein Beta	Protein Coding	43	GC20P050190	22.32
RAB7A	RAB7A, Member RAS Oncogene Family	Protein Coding	47	GC03P1320	22.28

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ZMPSTE24	Zinc Metallopeptidase STE24	Protein Coding	42	GC01P040258	22.06
PLA2G4A	Phospholipase A2 Group IVA	Protein Coding	48	GC01P186798	22.02
IL33	Interleukin 33	Protein Coding	38	GC09P006206	21.98
P4HB	Prolyl 4-Hydroxylase Subunit Beta	Protein Coding	48	GC17M081843	21.96
CD81	CD81 Molecule	Protein Coding	45	GC11P002454	21.93
EPRS1	Glutamyl-Prolyl-TRNA Synthetase 1	Protein Coding	35	GC01M219969	21.92
CD69	CD69 Molecule	Protein Coding	39	GC12M016929	21.9
NME1	NME/NM23 Nucleoside Diphosphate Kinase 1	Protein Coding	45	GC17P051154	21.84
MICA	MHC Class I Polypeptide-Related Sequence A	Protein Coding	38	GC06P031399	21.73
IFITM1	Interferon Induced Transmembrane Protein 1	Protein Coding	41	GC11P000313	21.72
TAP2	Transporter 2, ATP Binding Cassette Subfamily B Member	Protein Coding	44	GC06M032821	21.63
SCARB2	Scavenger Receptor Class B Member 2	Protein Coding	43	GC04M076158	21.54
HBA2	Hemoglobin Subunit Alpha 2	Protein Coding	41	GC16P006710	21.5
AXL	AXL Receptor Tyrosine Kinase	Protein Coding	50	GC19P041219	21.43

BAK1	BCL2 Antagonist/Killer 1	Protein Coding	44	GC06 M033 572	21.39
IRAK4	Interleukin 1 Receptor Associated Kinase 4	Protein Coding	48	GC12 P0437 58	21.37
ADAM17	ADAM Metallopeptidase Domain 17	Protein Coding	50	GC02 M009 488	21.24
XRCC6	X-Ray Repair Cross Complementing 6	Protein Coding	45	GC22 P0416 22	21.23
TYK2	Tyrosine Kinase 2	Protein Coding	52	GC19 M010 350	21.11
FLNB	Filamin B	Protein Coding	45	GC03 P0580 08	21.04
XBP1	X-Box Binding Protein 1	Protein Coding	45	GC22 M028 794	20.98
MDH2	Malate Dehydrogenase 2	Protein Coding	47	GC07 P0760 48	20.91
IL10RA	Interleukin 10 Receptor Subunit Alpha	Protein Coding	44	GC11 P1179 87	20.91
MRC1	Mannose Receptor C-Type 1	Protein Coding	39	GC10 P0178 09	20.77
CXCL9	C-X-C Motif Chemokine Ligand 9	Protein Coding	38	GC04 M076 001	20.74
TIRAP	TIR Domain Containing Adaptor Protein	Protein Coding	42	GC11 P1262 84	20.63
VDAC1	Voltage Dependent Anion Channel 1	Protein Coding	45	GC05 M133 975	20.62
ALPP	Alkaline Phosphatase, Placental	Protein Coding	45	GC02 P2323 78	20.62
EPHX1	Epoxide Hydrolase 1	Protein	45	GC01	20.59

		Coding		P22581 0	
STUB1	STIP1 Homology And U-Box Containing Protein 1	Protein Coding	44	GC16 P00673 7	20.54
CANX	Calnexin	Protein Coding	43	GC05 P17967 8	20.51
EIF4E	Eukaryotic Translation Initiation Factor 4E	Protein Coding	48	GC04 M0987 9	20.5
MIR150	MicroRNA 150	RNA Gene	22	GC19 M0495 00	20.31
UBA1	Ubiquitin Like Modifier Activating Enzyme 1	Protein Coding	46	GC0X P04719 0	20.26
L1CAM	L1 Cell Adhesion Molecule	Protein Coding	46	GC0X M1538 64	20.05
RRAS2	RAS Related 2	Protein Coding	45	GC11 M0142 99	20.01
CD70	CD70 Molecule	Protein Coding	41	GC19 M0065 90	19.95
FASN	Fatty Acid Synthase	Protein Coding	48	GC17 M0820 78	19.91
LGALS9	Galectin 9	Protein Coding	38	GC17 P02762 9	19.88
ABCC11	ATP Binding Cassette Subfamily C Member 11	Protein Coding	41	GC16 M0481 66	19.88
CPB2	Carboxypeptidase B2	Protein Coding	44	GC13 M0460 53	19.86
ENO1	Enolase 1	Protein Coding	46	GC01 M0088 61	19.8
GC	GC Vitamin D Binding Protein	Protein Coding	42	GC04 M071	19.8

				741	
DAXX	Death Domain Associated Protein	Protein Coding	43	GC06 M033 318	19.79
SMC3	Structural Maintenance Of Chromosomes 3	Protein Coding	45	GC10 P1105 67	19.78
NDUFAF 2	NADH:Ubiquinone Oxidoreductase Complex Assembly Factor 2	Protein Coding	39	GC05 P0609 45	19.7
RASSF1	Ras Association Domain Family Member 1	Protein Coding	44	GC03 M050 329	19.7
SARS1	Seryl-TRNA Synthetase 1	Protein Coding	34	GC01 P1092 14	19.65
EFEMP2	EGF Containing Fibulin Extracellular Matrix Protein 2	Protein Coding	42	GC11 M074 531	19.63
OAS1	2'-5'-Oligoadenylate Synthetase 1	Protein Coding	44	GC12 P1129 18	19.62
IFITM2	Interferon Induced Transmembrane Protein 2	Protein Coding	36	GC11 P0003 00	19.55
KRT10	Keratin 10	Protein Coding	42	GC17 M040 818	19.53
ANXA1	Annexin A1	Protein Coding	48	GC09 P0731 51	19.52
SF3B1	Splicing Factor 3b Subunit 1	Protein Coding	44	GC02 M197 401	19.51
DLL1	Delta Like Canonical Notch Ligand 1	Protein Coding	45	GC06 M170 282	19.47
ATP6V1 A	ATPase H+ Transporting V1 Subunit A	Protein Coding	44	GC03 P1137 47	19.45
CD38	CD38 Molecule	Protein Coding	44	GC04 P0157 80	19.43

ABCB7	ATP Binding Cassette Subfamily B Member 7	Protein Coding	43	GC0XM075053	19.32
SKIV2L	Ski2 Like RNA Helicase	Protein Coding	42	GC06P061192	19.31
MALT1	MALT1 Paracaspase	Protein Coding	46	GC18P058671	19.21
DROSHA	Drosha Ribonuclease III	Protein Coding	42	GC05M031401	19.2
SHFL	Shiftless Antiviral Inhibitor Of Ribosomal Frameshifting	Protein Coding	24	GC19P010086	19.2
GBF1	Golgi Brefeldin A Resistant Guanine Nucleotide Exchange Factor 1	Protein Coding	43	GC10P102245	19.01
MOV10	Mov10 RISC Complex RNA Helicase	Protein Coding	40	GC01P112673	18.91
ASS1	Argininosuccinate Synthase 1	Protein Coding	47	GC09P130444	18.81
MAVS	Mitochondrial Antiviral Signaling Protein	Protein Coding	39	GC20P003850	18.78
HLA-DRB3	Major Histocompatibility Complex, Class II, DR Beta 3	Protein Coding	28	GC06Mn03715	18.74
C5	Complement C5	Protein Coding	45	GC09M120952	18.67
RAP1A	RAP1A, Member Of RAS Oncogene Family	Protein Coding	45	GC01P111542	18.54
IKBKE	Inhibitor Of Nuclear Factor Kappa B Kinase Subunit Epsilon	Protein Coding	45	GC01P206470	18.49
LDHA	Lactate Dehydrogenase A	Protein Coding	50	GC11P018394	18.47
IFNL3	Interferon Lambda 3	Protein	33	GC19	18.45

		Coding		M039243	
PPIA	Peptidylprolyl Isomerase A	Protein Coding	46	GC07P044807	18.38
PRKDC	Protein Kinase, DNA-Activated, Catalytic Subunit	Protein Coding	49	GC08M047773	18.38
AUP1	AUP1 Lipid Droplet Regulating VLDL Assembly Factor	Protein Coding	36	GC02M074526	18.34
ADAMTSL1	ADAMTS Like 1	Protein Coding	41	GC09P017906	18.24
KRT16	Keratin 16	Protein Coding	43	GC17M041609	18.14
IL21	Interleukin 21	Protein Coding	41	GC04M122612	18.1
DST	Dystonin	Protein Coding	41	GC06M056457	18.08
PTPN1	Protein Tyrosine Phosphatase Non-Receptor Type 1	Protein Coding	49	GC20P050510	18.08
ALDOA	Aldolase, Fructose-Bisphosphate A	Protein Coding	48	GC16P030064	18.01
RAB5A	RAB5A, Member RAS Oncogene Family	Protein Coding	45	GC03P019963	17.98
YWHAE	Tyrosine 3-Monooxygenase/Tryptophan 5-Monooxygenase Activation Protein Epsilon	Protein Coding	48	GC17M001346	17.9
RPA1	Replication Protein A1	Protein Coding	45	GC17P001829	17.82
UBC	Ubiquitin C	Protein Coding	42	GC12M124911	17.76
LGALS1	Galectin 1	Protein Coding	42	GC22P0376	17.76

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ACADVL	Acyl-CoA Dehydrogenase Very Long Chain	Protein Coding	45	GC17 P007219	17.74
HELLS	Helicase, Lymphoid Specific	Protein Coding	45	GC10 P094501	17.74
APRT	Adenine Phosphoribosyltransferase	Protein Coding	46	GC16 M088810	17.59
ACAD9	Acyl-CoA Dehydrogenase Family Member 9	Protein Coding	42	GC03 P132077	17.57
SENP8	SUMO Peptidase Family Member, NEDD8 Specific	Protein Coding	38	GC15 P080654	17.46
PRPS1	Phosphoribosyl Pyrophosphate Synthetase 1	Protein Coding	46	GC0X P107628	17.44
ATF6	Activating Transcription Factor 6	Protein Coding	46	GC01 P161766	17.43
LBP	Lipopolysaccharide Binding Protein	Protein Coding	42	GC20 P038346	17.37
SPCS1	Signal Peptidase Complex Subunit 1	Protein Coding	35	GC03 P052920	17.28
PKM	Pyruvate Kinase M1/2	Protein Coding	44	GC15 M072199	17.25
ITCH	Itchy E3 Ubiquitin Protein Ligase	Protein Coding	45	GC20 P034363	17.22
SDC1	Syndecan 1	Protein Coding	42	GC02 M020200	17.15
RNF31	Ring Finger Protein 31	Protein Coding	41	GC14 P024146	17.07
DDR2	Discoidin Domain Receptor Tyrosine Kinase 2	Protein Coding	49	GC01 P162631	16.98

GDF15	Growth Differentiation Factor 15	Protein Coding	41	GC19P029039	16.97
AURKB	Aurora Kinase B	Protein Coding	48	GC17M009468	16.95
EXOSC9	Exosome Component 9	Protein Coding	38	GC04P121801	16.94
PROCR	Protein C Receptor	Protein Coding	41	GC20P035273	16.91
OXA1L	OXA1L Mitochondrial Inner Membrane Protein	Protein Coding	38	GC14P022766	16.75
PRKRA	Protein Activator Of Interferon Induced Protein Kinase EIF2AK2	Protein Coding	41	GC02M178431	16.74
PAF1	PAF1 Homolog, Paf1/RNA Polymerase II Complex Component	Protein Coding	36	GC19M039385	16.7
BLOC1S1	Biogenesis Of Lysosomal Organelles Complex 1 Subunit 1	Protein Coding	36	GC12P055788	16.67
UQCRFS1	Ubiquinol-Cytochrome C Reductase, Rieske Iron-Sulfur Polypeptide 1	Protein Coding	45	GC19M029205	16.58
TMPO	Thymopoietin	Protein Coding	44	GC12P098515	16.56
RBFOX1	RNA Binding Fox-1 Homolog 1	Protein Coding	38	GC16P006930	16.42
ATP1A1	ATPase Na+/K+ Transporting Subunit Alpha 1	Protein Coding	49	GC01P116372	16.4
IL1RL1	Interleukin 1 Receptor Like 1	Protein Coding	40	GC02P102294	16.39
AHCY	Adenosylhomocysteinase	Protein Coding	49	GC20M034379	16.39
SEC63	SEC63 Homolog, Protein Translocation Regulator	Protein	43	GC06	16.37

		Coding		M107867	
TYROBP	Transmembrane Immune Signaling Adaptor TYROBP	Protein Coding	44	GC19M035904	16.32
SUMO1	Small Ubiquitin Like Modifier 1	Protein Coding	45	GC02M202206	16.28
TPSAB1	Tryptase Alpha/Beta 1	Protein Coding	42	GC16P001240	16.23
CCL27	C-C Motif Chemokine Ligand 27	Protein Coding	36	GC09M034662	16.22
NCL	Nucleolin	Protein Coding	41	GC02M231453	16.22
GAS6	Growth Arrest Specific 6	Protein Coding	43	GC13M113820	16.07
EIF4EBP1	Eukaryotic Translation Initiation Factor 4E Binding Protein 1	Protein Coding	45	GC08P038108	16.02
GRK2	G Protein-Coupled Receptor Kinase 2	Protein Coding	38	GC11P067266	15.98
AIMP1	Aminoacyl TRNA Synthetase Complex Interacting Multifunctional Protein 1	Protein Coding	41	GC04P106315	15.96
TUBB4A	Tubulin Beta 4A Class IVa	Protein Coding	44	GC19M006496	15.95
CGAS	Cyclic GMP-AMP Synthase	Protein Coding	29	GC06M073414	15.91
ALDH7A1	Aldehyde Dehydrogenase 7 Family Member A1	Protein Coding	46	GC05M126541	15.87
DLAT	Dihydrolipoamide S-Acetyltransferase	Protein Coding	45	GC11P112024	15.86
SLC3A2	Solute Carrier Family 3 Member 2	Protein Coding	41	GC11P0628	15.85

				56	
EXOC1	Exocyst Complex Component 1	Protein Coding	35	GC04P055853	15.83
NOD1	Nucleotide Binding Oligomerization Domain Containing 1	Protein Coding	44	GC07M030424	15.79
TRIM21	Tripartite Motif Containing 21	Protein Coding	41	GC11M004384	15.78
TLR6	Toll Like Receptor 6	Protein Coding	43	GC04M038828	15.76
C2	Complement C2	Protein Coding	45	GC06P031897	15.74
PTGIS	Prostaglandin I2 Synthase	Protein Coding	47	GC20M049503	15.73
IFNGR2	Interferon Gamma Receptor 2	Protein Coding	43	GC21P033402	15.67
MSN	Moesin	Protein Coding	46	GC0XP065588	15.62
ATP6AP2	ATPase H+ Transporting Accessory Protein 2	Protein Coding	43	GC0XP040582	15.6
LARP1	La Ribonucleoprotein 1, Translational Regulator	Protein Coding	38	GC05P154682	15.58
CCL18	C-C Motif Chemokine Ligand 18	Protein Coding	36	GC17P036064	15.49
CLEC12A	C-Type Lectin Domain Family 12 Member A	Protein Coding	37	GC12P009951	15.39
RTN4	Reticulon 4	Protein Coding	44	GC02M054934	15.38
GNAI1	G Protein Subunit Alpha I1	Protein Coding	46	GC07P079769	15.28

HK2	Hexokinase 2	Protein Coding	46	GC02 P074833	15.19
USP8	Ubiquitin Specific Peptidase 8	Protein Coding	48	GC15 P050424	15.17
TREM1	Triggering Receptor Expressed On Myeloid Cells 1	Protein Coding	40	GC06 M041267	15.1
TRIM5	Tripartite Motif Containing 5	Protein Coding	41	GC11 M005850	15.1
TUBA1B	Tubulin Alpha 1b	Protein Coding	42	GC12 M049127	15.03
STMN1	Stathmin 1	Protein Coding	42	GC01 M025884	15.01
KPNA2	Karyopherin Subunit Alpha 2	Protein Coding	44	GC17 P068035	14.98
ITGAE	Integrin Subunit Alpha E	Protein Coding	39	GC17 M003741	14.95
MIRLET7E	MicroRNA Let-7e	RNA Gene	20	GC19 P051718	14.94
CXCL11	C-X-C Motif Chemokine Ligand 11	Protein Coding	40	GC04 M076033	14.9
PRKAR1B	Protein Kinase CAMP-Dependent Type I Regulatory Subunit Beta	Protein Coding	47	GC07 M000549	14.81
FOLR1	Folate Receptor Alpha	Protein Coding	45	GC11 P072190	14.79
IFI6	Interferon Alpha Inducible Protein 6	Protein Coding	37	GC01 M027666	14.72
LGALS3BP	Galectin 3 Binding Protein	Protein Coding	40	GC17 M078971	14.68
NRBP1	Nuclear Receptor Binding Protein 1	Protein	38	GC02	14.66

		Coding		P027427	
RBX1	Ring-Box 1	Protein Coding	42	GC22P040951	14.53
COPA	COPI Coat Complex Subunit Alpha	Protein Coding	41	GC01M160288	14.5
MIRLET7A1	MicroRNA Let-7a-1	RNA Gene	21	GC09P094175	14.48
UBE2I	Ubiquitin Conjugating Enzyme E2 I	Protein Coding	46	GC16P006745	14.46
CPS1	Carbamoyl-Phosphate Synthase 1	Protein Coding	45	GC02P210477	14.45
RP1	RP1 Axonemal Microtubule Associated	Protein Coding	37	GC08P054555	14.44
CTR9	CTR9 Homolog, Paf1/RNA Polymerase II Complex Component	Protein Coding	37	GC11P010772	14.38
KIF11	Kinesin Family Member 11	Protein Coding	47	GC10P092574	14.38
SSB	Small RNA Binding Exonuclease Protection Factor La	Protein Coding	42	GC02P169791	14.29
ETFA	Electron Transfer Flavoprotein Subunit Alpha	Protein Coding	45	GC15M076215	14.04
CKM	Creatine Kinase, M-Type	Protein Coding	44	GC19M045306	13.97
FABP3	Fatty Acid Binding Protein 3	Protein Coding	42	GC01M031365	13.85
MIR3614	MicroRNA 3614	RNA Gene	15	GC17M056891	13.78
GNAI2	G Protein Subunit Alpha I2	Protein Coding	46	GC03P0502	13.74

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HSP90B1	Heat Shock Protein 90 Beta Family Member 1	Protein Coding	45	GC12P103930	13.69
ERN1	Endoplasmic Reticulum To Nucleus Signaling 1	Protein Coding	45	GC17M064039	13.65
SPCS3	Signal Peptidase Complex Subunit 3	Protein Coding	36	GC04P176319	13.64
LARS1	Leucyl-TRNA Synthetase 1	Protein Coding	36	GC05M146114	13.58
COG1	Component Of Oligomeric Golgi Complex 1	Protein Coding	36	GC17P073193	13.57
NFASC	Neurofascin	Protein Coding	41	GC01P204828	13.56
SRPRA	SRP Receptor Subunit Alpha	Protein Coding	30	GC11M126255	13.53
DHX9	DExH-Box Helicase 9	Protein Coding	40	GC01P182839	13.45
ATP1B1	ATPase Na+/K+ Transporting Subunit Beta 1	Protein Coding	46	GC01P169105	13.36
PTBP1	Polypyrimidine Tract Binding Protein 1	Protein Coding	42	GC19P000797	13.35
TNFRSF9	TNF Receptor Superfamily Member 9	Protein Coding	43	GC01M007915	13.25
TRIM25	Tripartite Motif Containing 25	Protein Coding	43	GC17M056836	13.24
PSMC6	Proteasome 26S Subunit, ATPase 6	Protein Coding	40	GC14P052707	13.17
IL1R2	Interleukin 1 Receptor Type 2	Protein Coding	44	GC02P101991	13.15

SPTBN1	Spectrin Beta, Non-Erythrocytic 1	Protein Coding	43	GC02 P054456	12.99
GYS1	Glycogen Synthase 1	Protein Coding	49	GC19 M051588	12.97
HRG	Histidine Rich Glycoprotein	Protein Coding	42	GC03 P186660	12.88
GPI	Glucose-6-Phosphate Isomerase	Protein Coding	45	GC19 P034359	12.84
BTRC	Beta-Transducin Repeat Containing E3 Ubiquitin Protein Ligase	Protein Coding	46	GC10 P101354	12.72
RAB18	RAB18, Member RAS Oncogene Family	Protein Coding	39	GC10 P027504	12.58
GFER	Growth Factor, Augmenter Of Liver Regeneration	Protein Coding	44	GC16 P001984	12.51
PIGT	Phosphatidylinositol Glycan Anchor Biosynthesis Class T	Protein Coding	39	GC20 P045416	12.33
DDX6	DEAD-Box Helicase 6	Protein Coding	45	GC11 M118748	12.28
RAB8A	RAB8A, Member RAS Oncogene Family	Protein Coding	39	GC19 P016111	12.27
HPD	4-Hydroxyphenylpyruvate Dioxygenase	Protein Coding	44	GC12 M121839	12.26
GZMA	Granzyme A	Protein Coding	42	GC05 P055102	12.23
PRDX3	Peroxiredoxin 3	Protein Coding	42	GC10 M119167	12.22
GAB1	GRB2 Associated Binding Protein 1	Protein Coding	44	GC04 P143336	12.21
ECHS1	Enoyl-CoA Hydratase, Short Chain 1	Protein	46	GC10	12.17

		Coding		M133362	
CLEC4G	C-Type Lectin Domain Family 4 Member G	Protein Coding	36	GC19M007728	12.16
NFKBIB	NFKB Inhibitor Beta	Protein Coding	41	GC19P038899	12.13
SLC25A6	Solute Carrier Family 25 Member 6	Protein Coding	42	GC0XM001386	12
OMP	Olfactory Marker Protein	Protein Coding	36	GC11P077102	11.86
TLN1	Talin 1	Protein Coding	41	GC09M035696	11.83
NDUFA9	NADH:Ubiquinone Oxidoreductase Subunit A9	Protein Coding	43	GC12P004649	11.83
PLVAP	Plasmalemma Vesicle Associated Protein	Protein Coding	37	GC19M017351	11.79
LALBA	Lactalbumin Alpha	Protein Coding	38	GC12M048567	11.76
OASL	2'-5'-Oligoadenylate Synthetase Like	Protein Coding	40	GC12M121674	11.75
RAP1B	RAP1B, Member Of RAS Oncogene Family	Protein Coding	44	GC12P068610	11.75
PCK2	Phosphoenolpyruvate Carboxykinase 2, Mitochondrial	Protein Coding	46	GC14P024094	11.73
IFNA17	Interferon Alpha 17	Protein Coding	34	GC09M021227	11.69
UBE2N	Ubiquitin Conjugating Enzyme E2 N	Protein Coding	45	GC12M093406	11.68
FABP2	Fatty Acid Binding Protein 2	Protein Coding	41	GC04M119	11.66

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RHOB	Ras Homolog Family Member B	Protein Coding	43	GC02 P020447	11.45
HNRNPC	Heterogeneous Nuclear Ribonucleoprotein C	Protein Coding	40	GC14 M021210	11.42
PDCD6IP	Programmed Cell Death 6 Interacting Protein	Protein Coding	42	GC03 P033798	11.27
TAL1	TAL BHLH Transcription Factor 1, Erythroid Differentiation Factor	Protein Coding	44	GC01 M047216	11.23
EPS15	Epidermal Growth Factor Receptor Pathway Substrate 15	Protein Coding	45	GC01 M051354	11.04
CFAP43	Cilia And Flagella Associated Protein 43	Protein Coding	29	GC10 M104129	11.02
PRDX4	Peroxiredoxin 4	Protein Coding	42	GC0X P023665	10.91
DYNLT1	Dynein Light Chain Tctex-Type 1	Protein Coding	37	GC06 M158636	10.85
SLC25A5	Solute Carrier Family 25 Member 5	Protein Coding	44	GC0X P119468	10.82
IFNA21	Interferon Alpha 21	Protein Coding	36	GC09 M021165	10.74
PCBP2	Poly(RC) Binding Protein 2	Protein Coding	41	GC12 P053452	10.65
SF3B2	Splicing Factor 3b Subunit 2	Protein Coding	38	GC11 P066050	10.51
RNASEK	Ribonuclease K	Protein Coding	33	GC17 P007012	10.48
ACTR3	Actin Related Protein 3	Protein Coding	41	GC02 P113889	10.43

MIR590	MicroRNA 590	RNA Gene	18	GC07 P074191	10.3
UBR4	Ubiquitin Protein Ligase E3 Component N-Recognin 4	Protein Coding	38	GC01 M019074	10.28
HDGF	Heparin Binding Growth Factor	Protein Coding	39	GC01 M156822	10.23
SNAP23	Synaptosome Associated Protein 23	Protein Coding	43	GC15 P042491	10.09
LOC117307477	CD209 Promoter Region	Biological Region	1	GC19 P007749	10.03
LY6E	Lymphocyte Antigen 6 Family Member E	Protein Coding	38	GC08 P143017	9.99
AQR	Aquarius Intron-Binding Spliceosomal Factor	Protein Coding	35	GC15 M034851	9.92
OAS2	2'-5'-Oligoadenylate Synthetase 2	Protein Coding	39	GC12 P112978	9.87
IFNA8	Interferon Alpha 8	Protein Coding	36	GC09 P021409	9.48
ZDHHC2	Zinc Finger DHHC-Type Palmitoyltransferase 2	Protein Coding	38	GC08 P017156	9.34
SEC22B	SEC22 Homolog B, Vesicle Trafficking Protein	Protein Coding	34	GC01 M120150	9.24
STK39	Serine/Threonine Kinase 39	Protein Coding	43	GC02 M167954	9.2
EIF3L	Eukaryotic Translation Initiation Factor 3 Subunit L	Protein Coding	38	GC22 P037848	9.18
S100A10	S100 Calcium Binding Protein A10	Protein Coding	44	GC01 M151955	9.04
RPN2	Ribophorin II	Protein	41	GC20	8.98

		Coding		P03717 8	
DNAJA3	DnaJ Heat Shock Protein Family (Hsp40) Member A3	Protein Coding	40	GC16 P00442 5	8.94
ARF4	ADP Ribosylation Factor 4	Protein Coding	42	GC03 M057 572	8.89
IFNA6	Interferon Alpha 6	Protein Coding	36	GC09 M021 349	8.81
IFNA10	Interferon Alpha 10	Protein Coding	35	GC09 M021 562	8.78
IFNA14	Interferon Alpha 14	Protein Coding	32	GC09 M021 239	8.74
IFNA4	Interferon Alpha 4	Protein Coding	33	GC09 M021 186	8.55
IFNA13	Interferon Alpha 13	Protein Coding	34	GC09 M021 367	8.51
CLEC4C	C-Type Lectin Domain Family 4 Member C	Protein Coding	32	GC12 M007 695	8.42
IFNA5	Interferon Alpha 5	Protein Coding	37	GC09 M021 304	8.38
NUP210	Nucleoporin 210	Protein Coding	39	GC03 M017 906	8.37
TRAF4	TNF Receptor Associated Factor 4	Protein Coding	42	GC17 P03170 8	8.36
RIMS2	Regulating Synaptic Membrane Exocytosis 2	Protein Coding	40	GC08 P10350 0	8.32
XAB2	XPA Binding Protein 2	Protein Coding	37	GC19 M007 619	8.28
COX5B	Cytochrome C Oxidase Subunit 5B	Protein Coding	41	GC02 P0976	8.16

				28	
IFNL1	Interferon Lambda 1	Protein Coding	34	GC19P039296	8.16
WBP11	WW Domain Binding Protein 11	Protein Coding	36	GC12M014784	8.14
IFNA16	Interferon Alpha 16	Protein Coding	32	GC09M021216	7.99
TRAM1	Translocation Associated Membrane Protein 1	Protein Coding	38	GC08M070573	7.96
SYVN1	Synoviolin 1	Protein Coding	40	GC11M074466	7.93
RPL7	Ribosomal Protein L7	Protein Coding	41	GC08M073290	7.85
5IFNE	Interferon Epsilon	Protein Coding	34	GC09M021480	7.52
IFNK	Interferon Kappa	Protein Coding	37	GC09P027514	7.44
MIR520A	MicroRNA 520a	RNA Gene	18	GC19P053690	7.36
SAP30L	SAP30 Like	Protein Coding	37	GC05P154445	7.23
IFIT3	Interferon Induced Protein With Tetratricopeptide Repeats 3	Protein Coding	37	GC10P089327	7.1
TRIM33	Tripartite Motif Containing 33	Protein Coding	42	GC01M114392	7.09
MAP4	Microtubule Associated Protein 4	Protein Coding	41	GC03M047850	7.04
PLAAT4	Phospholipase A And Acyltransferase 4	Protein Coding	29	GC11P063593	6.21

TOP3B	DNA Topoisomerase III Beta	Protein Coding	40	GC22 M021 957	6.1
RAB14	RAB14, Member RAS Oncogene Family	Protein Coding	40	GC09 M121 178	6.03
IFNW1	Interferon Omega 1	Protein Coding	38	GC09 M021 140	5.9
PRPSAP 1	Phosphoribosyl Pyrophosphate Synthetase Associated Protein 1	Protein Coding	35	GC17 M076 309	5.83
SEC11B	SEC11 Homolog B, Signal Peptidase Complex Subunit (Pseudogene)	Pseudog ene	13	GC08 M054 522	5.25
THAP12	THAP Domain Containing 12	Protein Coding	29	GC11 M076 349	5.14
OBP2A	Odorant Binding Protein 2A	Protein Coding	32	GC09 P1355 47	4.36
CNTN3	Contactin 3	Protein Coding	37	GC03 M074 232	3.78
RNF186	Ring Finger Protein 186	Protein Coding	33	GC01 M019 814	3.58

Supplementary Table 2: AVD.

Generic Name	DrugBank Accession Number	Target Gene Name
Fosinopril	DB00492	ACE
Acetazolamide	DB00819	CA1
Acetazolamide	DB00819	CA2
Acetazolamide	DB00819	CA4
Acetazolamide	DB00819	CA12
Acetazolamide	DB00819	CA14
Acetazolamide	DB00819	CA3
Acetazolamide	DB00819	CA7
Acetazolamide	DB00819	AQP1
Acetylcysteine	DB06151	GSS
Acetylcysteine	DB06151	SLC7A11
Acetylcysteine	DB06151	ACY1

Acetylcysteine	DB06151	IKBKB
Acetylcysteine	DB06151	CHUK
Acetylcysteine	DB06151	GRIN2B
Acetylcysteine	DB06151	GRIN1
Acetylcysteine	DB06151	GRIN2A
Acetylcysteine	DB06151	GRIN2D
Acetylcysteine	DB06151	GRIN3A
Angiotensin II	DB11842	AGTR1
Atomoxetine	DB00289	SLC6A2
Atomoxetine	DB00289	SLC6A4
Atomoxetine	DB00289	GRIN1
Atomoxetine	DB00289	GRIN2A
Atomoxetine	DB00289	GRIN2B
Atomoxetine	DB00289	GRIN2C
Atomoxetine	DB00289	GRIN2D
Atomoxetine	DB00289	GRIN3A
Atomoxetine	DB00289	GRIN3B
Atomoxetine	DB00289	KCNJ3
Atomoxetine	DB00289	OPRK1
Baricitinib	DB11817	JAK1
Baricitinib	DB11817	JAK2
Baricitinib	DB11817	PTK2B
Baricitinib	DB11817	JAK3
Benazepril	DB00542	ACE
Bendroflumethiazide	DB00436	SLC12A3
Bendroflumethiazide	DB00436	KCNMA1
Bendroflumethiazide	DB00436	CA1
Bendroflumethiazide	DB00436	CA2
Bendroflumethiazide	DB00436	CA4
Bivalirudin	DB00006	F2
Budesonide	DB01222	NR3C1
Budesonide	DB01222	ANXA1
Buspirone	DB00490	HTR1A
Buspirone	DB00490	DRD2
Buspirone	DB00490	DRD3
Buspirone	DB00490	DRD4
Buspirone	DB00490	ADRA1A
Buspirone	DB00490	ADRA1B
Buspirone	DB00490	ADRA1D
Camostat	DB13729	PRSS1
Camostat	DB13729	TMPRSS2

Camostat	DB13729	ST14
Camostat	DB13729	CCK
Captopril	DB01197	ACE
Captopril	DB01197	MMP2
Captopril	DB01197	MMP9
Captopril	DB01197	LTA4H
Captopril	DB01197	BDKRB1
Chlorothiazide	DB00880	SLC12A3
Chlorothiazide	DB00880	CA1
Chlorothiazide	DB00880	CA2
Chlorthalidone	DB00310	SLC12A1
Chlorthalidone	DB00310	CA1
Cholecalciferol	DB00169	VDR
Clopidogrel	DB00758	P2RY12
Coagulation Factor IX (Recombinant)	DB00100	F10
Coagulation Factor IX (Recombinant)	DB00100	F11
Coagulation Factor IX (Recombinant)	DB00100	F7
Coagulation Factor IX (Recombinant)	DB00100	F8
Coagulation Factor IX (Recombinant)	DB00100	F2
Coagulation Factor IX (Recombinant)	DB00100	LRP1
Coagulation Factor IX (Recombinant)	DB00100	GGCX
Corticotropin	DB01285	MC2R
Corticotropin	DB01285	CRH
Cyclosporine	DB00091	CAMLG
Cyclosporine	DB00091	PPP3R2
Cyclosporine	DB00091	PPIA
Cyclosporine	DB00091	PPIF
Dexmedetomidine	DB00633	ADRA2A
Enalapril	DB00584	ACE
Enoxaparin	DB01225	SERPINC1
Enoxaparin	DB01225	F10
Eprosartan	DB00876	AGTR1
Fluoxetine	DB00472	SLC6A4
Fluoxetine	DB00472	HTR2C
Fluoxetine	DB00472	CHRNA2
Fluoxetine	DB00472	CHRNA3
Fluoxetine	DB00472	CHRNB4
Fluoxetine	DB00472	CKS1B

Fluoxetine	DB00472	KCNH2
Fremanezumab	DB14041	CALCA
Fremanezumab	DB14041	CALCB
Guanfacine	DB01018	ADRA2A
Guanfacine	DB01018	ADRA2B
Heparin	DB01109	SERPINC1
Heparin	DB01109	F10
Heparin	DB01109	SELP
Heparin	DB01109	FGFR4
Heparin	DB01109	FGF4
Heparin	DB01109	FGF19
Heparin	DB01109	FGFR1
Heparin	DB01109	FGF1
Heparin	DB01109	FGFR2
Heparin	DB01109	FGF2
Heparin	DB01109	PF4
Heparin	DB01109	HGF
Hydrochlorothiazide	DB00999	SLC12A3
Hydrochlorothiazide	DB00999	KCNMA1
Hydroxychloroquine	DB01611	TLR7
Hydroxychloroquine	DB01611	TLR9
Hydroxychloroquine	DB01611	ACE2
Indapamide	DB00808	SLC12A3
Interferon beta-1a	DB00060	IFNAR1
Interferon beta-1a	DB00060	IFNAR2
Irbesartan	DB01029	AGTR1
Irbesartan	DB01029	JUN
Ivermectin	DB00602	GLRA3
Ivermectin	DB00602	GABRB3
Lenalidomide	DB00480	CRBN
Lenalidomide	DB00480	TNFSF11
Lenalidomide	DB00480	CDH5
Lenalidomide	DB00480	PTGS2
Linagliptin	DB08882	DPP4
Lisinopril	DB00722	ACE
Lisinopril	DB00722	REN
Losartan	DB00678	AGTR1
Metformin	DB00331	PRKAB1
Metformin	DB00331	ETFDH

Metformin	DB00331	GPD1
Metolazone	DB00524	SLC12A3
Nadroparin	DB08813	SERPINC1
Nadroparin	DB08813	SELP
Nadroparin	DB08813	FOS
Nadroparin	DB08813	MYC
Oseltamivir	DB00198	NEU1
Oseltamivir	DB00198	NEU2
Parathyroid hormone	DB05829	PTH1R
Parathyroid hormone	DB05829	PTH2R
Pentoxifylline	DB00806	ADORA1
Pentoxifylline	DB00806	ADORA2A
Pentoxifylline	DB00806	NT5E
Perindopril	DB00790	ACE
Perindopril	DB00790	SFRP4
Propofol	DB00818	GABRB2
Propofol	DB00818	GABRB3
Propofol	DB00818	SCN4A
Propofol	DB00818	SCN2A
Propofol	DB00818	GABRA1
Propofol	DB00818	GABRA2
Propofol	DB00818	GABRA3
Propofol	DB00818	GABRA4
Propofol	DB00818	GABRA5
Propofol	DB00818	GABRA6
Propofol	DB00818	GABRB1
Propofol	DB00818	GABRB2
Propofol	DB00818	GABRB3
Propofol	DB00818	GABRD
Propofol	DB00818	GABRE
Propofol	DB00818	GABRG1
Propofol	DB00818	GABRG2
Propofol	DB00818	GABRG3
Propofol	DB00818	GABRP
Propofol	DB00818	GABRQ
Quinapril	DB00881	ACE
Ramipril	DB00178	ACE

Ramipril	DB00178	BDKRB1
Rivaroxaban	DB06228	F10
Sargramostim	DB00020	CSF2RA
Sargramostim	DB00020	IL3RA
Sargramostim	DB00020	CSF2RB
Sargramostim	DB00020	SDC2
Sargramostim	DB00020	PRG2
Sertraline	DB01104	SLC6A4
Sertraline	DB01104	SLC6A3
Sertraline	DB01104	PGRMC1
Sertraline	DB01104	SIGMAR1
Sertraline	DB01104	SLC6A2
Sertraline	DB01104	SLC29A4
Sevoflurane	DB01236	GABRA1
Sevoflurane	DB01236	GLRA1
Sevoflurane	DB01236	GRIA1
Sevoflurane	DB01236	ATP2C1
Sevoflurane	DB01236	MT-ND1
Sevoflurane	DB01236	GABRA1
Sevoflurane	DB01236	GABRA2
Sevoflurane	DB01236	GABRA3
Sevoflurane	DB01236	GABRA4
Sevoflurane	DB01236	GABRA5
Sevoflurane	DB01236	GABRA6
Sevoflurane	DB01236	GABRB1
Sevoflurane	DB01236	GABRB2
Sevoflurane	DB01236	GABRB3
Sevoflurane	DB01236	GABRD
Sevoflurane	DB01236	GABRE
Sevoflurane	DB01236	GABRG1
Sevoflurane	DB01236	CCDC51
Spironolactone	DB00421	NR3C2
Spironolactone	DB00421	AR
Spironolactone	DB00421	PGR
Spironolactone	DB00421	NR3C1
Spironolactone	DB00421	CYP11B2
Spironolactone	DB00421	CYP17A1
Spironolactone	DB00421	SRD5A1
Spironolactone	DB00421	SRD5A2
Spironolactone	DB00421	SRD5A3

Spironolactone	DB00421	SHBG
Spironolactone	DB00421	CACNG1
Spironolactone	DB00421	CACNG2
Spironolactone	DB00421	CACNG3
Spironolactone	DB00421	CACNG4
Spironolactone	DB00421	CACNG5
Spironolactone	DB00421	CACNG6
Spironolactone	DB00421	CACNG7
Spironolactone	DB00421	CACNG8
Spironolactone	DB00421	CACNA2D1
Spironolactone	DB00421	CACNA2D2
Spironolactone	DB00421	CACNA2D3
Spironolactone	DB00421	CACNA2D4
Spironolactone	DB00421	CACNA1C
Spironolactone	DB00421	CACNA1D
Spironolactone	DB00421	CACNA1F
Spironolactone	DB00421	CACNA1S
Spironolactone	DB00421	CACNB1
Spironolactone	DB00421	CACNB2
Spironolactone	DB00421	CACNB3
Spironolactone	DB00421	CACNB4
Spironolactone	DB00421	CACNA1B
Spironolactone	DB00421	CACNA1A
Spironolactone	DB00421	CACNA1E
Spironolactone	DB00421	CACNA1G
Spironolactone	DB00421	CACNA1H
Spironolactone	DB00421	CACNA1I
Spironolactone	DB00421	NR1I2
Telmisartan	DB00966	AGTR1
Telmisartan	DB00966	PPARG
Tetrandrine	DB14066	ABCB1
Trandolapril	DB00519	ACE
Valsartan	DB00177	AGTR1
Verapamil	DB00661	CACNA1C
Verapamil	DB00661	CACNA1B
Verapamil	DB00661	CACNA1A
Verapamil	DB00661	KCNJ11
Verapamil	DB00661	CACNA1G
Verapamil	DB00661	CACNA1H
Verapamil	DB00661	KCNH2
Verapamil	DB00661	SLC6A4

Verapamil	DB00661	ADRA1A
Verapamil	DB00661	ADRA1B
Verapamil	DB00661	ADRA1D
Zolpidem	DB00425	GABRA1
Zolpidem	DB00425	GABRA2
Zolpidem	DB00425	GABRA3
Zolpidem	DB00425	GABRG2

Supplementary Table 3: ADHFD.

Generic Name	**DrugBank Accession Number**	**Target Gene Name**
Peginterferon alfa-2a	DB00008	IFNAR1
Peginterferon alfa-2a	DB00008	IFNAR2
Peginterferon alfa-2b	DB00022	IFNAR1
Peginterferon alfa-2b	DB00022	IFNAR2
Coagulation factor VIIa Recombinant Human	DB00036	F10
Coagulation factor VIIa Recombinant Human	DB00036	F3
Coagulation factor VIIa Recombinant Human	DB00036	F7
Coagulation factor VIIa Recombinant Human	DB00036	GGCX
Coagulation factor VIIa Recombinant Human	DB00036	TFPI
alpha-Linolenic acid	DB00132	FADS1
alpha-Linolenic acid	DB00132	FADS2
alpha-Linolenic acid	DB00132	NR1H4
alpha-Linolenic acid	DB00132	PPARA
alpha-Linolenic acid	DB00132	PPARD
alpha-Linolenic acid	DB00132	SLC8A1
alpha-Linolenic acid	DB00132	TRPV1
Tryptophan	DB00150	trpS
Tryptophan	DB00150	trpS
Tryptophan	DB00150	WARS
Tryptophan	DB00150	WARS
Tryptophan	DB00150	WARS2
Tryptophan	DB00150	WARS2
Oseltamivir	DB00198	NA
Oseltamivir	DB00198	NEU1
Oseltamivir	DB00198	NEU2
Caffeine	DB00201	ADORA1

Caffeine	DB00201	ADORA2A
Caffeine	DB00201	ADORA2B
Caffeine	DB00201	ADORA3
Caffeine	DB00201	ATM
Caffeine	DB00201	ITPR1
Caffeine	DB00201	ITPR2
Caffeine	DB00201	ITPR3
Caffeine	DB00201	PDE10A
Caffeine	DB00201	PDE11A
Caffeine	DB00201	PDE1A
Caffeine	DB00201	PDE1B
Caffeine	DB00201	PDE1B
Caffeine	DB00201	PDE1C
Caffeine	DB00201	PDE2A
Caffeine	DB00201	PDE3A
Caffeine	DB00201	PDE3B
Caffeine	DB00201	PDE3B
Caffeine	DB00201	PDE4A
Caffeine	DB00201	PDE4B
Caffeine	DB00201	PDE4B
Caffeine	DB00201	PDE4C
Caffeine	DB00201	PDE4D
Caffeine	DB00201	PDE4D
Caffeine	DB00201	PDE5A
Caffeine	DB00201	PDE5A
Caffeine	DB00201	PDE6A
Caffeine	DB00201	PDE6B
Caffeine	DB00201	PDE6C
Caffeine	DB00201	PDE7A
Caffeine	DB00201	PDE7B
Caffeine	DB00201	PDE8A
Caffeine	DB00201	PDE8B
Caffeine	DB00201	PDE9A
Caffeine	DB00201	PIK3CA
Caffeine	DB00201	PIK3CB
Caffeine	DB00201	PIK3CD
Caffeine	DB00201	PRKDC
Caffeine	DB00201	RYR1
Nevirapine	DB00238	pol
Benzatropine	DB00245	CHRM1
Benzatropine	DB00245	HRH1
Benzatropine	DB00245	SLC6A2

Benzatropine	DB00245	SLC6A3
Benzatropine	DB00245	SLC6A4
Anagrelide	DB00261	PDE3A
Pamidronic acid	DB00282	CASP3
Pamidronic acid	DB00282	CASP9
Pamidronic acid	DB00282	FDPS
Pamidronic acid	DB00282	GGPS1
Clemastine	DB00283	HRH1
Bleomycin	DB00290	LIG1
Bleomycin	DB00290	LIG1
Bleomycin	DB00290	LIG3
Bleomycin	DB00290	LIG3
Raltitrexed	DB00293	FPGS
Raltitrexed	DB00293	TYMS
Bupivacaine	DB00297	PTGER1
Bupivacaine	DB00297	SCN10A
Acetaminophen	DB00316	PTGES3
Acetaminophen	DB00316	PTGS1
Acetaminophen	DB00316	PTGS2
Acetaminophen	DB00316	TRPV1
Codeine	DB00318	OPRD1
Codeine	DB00318	OPRK1
Codeine	DB00318	OPRM1
Indomethacin	DB00328	AKR1C3
Indomethacin	DB00328	GLO1
Indomethacin	DB00328	PLA2G2A
Indomethacin	DB00328	PPARA
Indomethacin	DB00328	PPARG
Indomethacin	DB00328	PTGDR2
Indomethacin	DB00328	PTGR2
Indomethacin	DB00328	PTGS1
Indomethacin	DB00328	PTGS2
Methadone	DB00333	CHRNA3
Methadone	DB00333	CHRNA4
Methadone	DB00333	CHRNA7
Methadone	DB00333	CHRNB2
Methadone	DB00333	GRIN1
Methadone	DB00333	GRIN2A
Methadone	DB00333	GRIN2B
Methadone	DB00333	GRIN2C
Methadone	DB00333	GRIN2D
Methadone	DB00333	GRIN3A

Methadone	DB00333	GRIN3B
Methadone	DB00333	HTR3A
Methadone	DB00333	OPRD1
Methadone	DB00333	OPRM1
Pyrazinamide	DB00339	fas
Pyrazinamide	DB00339	fas
Terfenadine	DB00342	CHRM1
Terfenadine	DB00342	CHRM2
Terfenadine	DB00342	CHRM3
Terfenadine	DB00342	CHRM4
Terfenadine	DB00342	CHRM5
Terfenadine	DB00342	HRH1
Terfenadine	DB00342	KCNH2
Vinorelbine	DB00361	TUBB
Doxylamine	DB00366	CHRM1
Doxylamine	DB00366	CHRM2
Doxylamine	DB00366	CHRM3
Doxylamine	DB00366	CHRM4
Doxylamine	DB00366	CHRM5
Doxylamine	DB00366	HRH1
Doxylamine	DB00366	NR1I3
Phenylephrine	DB00388	ADRA1A
Phenylephrine	DB00388	ADRA1B
Phenylephrine	DB00388	ADRA1D
Phenylpropanolamine	DB00397	ADRA2A
Phenylpropanolamine	DB00397	ADRA2B
Phenylpropanolamine	DB00397	ADRA2C
Phenylpropanolamine	DB00397	ADRB1
Phenylpropanolamine	DB00397	ADRB2
Phenylpropanolamine	DB00397	DRD1
Dexbrompheniramine	DB00405	HRH1
Phenoxymethylpenicillin	DB00417	dacB
Phenoxymethylpenicillin	DB00417	mecA
Phenoxymethylpenicillin	DB00417	pbpA
Phenoxymethylpenicillin	DB00417	SLC15A1
Hyoscyamine	DB00424	ADCY1
Hyoscyamine	DB00424	CHRM1
Hyoscyamine	DB00424	CHRM1
Hyoscyamine	DB00424	CHRM2
Hyoscyamine	DB00424	CHRM2
Hyoscyamine	DB00424	CHRM3
Hyoscyamine	DB00424	CHRM3

Hyoscyamine	DB00424	CHRM4
Hyoscyamine	DB00424	CHRM4
Hyoscyamine	DB00428	ADCY1
Trimethoprim	DB00440	folA
Trimethoprim	DB00440	folA
Chloramphenicol	DB00446	CD55
Chloramphenicol	DB00446	draA
Chloramphenicol	DB00446	rplP
Levothyroxine	DB00451	ITGAV
Levothyroxine	DB00451	ITGB3
Levothyroxine	DB00451	THRA
Levothyroxine	DB00451	THRB
Nabumetone	DB00461	PTGS1
Nabumetone	DB00461	PTGS2
Ketorolac	DB00465	PTGS1
Ketorolac	DB00465	PTGS2
Chlorpromazine	DB00477	ADRA1A
Chlorpromazine	DB00477	ADRA1A
Chlorpromazine	DB00477	ADRA1B
Chlorpromazine	DB00477	ADRA1B
Chlorpromazine	DB00477	ADRA1D
Chlorpromazine	DB00477	ADRA2A
Chlorpromazine	DB00477	ADRA2B
Chlorpromazine	DB00477	ADRA2C
Chlorpromazine	DB00477	CALM1
Chlorpromazine	DB00477	CHRM1
Chlorpromazine	DB00477	CHRM3
Chlorpromazine	DB00477	DRD1
Chlorpromazine	DB00477	DRD1
Chlorpromazine	DB00477	DRD2
Chlorpromazine	DB00477	DRD3
Chlorpromazine	DB00477	DRD4
Chlorpromazine	DB00477	DRD5
Chlorpromazine	DB00477	DRD5
Chlorpromazine	DB00477	HRH1
Chlorpromazine	DB00477	HRH4
Chlorpromazine	DB00477	HTR1A
Chlorpromazine	DB00477	HTR2A
Chlorpromazine	DB00477	HTR2A
Chlorpromazine	DB00477	HTR2B
Chlorpromazine	DB00477	HTR2C
Chlorpromazine	DB00477	HTR2C

Chlorpromazine	DB00477	HTR6
Chlorpromazine	DB00477	HTR7
Chlorpromazine	DB00477	KCNH2
Chlorpromazine	DB00477	ORM1
Chlorpromazine	DB00477	ORM2
Chlorpromazine	DB00477	SMPD1
Dicloxacillin	DB00485	pbp1b
Dicloxacillin	DB00485	pbp2a
Dicloxacillin	DB00485	pbp3
Dicloxacillin	DB00485	pbpA
Dicloxacillin	DB00485	pbpC
Dicloxacillin	DB00485	penA
Nitazoxanide	DB00507	por
Trifluprom azine	DB00508	CHRM1
Trifluprom azine	DB00508	CHRM2
Trifluprom azine	DB00508	DRD1
Trifluprom azine	DB00508	DRD2
Trifluprom azine	DB00508	HTR2B
Dextromethorphan	DB00514	CHRNA2
Dextromethorphan	DB00514	CHRNA3
Dextromethorphan	DB00514	CHRNA4
Dextromethorphan	DB00514	CHRNA7
Dextromethorphan	DB00514	CHRNB2
Dextromethorphan	DB00514	CHRNB4
Dextromethorphan	DB00514	CYBA
Dextromethorphan	DB00514	CYBB
Dextromethorphan	DB00514	GRIN3A
Dextromethorphan	DB00514	NCF1
Dextromethorphan	DB00514	NCF1
Dextromethorphan	DB00514	NCF4
Dextromethorphan	DB00514	OPRD1
Dextromethorphan	DB00514	OPRK1
Dextromethorphan	DB00514	OPRM1
Dextromethorphan	DB00514	PGRMC1
Dextromethorphan	DB00514	RAC1
Dextromethorphan	DB00514	RAC2
Dextromethorphan	DB00514	SIGMAR1
Dextromethorphan	DB00514	SIGMAR1
Dextromethorphan	DB00514	SLC6A2
Dextromethorphan	DB00514	SLC6A4
Albendazole	DB00518	TUBA1A
Albendazole	DB00518	TUBB4B

Cyclophosphamide	DB00531	NR1I2
Atropine	DB00572	CHRM1
Atropine	DB00572	CHRM2
Atropine	DB00572	CHRM3
Atropine	DB00572	CHRM4
Atropine	DB00572	CHRM5
Atropine	DB00572	CHRNA4
Atropine	DB00572	CHRNB2
Atropine	DB00572	GLRA1
Levocarnitine	DB00583	CES1
Levocarnitine	DB00583	CPT1A
Levocarnitine	DB00583	CPT2
Levocarnitine	DB00583	CRAT
Levocarnitine	DB00583	CROT
Levocarnitine	DB00583	MPO
Levocarnitine	DB00583	Q9H015
Levocarnitine	DB00583	SLC22A5
Levocarnitine	DB00583	SLC25A20
Levocarnitine	DB00583	SLC25A29
Levocarnitine	DB00583	XDH
Diclofenac	DB00586	PTGS1
Diclofenac	DB00586	PTGS2
Demeclocycline	DB00618	AVPR2
Mebendazole	DB00643	TUBA1A
Mebendazole	DB00643	TUBB4B
Dyclonine	DB00645	SCN10A
Dyclonine	DB00645	SCN10A
Epinephrine	DB00668	ADRA1A
Epinephrine	DB00668	ADRA1A
Epinephrine	DB00668	ADRA1B
Epinephrine	DB00668	ADRA1B
Epinephrine	DB00668	ADRA1D
Epinephrine	DB00668	ADRA1D
Epinephrine	DB00668	ADRA2A
Epinephrine	DB00668	ADRA2A
Epinephrine	DB00668	ADRA2B
Epinephrine	DB00668	ADRA2B
Epinephrine	DB00668	ADRB1
Epinephrine	DB00668	ADRB1
Epinephrine	DB00668	ADRB2
Epinephrine	DB00668	ADRB2
Epinephrine	DB00668	TNF

Epinephrine	DB00668	TNF
Flurbiprofen	DB00712	PTGS1
Flurbiprofen	DB00712	PTGS2
Paroxetine	DB00715	ADRA1A
Paroxetine	DB00715	ADRA2B
Paroxetine	DB00715	ADRA2C
Paroxetine	DB00715	ADRB1
Paroxetine	DB00715	ADRB2
Paroxetine	DB00715	ADRB3
Paroxetine	DB00715	CHRM1
Paroxetine	DB00715	CHRM2
Paroxetine	DB00715	CHRM3
Paroxetine	DB00715	CHRM4
Paroxetine	DB00715	CHRM5
Paroxetine	DB00715	DRD1
Paroxetine	DB00715	DRD2
Paroxetine	DB00715	DRD5
Paroxetine	DB00715	HRH1
Paroxetine	DB00715	HTR1B
Paroxetine	DB00715	HTR1D
Paroxetine	DB00715	HTR1E
Paroxetine	DB00715	HTR1F
Paroxetine	DB00715	HTR2A
Paroxetine	DB00715	HTR2A
Paroxetine	DB00715	HTR2B
Paroxetine	DB00715	HTR2B
Paroxetine	DB00715	HTR2C
Paroxetine	DB00715	HTR3A
Paroxetine	DB00715	HTR3B
Paroxetine	DB00715	HTR3C
Paroxetine	DB00715	HTR3D
Paroxetine	DB00715	HTR3E
Paroxetine	DB00715	HTR4
Paroxetine	DB00715	HTR6
Paroxetine	DB00715	HTR7
Paroxetine	DB00715	SLC6A2
Paroxetine	DB00715	SLC6A4
Imiquimod	DB00724	TLR7
Imiquimod	DB00724	TLR8
Trimipramine	DB00726	ADRA1A
Trimipramine	DB00726	ADRA1B
Trimipramine	DB00726	ADRA2A

Trimipramine	DB00726	ADRA2B
Trimipramine	DB00726	ADRB1
Trimipramine	DB00726	ADRB2
Trimipramine	DB00726	ADRB3
Trimipramine	DB00726	CHRM1
Trimipramine	DB00726	CHRM2
Trimipramine	DB00726	CHRM3
Trimipramine	DB00726	CHRM4
Trimipramine	DB00726	CHRM5
Trimipramine	DB00726	DRD1
Trimipramine	DB00726	DRD2
Trimipramine	DB00726	DRD2
Trimipramine	DB00726	HRH1
Trimipramine	DB00726	HTR1A
Trimipramine	DB00726	HTR1D
Trimipramine	DB00726	HTR2A
Trimipramine	DB00726	HTR2C
Trimipramine	DB00726	Htr2c
Trimipramine	DB00726	HTR3A
Trimipramine	DB00726	SLC6A2
Trimipramine	DB00726	SLC6A3
Trimipramine	DB00726	SLC6A4
Nitroglycerin	DB00727	NPR1
Pentamidine	DB00738	TRDMT1
Etodolac	DB00749	PTGS1
Etodolac	DB00749	PTGS2
Etodolac	DB00749	RXRA
Tetracycline	DB00759	mdfA
Tetracycline	DB00759	PRNP
Tetracycline	DB00759	rpsC
Tetracycline	DB00759	rpsG
Tetracycline	DB00759	rpsH
Tetracycline	DB00759	rpsN
Tetracycline	DB00759	rpsS
Methimazole	DB00763	TPO
Propiomazine	DB00777	ADRA1A
Propiomazine	DB00777	CHRM1
Propiomazine	DB00777	CHRM2
Propiomazine	DB00777	CHRM3
Propiomazine	DB00777	CHRM4
Propiomazine	DB00777	CHRM5
Propiomazine	DB00777	DRD2

Propiomazine	DB00777	HRH1
Propiomazine	DB00777	HTR2A
Propiomazine	DB00777	HTR2C
Mefenamic acid	DB00784	PTGS1
Mefenamic acid	DB00784	PTGS2
Naproxen	DB00788	pab
Naproxen	DB00788	PTGS1
Naproxen	DB00788	PTGS2
Tripelennamine	DB00792	HRH1
Pentoxifylline	DB00806	ADORA1
Pentoxifylline	DB00806	ADORA2A
Pentoxifylline	DB00806	NT5E
Meloxicam	DB00814	PTGS1
Meloxicam	DB00814	PTGS1
Meloxicam	DB00814	PTGS2
Meloxicam	DB00814	PTGS2
Trifluoperazine	DB00831	ADRA1A
Trifluoperazine	DB00831	CALM1
Trifluoperazine	DB00831	CALY
Trifluoperazine	DB00831	DRD2
Trifluoperazine	DB00831	S100A4
Trifluoperazine	DB00831	TNNC1
Brompheniramine	DB00835	CHRM1
Brompheniramine	DB00835	CHRM2
Brompheniramine	DB00835	CHRM3
Brompheniramine	DB00835	CHRM4
Brompheniramine	DB00835	CHRM5
Brompheniramine	DB00835	HRH1
Pseudoephedrine	DB00852	ADRA1A
Pseudoephedrine	DB00852	ADRA2A
Pseudoephedrine	DB00852	ADRB1
Pseudoephedrine	DB00852	ADRB2
Pseudoephedrine	DB00852	ATF1
Pseudoephedrine	DB00852	ATF2
Pseudoephedrine	DB00852	ATF3
Pseudoephedrine	DB00852	ATF4
Pseudoephedrine	DB00852	ATF5
Pseudoephedrine	DB00852	ATF6
Pseudoephedrine	DB00852	ATF7
Pseudoephedrine	DB00852	FOS
Pseudoephedrine	DB00852	IL2
Pseudoephedrine	DB00852	JDP2

Pseudoephedrine	DB00852	JUN
Pseudoephedrine	DB00852	NFATC1
Pseudoephedrine	DB00852	NFKB1
Pseudoephedrine	DB00852	SLC6A2
Pseudoephedrine	DB00852	SLC6A3
Pseudoephedrine	DB00852	SLC6A4
Pseudoephedrine	DB00852	TNF
Suprofen	DB00870	PTGS1
Suprofen	DB00870	PTGS1
Suprofen	DB00870	PTGS2
Suprofen	DB00870	PTGS2
Ethanol	DB00898	CACNA1C
Ethanol	DB00898	CACNA1D
Ethanol	DB00898	CACNA1S
Ethanol	DB00898	CACNB1
Ethanol	DB00898	CACNG1
Ethanol	DB00898	CACNG2
Ethanol	DB00898	CHRNA10
Ethanol	DB00898	CHRNA2
Ethanol	DB00898	CHRNA3
Ethanol	DB00898	CHRNA5
Ethanol	DB00898	CHRNA6
Ethanol	DB00898	CHRNA7
Ethanol	DB00898	CHRNA9
Ethanol	DB00898	CHRNB2
Ethanol	DB00898	CHRNB3
Ethanol	DB00898	CHRNB4
Ethanol	DB00898	GABRA1
Ethanol	DB00898	GABRA2
Ethanol	DB00898	GABRA3
Ethanol	DB00898	GABRA4
Ethanol	DB00898	GABRA5
Ethanol	DB00898	GABRA6
Ethanol	DB00898	GABRB1
Ethanol	DB00898	GABRB2
Ethanol	DB00898	GABRB3
Ethanol	DB00898	GABRD
Ethanol	DB00898	GABRE
Ethanol	DB00898	GABRG1
Ethanol	DB00898	GABRG3
Ethanol	DB00898	GABRP
Ethanol	DB00898	GABRQ

Ethanol	DB00898	GLRA1
Ethanol	DB00898	GLRA2
Ethanol	DB00898	GRIA1
Ethanol	DB00898	GRIA2
Ethanol	DB00898	GRIA3
Ethanol	DB00898	GRIA4
Ethanol	DB00898	GRIN3A
Ethanol	DB00898	HTR3A
Ethanol	DB00898	HTR3B
Ethanol	DB00898	HTR3C
Ethanol	DB00898	HTR3D
Ethanol	DB00898	HTR3E
Ethanol	DB00898	KCNJ3
Ethanol	DB00898	KCNJ5
Ethanol	DB00898	KCNJ6
Ethanol	DB00898	KCNJ9
Ethanol	DB00898	L1CAM
Ethanol	DB00898	P43681
Ethanol	DB00898	SLC29A1
Ethanol	DB00898	SLC29A2
Ethanol	DB00898	VCAM1
Methdilazine	DB00902	HRH1
Methdilazine	DB00902	HRH1
Buprenorphine	DB00921	OPRD1
Buprenorphine	DB00921	OPRK1
Buprenorphine	DB00921	OPRL1
Buprenorphine	DB00921	OPRM1
Misoprostol	DB00929	PTGER1
Misoprostol	DB00929	PTGER2
Misoprostol	DB00929	PTGER3
Misoprostol	DB00929	PTGER4
Methantheline	DB00940	CHRM1
Methantheline	DB00940	CHRM1
Methantheline	DB00940	CHRM2
Methantheline	DB00940	CHRM2
Methantheline	DB00940	CHRM3
Methantheline	DB00940	CHRM3
Methantheline	DB00940	CHRM4
Methantheline	DB00940	CHRM4
Methantheline	DB00940	CHRM5
Methantheline	DB00940	CHRM5
Methantheline	DB00940	HRH2

Methantheline	DB00940	HRH2
Zalcitabine	DB00943	pol
Acetylsalicylic acid	DB00945	AKR1C1
Acetylsalicylic acid	DB00945	CASP1
Acetylsalicylic acid	DB00945	CASP3
Acetylsalicylic acid	DB00945	CCND1
Acetylsalicylic acid	DB00945	EDNRA
Acetylsalicylic acid	DB00945	HSPA5
Acetylsalicylic acid	DB00945	IKBKB
Acetylsalicylic acid	DB00945	MAPK1
Acetylsalicylic acid	DB00945	MAPK15
Acetylsalicylic acid	DB00945	MAPK3
Acetylsalicylic acid	DB00945	MAPK4
Acetylsalicylic acid	DB00945	MAPK6
Acetylsalicylic acid	DB00945	MAPK7
Acetylsalicylic acid	DB00945	MYC
Acetylsalicylic acid	DB00945	NFKBIA
Acetylsalicylic acid	DB00945	PCNA
Acetylsalicylic acid	DB00945	PRKAA1
Acetylsalicylic acid	DB00945	PRKAA2
Acetylsalicylic acid	DB00945	PRKAB1
Acetylsalicylic acid	DB00945	PRKAB2
Acetylsalicylic acid	DB00945	PRKAG1
Acetylsalicylic acid	DB00945	PRKAG2
Acetylsalicylic acid	DB00945	PRKAG3
Acetylsalicylic acid	DB00945	PTGS1
Acetylsalicylic acid	DB00945	PTGS2
Acetylsalicylic acid	DB00945	RPS6KA3
Acetylsalicylic acid	DB00945	TNFAIP6
Acetylsalicylic acid	DB00945	TP53
Mezlocillin	DB00948	mrdA
Mezlocillin	DB00948	pbp3
Mezlocillin	DB00948	pbpA
Cytarabine	DB00987	POLB
Gabapentin	DB00996	ADORA1
Gabapentin	DB00996	ADORA1
Gabapentin	DB00996	CACNA1B
Gabapentin	DB00996	CACNA1B
Gabapentin	DB00996	CACNA1B
Gabapentin	DB00996	CACNA1B
Gabapentin	DB00996	CACNA2D1
Gabapentin	DB00996	CACNA2D1

Gabapentin	DB00996	CACNA2D2
Gabapentin	DB00996	CACNA2D2
Gabapentin	DB00996	KCNQ3
Gabapentin	DB00996	KCNQ3
Gabapentin	DB00996	KCNQ5
Gabapentin	DB00996	KCNQ5
Ketoprofen	DB01009	CXCR1
Ketoprofen	DB01009	PTGS1
Ketoprofen	DB01009	PTGS2
Isosorbide mononitrate	DB01020	GUCY1A2
Oxybutynin	DB01062	CHRM1
Oxybutynin	DB01062	CHRM2
Oxybutynin	DB01062	CHRM3
Diphenhydramine	DB01075	CHRM2
Diphenhydramine	DB01075	CHRM2
Diphenhydramine	DB01075	HRH1
Diphenhydramine	DB01075	HRH1
Diphenylpyraline	DB01146	HRH1
Diphenylpyraline	DB01146	SLC6A3
Cloxacillin	DB01147	dacA
Cloxacillin	DB01147	dacA
Cloxacillin	DB01147	dacA
Cloxacillin	DB01147	dacA
Cloxacillin	DB01147	pbpA
Cloxacillin	DB01147	pbpX
Budesonide	DB01222	ANXA1
Budesonide	DB01222	NR3C1
Bromodiphenhydramine	DB01237	HRH1
Butobarbital	DB01353	GABRA1
Butobarbital	DB01353	GABRA2
Butobarbital	DB01353	GABRA3
Butobarbital	DB01353	GABRA4
Butobarbital	DB01353	GABRA5
Butobarbital	DB01353	GABRA6
Colchicine	DB01394	ABCB1
Choline magnesium trisalicylate	DB01401	PTGS1
Choline magnesium trisalicylate	DB01401	PTGS2
Liotrix	DB01583	THRA
Liotrix	DB01583	THRB
Pivmecillinam	DB01605	pbpA
Erythrityl tetranitrate	DB01613	NPR1
Erythrityl tetranitrate	DB01613	NPR2

Phenindamine	DB01619	HRH1
Isopropamide	DB01625	CHRM3
Isopropamide	DB01625	CHRM4
Huperzine A	DB04864	ACHE
Vildagliptin	DB04876	DPP4
Cobimetinib	DB05239	MAP2K1
Spiramycin	DB06145	rplC
Pizotifen	DB06153	ADRA1A
Pizotifen	DB06153	ADRA1B
Pizotifen	DB06153	ADRA1D
Pizotifen	DB06153	ADRA2A
Pizotifen	DB06153	ADRA2B
Pizotifen	DB06153	ADRA2C
Pizotifen	DB06153	CHRM1
Pizotifen	DB06153	CHRM2
Pizotifen	DB06153	CHRM3
Pizotifen	DB06153	HRH1
Pizotifen	DB06153	HTR1A
Pizotifen	DB06153	HTR1B
Pizotifen	DB06153	HTR2A
Pizotifen	DB06153	HTR2B
Pizotifen	DB06153	HTR2C
Rilonacept	DB06372	IL1A
Rilonacept	DB06372	IL1B
Rilonacept	DB06372	IL1RN
Xylometazoline	DB06694	ADRA1A
Xylometazoline	DB06694	ADRA1B
Xylometazoline	DB06694	ADRA1D
Xylometazoline	DB06694	ADRA2A
Xylometazoline	DB06694	ADRA2B
Xylometazoline	DB06694	ADRA2C
Aceclofenac	DB06736	PTGS1
Aceclofenac	DB06736	PTGS2
Dimetindene	DB08801	CHRM2
Dimetindene	DB08801	CHRM2
Dimetindene	DB08801	HRH1
Dimetindene	DB08801	HRH1
Regorafenib	DB08896	ABL1
Regorafenib	DB08896	BRAF
Regorafenib	DB08896	DDR2
Regorafenib	DB08896	EPHA2
Regorafenib	DB08896	FGFR1

Regorafenib	DB08896	FGFR2
Regorafenib	DB08896	FLT1
Regorafenib	DB08896	FLT4
Regorafenib	DB08896	FRK
Regorafenib	DB08896	KDR
Regorafenib	DB08896	KIT
Regorafenib	DB08896	MAPK11
Regorafenib	DB08896	NTRK1
Regorafenib	DB08896	PDGFRA
Regorafenib	DB08896	PDGFRB
Regorafenib	DB08896	RAF1
Regorafenib	DB08896	RET
Regorafenib	DB08896	TEK
Dabrafenib	DB08912	BRAF
Dabrafenib	DB08912	LIMK1
Dabrafenib	DB08912	NEK11
Dabrafenib	DB08912	RAF1
Dabrafenib	DB08912	SIK1
Siltuximab	DB09036	IL6
Olaparib	DB09074	PARP1
Olaparib	DB09074	PARP2
Olaparib	DB09074	PARP3
Edoxaban	DB09075	F10
Tetracaine	DB09085	RYR1
Tetracaine	DB09085	RYR2
Tetracaine	DB09085	SCN10A
Tetracaine	DB09085	SCN11A
Tetracaine	DB09085	SCN1A
Tetracaine	DB09085	SCN2A
Tetracaine	DB09085	SCN3A
Tetracaine	DB09085	SCN4A
Tetracaine	DB09085	SCN5A
Tetracaine	DB09085	SCN7A
Tetracaine	DB09085	SCN8A
Tetracaine	DB09085	SCN9A
Thyroid, porcine	DB09100	THRA
Thyroid, porcine	DB09100	THRB
Turoctocog alfa	DB09109	F10
Turoctocog alfa	DB09109	F10
Turoctocog alfa	DB09109	F2
Turoctocog alfa	DB09109	F2
Turoctocog alfa	DB09109	F9

Turoctocog alfa	DB09109	F9
Aurothioglucose	DB09121	ADCY1
Aurothioglucose	DB09121	ADCY2
Aurothioglucose	DB09121	ADCY5
Loxoprofen	DB09212	PTGS1
Loxoprofen	DB09212	PTGS2
Kappadione	DB09332	F10
Kappadione	DB09332	F2
Kappadione	DB09332	F7
Kappadione	DB09332	F9
Kappadione	DB09332	GGCX
Kappadione	DB09332	PROC
Kappadione	DB09332	PROS1
Enalaprilat	DB09477	ACE
Enalaprilat	DB09477	BDKRB1
Acrivastine	DB09488	HRH1
Dexchlorpheniramine maleate	DB09555	HRH1
Phenyl salicylate	DB11071	PTGS1
Phenyl salicylate	DB11071	PTGS2
Phenyltoloxamine	DB11160	Hrh1
Homatropine	DB11181	CHRM1
Homatropine	DB11181	CHRM2
Homatropine	DB11181	CHRM3
Homatropine	DB11181	CHRM4
Homatropine	DB11181	CHRM5
Thonzylamine	DB11235	CHRM1
Thonzylamine	DB11235	CHRM2
Thonzylamine	DB11235	CHRM3
Thonzylamine	DB11235	CHRM4
Thonzylamine	DB11235	CHRM5
Thonzylamine	DB11235	HRH1
Tetradecyl hydrogen sulfate (ester)	DB11328	PROCR
Rifamycin	DB11753	rpoA
Rifamycin	DB11753	rpoB
Rifamycin	DB11753	rpoC
Capmatinib	DB11791	MET
Capmatinib	DB11791	MET
Copanlisib	DB12483	PIK3CA
Copanlisib	DB12483	PIK3CD
Mogamulizumab	DB12498	CCR4
Antihemophilic factor human	DB13192	F10
Antihemophilic factor human	DB13192	F9

Mifamurtide	DB13615	NOD2
Mifamurtide	DB13615	TLR4
Agkistrodon piscivorus antivenin	DB13894	PLA2G10
Equine Botulinum Neurotoxin G Immune FAB2	DB13899	botG
Equine Botulinum Neurotoxin A Immune FAB2	DB13900	botA
Equine Botulinum Neurotoxin F Immune FAB2	DB13901	botF
Equine Botulinum Neurotoxin D Immune FAB2	DB13902	botD
Equine Botulinum Neurotoxin B Immune FAB2	DB13903	botB
Equine Botulinum Neurotoxin B Immune FAB2	DB13903	botB
Emicizumab	DB13923	F10
Emicizumab	DB13923	F9
Ferric pyrophosphate citrate	DB13995	FTH1
Ferric pyrophosphate citrate	DB13995	FTH1
Ferric pyrophosphate citrate	DB13995	FTL
Ferric pyrophosphate citrate	DB13995	FTL
Ferric pyrophosphate citrate	DB13995	HBA1
Ferric pyrophosphate citrate	DB13995	HBA1
Ferric pyrophosphate citrate	DB13995	HBB
Ferric pyrophosphate citrate	DB13995	HBB
Moroctocog alfa	DB13999	ASGR2
Moroctocog alfa	DB13999	CALR
Moroctocog alfa	DB13999	CANX
Moroctocog alfa	DB13999	F10
Moroctocog alfa	DB13999	F9
Moroctocog alfa	DB13999	HSPA5
Moroctocog alfa	DB13999	LMAN1
Moroctocog alfa	DB13999	LRP1
Moroctocog alfa	DB13999	MCFD2
Moroctocog alfa	DB13999	PHYH
Moroctocog alfa	DB13999	VWF
Damoctocog alfa pegol	DB14700	F8
Emapalumab	DB14724	IFNG
Margetuximab	DB14967	ERBB2
Pralsetinib	DB15822	DDR1
Pralsetinib	DB15822	FGFR1
Pralsetinib	DB15822	FGFR2

Pralsetinib	DB15822	FLT3
Pralsetinib	DB15822	JAK1
Pralsetinib	DB15822	JAK2
Pralsetinib	DB15822	KDR
Pralsetinib	DB15822	NTRK1
Pralsetinib	DB15822	NTRK3
Pralsetinib	DB15822	PDGFRB
Pralsetinib	DB15822	RET
Ansuvimab	DB16385	GP

Supplementary Table 4: Host-virus-interacting genes.

Genes	Reactome			Kegg			Tissues		
IL6	Term	P-value	Genes	Term	P-value	Genes	Term	P-value	Genes
TNF	Immune System Homo sapiens R-HSA-168256	3.93E-28	CRP;IL1RN;IFNA1;ITGB3;TNF;ICAM1;NRAS;CASP3;AKT1;CTLA4;MAPK1;JAK2;MBL2;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;IL2;IL1A;IL6;CD4;FCGR2A;CD40LG;IFNG;PIK3CA;CD209;IL7;IL1B;KRAS;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2	AGE-RAGE signaling pathway in diabetic complications	3.01E-32	CXCL8;TGFB1;STAT1;SERPINE1;STAT3;TNF;F3;ICAM1;VEGFA;IL1A;NRAS;IL6;PIK3CA;CASP3;IL1B;AKT1;CCL2;MAPK1;KRAS;JAK2	Immune system	1.12E-61	IL1RN;IFNA1;ITGB3;SERPINE1;TNF;ICAM1;CASP3;AKT1;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL4;IL6;CD4;FCGR2A;CD40LG;IL7;ALB;HLA-DRB1
TP53	Cytokine Signaling in Immune system	7.06	IL1RN;IFNA1;ITGB3;TNF;ICAM1;NRAS;CASP3;MAPK1;JAK2;DDX58;ST	Chagas disease	4.66	IL10;CXCL8;TGFB1;ACE;NOS2;IFNB1;SER	Bronchoalveo	2.85	CRP;SERPINE1;PTGS2;TNF;ICAM1;CCL5;CCL3;CCL2;ELANE;IL10;TGFB1;ACE;NOS2;IL13;F3;MM

	Homo sapiens R-HSA-1280215	E-27	AT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;IL2;IL1A;IL6;CD4;CD40LG;IFNG;PIK3CA;IL7;IL1B;KRAS;HLA-DRB1;HLA-DQB1		E-32	PINE1;TNF;IL2;IL6;IFNG;PIK3CA;IL1B;CCL5;CCL3;AKT1;CCL2;MAPK1;TLR4;TLR2	lar lavage	E-50	P9;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;ALB;TLR4;TLR2
IL10	Signaling by Interleukins Homo sapiens R-HSA-449147	3.84E-17	IL1RN;STAT1;ITGB3;IL13;STAT3;PTPN11;IL2;IL1A;NRAS;IL6;CD4;PIK3CA;IL7;CASP3;IL1B;MAPK1;KRAS;JAK2	Influenza A	6.17E-31	CXCL8;IFNA1;DDX58;STAT1;IFNB1;TNF;ICAM1;IL1A;IL6;IFNG;PIK3CA;CASP3;IL1B;CCL5;AKT1;CCL2;MAPK1;JAK2;TLR4;TLR3;HLA-DRB1;HLA-DQB1	Adult	9.98E-47	CRP;IL1RN;IFNA1;SERPINE1;PTGS2;TNF;ICAM1;NRAS;CASP3;CCL5;AKT1;CTLA4;CCL2;APOE;JAK2;CCR5;ELANE;IL10;TGFB1;ACE;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL7;IL1B;ALB;KRAS;TP53;TLR4;HLA-DRB1;TLR2
IFNG	Hemostasis Homo sapiens R-HSA-109582	8.79E-16	TGFB1;IFNA1;NOS2;IFNB1;ITGB3;SERPINE1;PTPN11;F2;F3;IL2;VEGFA;NRAS;PIK3CA;ALB;AKT1;MAPK1;KRAS;JAK2;TP53	Lipid and atherosclerosis	1.63E-30	CXCL8;IFNA1;IFNB1;STAT3;TNF;MMP9;ICAM1;NRAS;IL6;CD40LG;PIK3CA;CASP3;IL1B;CCL5;CCL3;AKT1;CCL2;MAPK1;KRAS;JAK2;TP53;TLR4;TLR2	Synovial tissue	1.98E-45	CRP;IL1RN;PTGS2;TNF;ICAM1;CASP3;CCL5;CCL3;AKT1;CCL2;IL10;TGFB1;STAT3;MMP9;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;TLR4;TLR2
CD209	Innate Immune System Homo sapiens R-HSA-	4.98E-	CRP;IFNA1;DDX58;IFNB1;ITGB3;PTPN11;IL2;NRAS;CD4;FCGR2A;PIK3CA;CD209;IL1B;AKT1;MAPK1;KRAS	Hepatitis B	1.25E-	CXCL8;TGFB1;IFNA1;DDX58;STAT1;IFNB1;STAT3;TNF;MMP9;	U-937 cell	1.30E-	IL10;TGFB1;IFNA1;STAT1;IFNB1;TNF;F3;MMP9;IL2;ICAM1;IL4;IL1A;IL6;CD4;FCGR2A;IFNG;CASP3;IL1B;AKT1;CCL2;MAPK1;TP53;TLR4;ELANE

	168249	15	;JAK2;TLR4;TLR3;MBL2;TLR2		29	NRAS;IL6;PIK3CA;CASP3;AKT1;MAPK1;KRAS;JAK2;TP53;TLR4;TLR3;TLR2		44	
IL1B	Platelet activation, signaling and aggregation Homo sapiens R-HSA-76002	8.55E-12	TGFB1;PIK3CA;ITGB3;SERPINE1;ALB;AKT1;MAPK1;PTPN11;JAK2;F2;IL2;VEGFA	Tuberculosis	1.27E-28	IL10;TGFB1;IFNA1;NOS2;STAT1;IFNB1;TNF;IL1A;IL6;FCGR2A;IFNG;CD209;CASP3;IL1B;AKT1;MAPK1;JAK2;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Mast cell	4.59E-38	PTGS2;TNF;ICAM1;CCL5;CCL3;AKT1;CCL2;ELANE;IL10;TGFB1;ACE;IL13;PTPN11;MMP9;IL2;VEGFA;IL4;IL6;CD4;CD40LG;IFNG;IL1B;ALB;TLR4;TLR2
HLA-DRB1	Interferon Signaling Homo sapiens R-HSA-913531	1.12E-11	IFNA1;IFNG;DDX58;STAT1;IFNB1;PTPN11;HLA-A;JAK2;HLA-DRB1;ICAM1;HLA-DQB1	Human cytomegalovirus infection	2.91E-28	CXCL8;IFNA1;IFNB1;ITGB3;STAT3;HLA-A;PTGS2;TNF;VEGFA;NRAS;IL6;PIK3CA;CASP3;IL1B;CCL5;CCL3;AKT1;CCL2;MAPK1;KRAS;CCR5;TP53	HUVEC cell	2.23E-37	TGFB1;ACE;SERPINE1;STAT3;PTGS2;TNF;F3;MMP9;ICAM1;VEGFA;IL4;IL1A;IL6;IFNG;CASP3;IL1B;ALB;AKT1;CCL2;MAPK1;APOE;TP53;TLR4
F2	Interleukin-6 signaling Homo sapiens R-HSA-1059683	8.56E-	IL6;STAT1;STAT3;PTPN11;JAK2	Leishmaniasis	3.29E-	IL10;TGFB1;NOS2;STAT1;PTGS2;TNF;IL4;IL1A;FCGR2A;IFN	Tendon	1.97E-	IL10;CRP;IL1RN;TGFB1;PTGS2;TNF;MMP9;IL2;ICAM1;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;CASP3;IL1B;CCL5;ALB;AKT1;CCL2

		11			28	G;IL1B;MAPK1;JAK2;TLR4;HLA-DRB1;HLA-DQB1;TLR2		35	
ALB	Signaling by SCF-KIT Homo sapiens R-HSA-1433557	1.56E-10	NRAS;PIK3CA;STAT1;ITGB3;STAT3;AKT1;MAPK1;PTPN11;KRAS;JAK2;MMP9;IL2	Inflammatory bowel disease	2.06E-27	IL10;TGFB1;STAT1;IL13;STAT3;TNF;IL2;IL4;IL1A;IL6;IFNG;IL1B;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Stromal cell	3.56E-34	IL10;TGFB1;SERPINE1;STAT3;PTGS2;TNF;MMP9;IL2;ICAM1;VEGFA;IL4;IL1A;IL6;CD4;IFNG;IL7;CASP3;IL1B;CCL5;CCL3;AKT1;CCL2;CCR5;TP53
KRAS	Interferon gamma signaling Homo sapiens R-HSA-877300	2.94E-10	IFNG;STAT1;PTPN11;HLA-A;JAK2;HLA-DRB1;ICAM1;HLA-DQB1	Rheumatoid arthritis	1.12E-26	CXCL8;TGFB1;TNF;ICAM1;VEGFA;IL1A;IL6;IFNG;IL1B;CCL5;CCL3;CTLA4;CCL2;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Gingiva	1.37E-33	IL10;CRP;TGFB1;PTGS2;TNF;MMP9;ICAM1;IL4;IL1A;IL6;CD4;CD40LG;IFNG;CASP3;IL1B;CCL2;TLR4;ELANE;TLR2
TGFB1	Signal Transduction Homo sapiens R-HSA-162582	1.32E-09	CXCL8;ITGB3;SERPINE1;TNF;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;CCR5;TGFB1;STAT1;STAT3;PTPN11;F2;MMP9;IL2;VEGFA;IL6;PIK3CA;KRAS;TP53	Kaposi sarcoma-associated herpesvirus	3.61E-26	CXCL8;IFNA1;STAT1;IFNB1;STAT3;HLA-A;PTGS2;ICAM1;VEGFA;NRAS;IL6;PIK3CA;CASP3;AKT1;MAPK1;KRAS;JAK2;CCR	Atherosclerotic plaque	2.48E-31	IL10;CRP;TGFB1;ACE;SERPINE1;TNF;F3;MMP9;ICAM1;VEGFA;IL6;IL1B;CCL5;ALB;AKT1;CCL2;APOE;TLR4

				infection		5;TP53;TLR3			
CXCL8	Costimulation by the CD28 family Homo sapiens R-HSA-388841	1.71E-09	CD4;PIK3CA;AKT1;CTLA4;PTPN11;HLA-DRB1;HLA-DQB1	Toxoplasmosis	3.37E-25	IL10;TGFB1;NOS2;STAT1;STAT3;TNF;CD40LG;IFNG;CASP3;AKT1;MAPK1;JAK2;CCR5;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Synovia	1.17E-27	IL10;CRP;TGFB1;TNF;MMP9;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;CCL5;ALB;CCL2;ELANE
VEGFA	Disease Homo sapiens R-HSA-1643685	1.92E-09	TGFB1;STAT1;STAT3;PTPN11;HLA-A;NRAS;CD4;PIK3CA;ALB;AKT1;KRAS;CCR5;TLR4;TLR3;TLR2	Coronavirus disease	1.59E-24	CXCL8;ACE;IFNA1;DDX58;STAT1;IFNB1;STAT3;F2;TNF;IL2;IL6;FCGR2A;PIK3CA;IL1B;CCL2;MAPK1;TLR4;TLR3;MBL2;TLR2	Marrow	2.95E-26	TGFB1;IFNA1;ITGB3;HLA-A;TNF;IL2;VEGFA;IL1A;IL6;CD4;CD40LG;IL7;IL1B;ALB;CCL3;JAK2;HLA-DRB1
1HLA-B	Downstream signal transduction Homo sapiens R-HSA-186763	4.06E-09	NRAS;PIK3CA;STAT1;ITGB3;STAT3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Cytokine-cytokine receptor interaction	5.37E-24	IL10;IL1RN;CXCL8;TGFB1;IFNA1;IFNB1;IL13;TNF;IL2;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL7;IL1B;CCL5;CCL3;CCL2;CCR5	Vascular cell	5.23E-26	CRP;TGFB1;SERPINE1;PTGS2;TNF;MMP9;F3;ICAM1;VEGFA;IL6;IL1B;AKT1;CCL2;APOE
IC	Signaling by PDGF	8.	NRAS;PIK3CA;STAT1;ITGB3;STAT3;	Pathwa	8.	CXCL8;TGFB1;IFNA1	Lamin	6.	IL10;TGFB1;IL13;TNF;IL2;ICAM1;IL4;IL6;CD4;C

AM1	Homo sapiens R-HSA-186797	00E-09	AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	ys in cancer	20E-23	;NOS2;STAT1;IL13;STAT3;F2;PTGS2;MMP9;IL2;VEGFA;IL4;NRAS;IL6;IFNG;PIK3CA;IL7;CASP3;AKT1;MAPK1;KRAS;JAK2;TP53	a propria	17E-25	D40LG;IFNG;IL1B;TLR4;TLR2
PIK3CA	MAPK1 (ERK2) activation Homo sapiens R-HSA-112411	8.51E-09	IL6;MAPK1;PTPN11;JAK2	Toll-like receptor signaling pathway	6.34E-22	CXCL8;IFNA1;STAT1;IFNB1;TNF;IL6;PIK3CA;IL1B;CCL5;CCL3;AKT1;MAPK1;TLR4;TLR3;TLR2	Sputum	8.49E-25	IL10;CRP;IL13;TNF;MMP9;IL4;IL6;CD4;CD40LG;IFNG;IL1B;CCL5;ALB;ELANE
APOE	Interleukin-6 family signaling Homo sapiens R-HSA-6783589	1.44E-08	IL6;STAT1;STAT3;PTPN11;JAK2	Measles	1.04E-21	IFNA1;DDX58;STAT1;IFNB1;STAT3;IL2;IL1A;IL6;PIK3CA;CD209;CASP3;IL1B;AKT1;TP53;TLR4;TLR2	Vasculature	1.36E-24	CRP;TGFB1;ACE;SERPINE1;PTGS2;TNF;F3;MMP9;ICAM1;VEGFA;IL6;IL1B;ALB;AKT1;CCL2;APOE;TP53
AKT1	Developmental Biology Homo sapiens R-HSA-1266738	4.80E-08	PRNP;TGFB1;ITGB3;STAT3;PTPN11;TNF;MMP9;IL2;VEGFA;NRAS;AKT1;MAPK1;KRAS;JAK2	Herpes simplex virus 1 infection	1.25E-20	IFNA1;DDX58;STAT1;IFNB1;ITGB3;PTPN11;HLA-A;TNF;IL6;IFNG;PIK3CA;CASP3;IL1B;CCL5;AKT1;CCL2;JAK2;TP	Peritoneal cavity	1.71E-24	IL10;IL6;CD4;TGFB1;IL1B;ALB;CCL2;TNF;IL2;ICAM1;VEGFA

						53;TLR3;HLA-DRB1;HLA-DQB1;TLR2			
CCL2	Regulation of IFNG signaling Homo sapiens R-HSA-877312	6.69E-08	IFNG;STAT1;PTPN11;JAK2	Malaria	1.47E-20	IL10;IL6;CXCL8;TGFB1;CD40LG;IFNG;IL1B;CCL2;TNF;TLR4;ICAM1;TLR2	Fruit	2.03E-23	CRP;TGFB1;F2;PTGS2;TNF;MMP9;ICAM1;VEGFA;IL6;CD4;CD40LG;CASP3;IL1B;ALB;AKT1;TP53
ACE	Signalling by NGF Homo sapiens R-HSA-166520	7.01E-08	NRAS;PIK3CA;ITGB3;CASP3;STAT3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	C-type lectin receptor signaling pathway	4.67E-20	IL10;STAT1;PTPN11;PTGS2;TNF;IL2;NRAS;IL6;PIK3CA;CD209;IL1B;AKT1;MAPK1;KRAS	Mesenchymal stem cell	9.62E-21	IL10;TGFB1;STAT3;TNF;MMP9;ICAM1;VEGFA;IL6;CD4;CASP3;IL1B;ALB;AKT1;CCL2;TP53;TLR4
TLR4	Signaling by FGFR1 in disease Homo sapiens R-HSA-5655302	8.75E-08	NRAS;PIK3CA;STAT1;STAT3;KRAS	PD-L1 expression and PD-1 checkpoint pathway in cancer	3.69E-19	STAT1;STAT3;PTPN11;NRAS;CD4;IFNG;PIK3CA;AKT1;MAPK1;KRAS;JAK2;TLR4;TLR2	Conjunctiva	1.12E-20	IL4;IL6;CD4;TGFB1;CD40LG;IL1B;IL13;ALB;TNF;MMP9;ICAM1;VEGFA
J	NGF	1	NRAS;PIK3CA;ITG	Hep	3	IFNA1;DD	Tro	1	IL10;TGFB1;IFNA1;SERP

AK2	signalling via TRKA from the plasma membrane Homo sapiens R-HSA-187037	.29E-07	B3;STAT3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	atitis C	.97E-19	X58;STAT1;IFNB1;STAT3;TNF;NRAS;IFNG;PIK3CA;CASP3;AKT1;MAPK1;KRAS;TP53;TLR3	phoblast	.18E-20	INE1;STAT3;HLA-A;TNF;F3;MMP9;VEGFA;IL6;IFNG;CASP3;IL1B;AKT1;TP53
CRP	IRS-mediated signalling Homo sapiens R-HSA-112399	1.40E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Epstein-Barr virus infection	4.81E-19	IFNA1;DDX58;STAT1;IFNB1;STAT3;HLA-A;TNF;ICAM1;IL6;PIK3CA;CASP3;AKT1;TP53;HLA-DRB1;HLA-DQB1;TLR2	Neointima	1.06E-19	TGFB1;ACE;IL1B;SERPINE1;AKT1;CCL2;APOE;TNF;MMP9;F3;ICAM1;VEGFA
CCL5	Insulin receptor signalling cascade Homo sapiens R-HSA-74751	1.53E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Proteoglycans in cancer	6.11E-19	TGFB1;ITGB3;STAT3;PTPN11;TNF;MMP9;VEGFA;NRAS;PIK3CA;CASP3;AKT1;MAPK1;KRAS;TP53;TLR4;TLR2	Knee	1.07E-19	IL10;CRP;IL1RN;TGFB1;F2;PTGS2;TNF;F3;MMP9;VEGFA;IL1A;IL6;IL1B;ALB
IFNA1	IGF1R signaling cascade Homo sapiens R-HSA-2428924	1.57E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	JAK-STAT signaling pathway	6.42E-19	IL10;IFNA1;STAT1;IFNB1;IL13;STAT3;PTPN11;IL2;IL4;IL6;IFNG;PIK3CA;IL7;AKT1;JAK2	HaCaT cell	1.14E-19	IL6;TGFB1;STAT1;CASP3;IL1B;AKT1;PTGS2;TNF;MMP9;TP53
CD	Signaling by Type 1	1.	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;	Yersinia	2.	IL10;CXCL8;IFNB1;T	Neona	2.	IL10;CRP;F2;TNF;F3;IL2;IL4;IL6;CD40LG;IFNG;IL

4	Insulin-like Growth Factor 1 Receptor (IGF1R) Homo sapiens R-HSA-2404192	57E-07	PTPN11;KRAS;JAK2;IL2	infection	59E-18	NF;IL2;IL6;CD4;FCGR2A;PIK3CA;IL1B;AKT1;CCL2;MAPK1;TLR4	te	69E-19	1B;ALB;TLR4
TLR3	IRS-related events triggered by IGF1R Homo sapiens R-HSA-2428928	1.57E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	T cell receptor signaling pathway	3.11E-18	IL10;TNF;IL2;IL4;NRAS;CD4;CD40LG;IFNG;PIK3CA;AKT1;CTLA4;MAPK1;KRAS	Peritoneal exudate	4.25E-19	IL10;IL4;IL6;CD4;IFNA1;IL1B;ALB;TNF;IL2
CCR5	Tie2 Signaling Homo sapiens R-HSA-210993	2.03E-07	NRAS;PIK3CA;PTPN11;KRAS	Th17 cell differentiation	4.57E-18	TGFB1;STAT1;STAT3;IL2;IL4;IL6;CD4;IFNG;IL1B;MAPK1;JAK2;HLA-DRB1;HLA-DQB1	Blood vessel endothelium	6.13E-19	IL10;CRP;ACE;NOS2;SERPINE1;F2;MMP9;IL6;CASP3;IL1B;ALB;AKT1;CCL2;APOE
SERPINE1	Adaptive Immune System Homo sapiens R-HSA-1280218	2.58E-07	PTPN11;HLA-A;ICAM1;NRAS;CD4;CD40LG;PIK3CA;AKT1;CTLA4;MAPK1;KRAS;HLA-DRB1;HLA-DQB1	TNF signaling pathway	8.48E-18	IFNB1;PTGS2;TNF;MMP9;ICAM1;IL6;PIK3CA;CASP3;IL1B;CCL5;AKT1;CCL2;MAPK1	Root nodule	1.36E-18	CRP;TGFB1;F2;TNF;MMP9;IL2;VEGFA;NRAS;CD4;CD40LG;ALB;KRAS;TP53;HLA-DRB1
IL2	Signaling by Insulin receptor Homo sapiens R-HSA-74752	3.01E-0	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	IL-17 signaling pathwa	5.24E-1	IL4;IL6;CXCL8;IFNG;CASP3;IL1B;IL13;CCL2;MAPK1;PTGS2;TNF;MMP9	Peritoneal fluid	1.71E-1	IL10;IL6;IL1B;SERPINE1;ALB;CCL2;TNF;VEGFA

		7		y	7			8	
IL4	VEGFA-VEGFR2 Pathway Homo sapiens R-HSA-4420097	3.82E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;KRAS;JAK2;IL2;VEGFA	Human T-cell leukemia virus 1 infection	6.27E-17	TGFB1;HLA-A;TNF;IL2;ICAM1;NRAS;IL6;CD4;PIK3CA;AKT1;MAPK1;KRAS;TP53;HLA-DRB1;HLA-DQB1	Capillary	2.72E-18	CRP;TGFB1;ACE;SERPINE1;F2;MMP9;IL6;CASP3;IL1B;ALB;AKT1;CCL2;APOE
HLA-A	Cellular Senescence Homo sapiens R-HSA-2559583	4.61E-07	IL1A;IL6;CXCL8;IFNB1;STAT3;MAPK1;TP53	Amoebiasis	1.46E-16	IL10;IL6;CXCL8;TGFB1;IFNG;PIK3CA;NOS2;CASP3;IL1B;TNF;TLR4;TLR2	Breast cancer cell line	3.17E-18	TGFB1;SERPINE1;STAT3;F2;PTGS2;TNF;MMP9;VEGFA;IL6;PIK3CA;CASP3;ALB;AKT1;MAPK1;JAK2;TP53
STAT3	Signaling by VEGF Homo sapiens R-HSA-194138	4.70E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;KRAS;JAK2;IL2;VEGFA	PI3K-Akt signaling pathway	1.58E-16	IFNA1;IFNB1;ITGB3;IL2;VEGFA;IL4;NRAS;IL6;PIK3CA;IL7;AKT1;MAPK1;KRAS;JAK2;TP53;TLR4;TLR2	Cervical cancer cell line	6.83E-17	IL6;CD4;IFNA1;STAT1;IFNB1;CASP3;STAT3;ALB;AKT1;APOE;TNF;TP53
STAT1	Downstream signaling of activated FGFR2 Homo sapiens R-HSA-5654696	4.82E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Human papillomavirus infection	1.27E-15	IFNA1;STAT1;IFNB1;ITGB3;HLA-A;PTGS2;TNF;VEGFA;NRAS;PIK3CA;CASP3;AKT1;MAPK1;KRAS;TP53;TLR3	Blood vessel wall	1.22E-16	CRP;IL6;TGFB1;ACE;IL1B;ALB;CCL2;APOE;MMP9

F3	Downstream signaling of activated FGFR4 Homo sapiens R-HSA-5654716	4.82E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Human immunodeficiency virus 1 infection	1.28E-15	IFNA1;IFNB1;HLA-A;TNF;NRAS;CD4;PIK3CA;CASP3;AKT1;MAPK1;KRAS;CCR5;TLR4;TLR2	Acute lymphoblastic leukemia cell	2.60E-16	CD4;TGFB1;IFNA1;IL7;CASP3;AKT1;KRAS;TNF;TP53;IL2
CCL3	Downstream signaling of activated FGFR3 Homo sapiens R-HSA-5654708	4.82E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Allograft rejection	1.36E-15	IL10;IL4;CD40LG;IFNG;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Gingival fluid	1.66E-15	CRP;IL10;IL1A;IL6;IL1B;TNF;MMP9;ELANE
CTLA4	GPVI-mediated activation cascade Homo sapiens R-HSA-114604	4.84E-07	PIK3CA;AKT1;PTPN11;JAK2;IL2	Osteoclast differentiation	2.20E-15	IL1A;TGFB1;FCGR2A;IFNG;PIK3CA;STAT1;IFNB1;ITGB3;IL1B;AKT1;MAPK1;TNF	Ovary cancer cell line	2.14E-15	TGFB1;CASP3;SERPINE1;STAT3;AKT1;F2;TNF;MMP9;TP53;VEGFA
CASP3	Signaling by ERBB4 Homo sapiens R-HSA-1236394	4.95E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Natural killer cell mediated cytotoxicity	3.21E-15	NRAS;IFNA1;IFNG;PIK3CA;IFNB1;CASP3;MAPK1;PTPN11;KRAS;HLA-A;TNF;ICAM1	Colorectal cancer cell	5.70E-15	TGFB1;PIK3CA;CASP3;STAT3;AKT1;KRAS;PTGS2;MMP9;TP53;VEGFA
MAP	MAPK1/MAPK3 signaling	5.1	NRAS;IL6;ITGB3;MAPK1;PTPN11;KRAS;JAK2;IL2	Graft-vers	3.6	IL1A;IL6;IFNG;IL1B;HLA-	BTO:0002	5.8	IL10;IL4;IL6;CD4;CD40LG;IL1B;ALB;TNF;ELANE

K1	Homo sapiens R-HSA-5684996	7E-07		us-host disease	9E-15	A;TNF;IL2;HLA-DRB1;HLA-DQB1	979	4E-15	
PTGS2	Cell surface interactions at the vascular wall Homo sapiens R-HSA-202733	5.18E-07	NRAS;PIK3CA;ITGB3;PTPN11;KRAS;F2	Fluid shear stress and atherosclerosis	6.63E-15	IL1A;IFNG;PIK3CA;ITGB3;IL1B;AKT1;CCL2;TNF;MMP9;TP53;ICAM1;VEGFA	Pancreatic cancer cell	7.74E-15	TGFB1;CASP3;IL1B;STAT3;AKT1;KRAS;PTGS2;MMP9;TP53;VEGFA
ELANE	Signaling by FGFR4 Homo sapiens R-HSA-5654743	5.20E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Chemokine signaling pathway	1.07E-14	CXCL8;STAT1;STAT3;NRAS;PIK3CA;CCL5;CCL3;AKT1;CCL2;MAPK1;KRAS;JAK2;CCR5	K-562 cell	1.60E-14	IFNA1;IFNG;ITGB3;CASP3;STAT3;AKT1;JAK2;TNF;TP53;IL2
FCGR2A	Downstream signaling of activated FGFR1 Homo sapiens R-HSA-5654687	5.20E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Pertussis	1.84E-14	IL10;IL1A;IL6;CXCL8;NOS2;CASP3;IL1B;MAPK1;TNF;TLR4	Periosteum	1.95E-14	IL1A;ITGB3;STAT3;CCL3;CCL2;MAPK1;TNF;MMP9
IL13	Signaling by FGFR3 Homo sapiens R-HSA-5654741	5.33E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Cellular senescence	2.70E-14	IL1A;NRAS;IL6;CXCL8;TGFB1;PIK3CA;SERPINE1;AKT1;MAPK1;KRAS;HLA-A;TP53	MG-63 cell	1.95E-14	IL6;TGFB1;CASP3;IL1B;AKT1;TNF;MMP9;TP53
HLA	Signaling by Leptin Homo	5.5	NRAS;ITGB3;STAT3;MAPK1;PTPN11;KRAS;JAK2;IL2	Autoimmu	3.5	IL10;IL4;CD40LG;IFNA1;CTLA	BMMC cell	3.4	IL4;IL6;IL13;AKT1;PTPN11;PTGS2;TNF;VEGFA

-DQB1	sapiens R-HSA-2586552	0E-07		ne thyroid disease	8E-14	4;HLA-A;IL2;HLA-DRB1;HLA-DQB1		8E-14	
IFNB1	Signaling by FGFR1 Homo sapiens R-HSA-5654736	5.75E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Th1 and Th2 cell differentiation	1.34E-13	IL4;CD4;IFNG;STAT1;IL13;MAPK1;JAK2;IL2;HLA-DRB1;HLA-DQB1	Artery	3.59E-14	IL10;CRP;TGFB1;ACE;NOS2;SERPINE1;F2;MMP9;IL6;CASP3;IL1B;ALB;AKT1;CCL2;APOE
PRNP	RAF-independent MAPK1/3 activation Homo sapiens R-HSA-112409	5.80E-07	IL6;MAPK1;PTPN11;JAK2	Hematopoietic cell lineage	2.85E-13	IL4;IL1A;IL6;CD4;IL7;ITGB3;IL1B;TNF;HLA-DRB1;HLA-DQB1	Blood clot	1.87E-13	CRP;CD40LG;ITGB3;SERPINE1;ALB;APOE;F2;F3;MMP9
TLR2	Chemokine receptors bind chemokines Homo sapiens R-HSA-380108	6.40E-07	CXCL8;CCL5;CCL3;CCL2;CCR5	Type I diabetes mellitus	4.68E-13	IL1A;IFNG;IL1B;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Cranium	3.02E-13	CRP;IL1A;IL6;TGFB1;IL1B;F2;PTGS2;TNF;MMP9;TP53;VEGFA
IL1RN	Growth hormone receptor signaling Homo sapiens R-HSA-982772	6.94E-07	STAT1;STAT3;MAPK1;JAK2	HIF-1 signaling pathway	7.62E-13	IL6;IFNG;PIK3CA;NOS2;SERPINE1;STAT3;AKT1;MAPK1;TLR4;VEGFA	Microvessel	3.18E-13	IL6;TGFB1;ACE;IL1B;ALB;AKT1;MMP9
PTPN11	DAP12 signaling Homo sapiens R-HSA-2424491	7.00E-0	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Pancreatic cancer	1.09E-1	TGFB1;PIK3CA;STAT1;STAT3;AKT1;MAPK1;KRAS;TP53;VEGFA	Fiber	6.17E-1	CRP;TGFB1;F2;TNF;MMP9;VEGFA;IL6;CASP3;IL1B;ALB;AKT1;APOE;TP53

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ITGB3	Regulation of IFNA signaling Homo sapiens R-HSA-912694	8.25E-07	IFNA1;STAT1;IFNB1;PTPN11	Necroptosis	1.14E-12	IL1A;IFNA1;IFNG;STAT1;IFNB1;IL1B;STAT3;JAK2;TNF;TLR4;TLR3	B16-F10 cell	6.20E-13	CD4;CASP3;AKT1;MMP9;TP53;IL2;VEGFA
NOS2	Signaling by EGFR Homo sapiens R-HSA-177929	9.09E-07	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Intestinal immune network for IgA production	1.20E-12	IL10;IL4;IL6;TGFB1;CD40LG;IL2;HLA-DRB1;HLA-DQB1	NIH-3T3 cell	7.62E-13	NRAS;TGFB1;STAT3;ALB;AKT1;MAPK1;KRAS;JAK2;TNF;TP53
DDX58	Interleukin-3, 5 and GM-CSF signaling Homo sapiens R-HSA-512988	9.43E-07	NRAS;PIK3CA;ITGB3;MAPK1;PTPN11;KRAS;JAK2;IL2	Asthma	3.35E-12	IL10;IL4;CD40LG;IL13;TNF;HLA-DRB1;HLA-DQB1	Myofibroblast	8.51E-13	IL6;TGFB1;IL1B;SERPINE1;AKT1;CCL2;TNF;MMP9;VEGFA
CD40LG	PD-1 signaling Homo sapiens R-HSA-389948	9.73E-07	CD4;PTPN11;HLA-DRB1;HLA-DQB1	NOD-like receptor signaling pathway	4.71E-12	IL6;CXCL8;IFNA1;STAT1;IFNB1;IL1B;CCL5;CCL2;MAPK1;TNF;TLR4	DAUDI cell	1.52E-12	CD4;CD40LG;IFNA1;IFNG;IFNB1;HLA-A;IL2
MM	DAP12 interactions	9.	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;	Viral	1.	IL10;IL6;CXCL8;CCL5	Latex	2.	CRP;IL6;CD4;CD40LG;IL1B;ALB;TNF

P9	Homo sapiens R-HSA-2172127	97E-07	PTPN11;KRAS;JAK2;IL2	protein interaction with cytokine and cytokine receptor	38E-11	;CCL3;CCL2;CCR5;TNF;IL2		00E-12	
MBL2	Signaling by FGFR2 Homo sapiens R-HSA-5654738	1.04E-06	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Fc epsilon RI signaling pathway	2.26E-11	IL4;NRAS;PIK3CA;IL13;AKT1;MAPK1;KRAS;TNF	Human aortic endothelial cell	2.49E-12	AKT1;CCL2;APOE;TNF;F3;ICAM1
IL1A	Signaling by FGFR in disease Homo sapiens R-HSA-1226099	1.16E-06	NRAS;PIK3CA;STAT1;STAT3;KRAS	Renal cell carcinoma	2.55E-11	NRAS;TGFB1;PIK3CA;AKT1;MAPK1;PTPN11;KRAS;VEGFA	Prostate gland cancer cell	2.60E-12	IL6;TGFB1;CASP3;STAT3;AKT1;PTGS2;TNF;MMP9;TP53;VEGFA
NRAS	Signaling by FGFR Homo sapiens R-HSA-190236	1.17E-06	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Bladder cancer	2.80E-11	NRAS;CXCL8;MAPK1;KRAS;MMP9;TP53;VEGFA	Peritoneal mesothelium	3.97E-12	IL6;TGFB1;IL1B;SERPINE1;CCL2;TNF
IL7	Interferon alpha/beta signaling Homo	1.70	IFNA1;STAT1;IFNB1;PTPN11;HLA-A	Prolactin sign	2.87	NRAS;PIK3CA;STAT1;STAT3;AKT1;MAPK	Embryonic	4.26	TGFB1;DDX58;STAT1;IFNB1;CASP3;STAT3;AKT1;TNF;TP53

	sapiens R-HSA-909733	E-06		aling pathway	E-11	1;KRAS;JAK2	fibroblast	E-12	
	MAPK family signaling cascades Homo sapiens R-HSA-5683057	1.77E-06	NRAS;IL6;ITGB3;MAPK1;PTPN11;KRAS;JAK2;IL2	Alzheimer disease	4.38E-11	NOS2;PTGS2;TNF;IL1A;NRAS;IL6;PIK3CA;CASP3;IL1B;AKT1;MAPK1;KRAS;APOE	Talus	3.35E-11	CRP;IL6;ACE;IL1B;ALB;F2;TNF
	Diseases of signal transduction Homo sapiens R-HSA-5663202	1.97E-06	NRAS;TGFB1;PIK3CA;STAT1;STAT3;AKT1;PTPN11;KRAS	Chronic myeloid leukemia	5.65E-11	NRAS;TGFB1;PIK3CA;AKT1;MAPK1;PTPN11;KRAS;TP53	MC3T3-E1 cell	1.05E-10	IL6;TGFB1;CASP3;AKT1;PTGS2;TNF;VEGFA
	Fc epsilon receptor (FCERI) signaling Homo sapiens R-HSA-2454202	2.19E-06	NRAS;PIK3CA;ITGB3;AKT1;MAPK1;PTPN11;KRAS;JAK2;IL2	Relaxin signaling pathway	1.39E-10	NRAS;TGFB1;PIK3CA;NOS2;AKT1;MAPK1;KRAS;MMP9;VEGFA	Ganglion	1.46E-10	PRNP;IL6;ACE;CASP3;IL1B;ALB;AKT1;APOE;PTGS2;TNF;TP53;VEGFA
	Axon guidance Homo sapiens R-HSA-422475	2.38E-06	PRNP;NRAS;ITGB3;MAPK1;PTPN11;KRAS;JAK2;MMP9;IL2;VEGFA	Colorectal cancer	1.55E-10	NRAS;TGFB1;PIK3CA;CASP3;AKT1;MAPK1;KRAS;TP53	Promastigote	2.29E-10	IL10;IL4;CD4;IFNG;APOE;TNF
	MAPK3 (ERK1) activation Homo sapiens R-HSA-110056	2.88E-0	IL6;PTPN11;JAK2	FoxO signaling pathwa	1.60E-1	IL10;NRAS;IL6;TGFB1;PIK3CA;STAT3;AKT1;MAPK1;KRAS	Gbm cell	5.51E-1	CASP3;STAT3;AKT1;TP53;VEGFA

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	Signaling by FGFR3 fusions in cancer Homo sapiens R-HSA-8853334	2.88E-06	NRAS;PIK3CA;KRAS	Pathogenic Escherichia coli infection	2.82E-10	IL6;CXCL8;FCGR2A;CASP3;IL1B;MAPK1;PTPN11;F2;TNF;TLR4	Esophageal cancer cell	8.00E-10	CASP3;STAT3;AKT1;PTGS2;TP53
	Senescence-Associated Secretory Phenotype (SASP) Homo sapiens R-HSA-2559582	3.16E-06	IL1A;IL6;CXCL8;STAT3;MAPK1	Legionellosis	3.17E-10	IL6;CXCL8;CASP3;IL1B;TNF;TLR4;TLR2	Hip	9.10E-10	CRP;IL6;IL1B;SERPINE1;ALB;F2;TNF;F3
	Signaling by FGFR4 in disease Homo sapiens R-HSA-5655291	3.96E-06	NRAS;PIK3CA;KRAS	VEGF signaling pathway	4.07E-10	NRAS;PIK3CA;AKT1;MAPK1;KRAS;PTGS2;VEGFA	Bronchial epithelial cell line	1.13E-09	IL6;IL1B;CCL5;TNF;ICAM1
	MAP2K and MAPK activation Homo sapiens R-HSA-5674135	4.68E-06	NRAS;ITGB3;MAPK1;KRAS	Phagosome	6.06E-10	FCGR2A;CD209;ITGB3;HLA-A;TLR4;HLA-DRB1;MBL2;HLA-DQB1;TLR2	L-929 cell	1.30E-09	FCGR2A;IFNA1;IFNB1;TNF;IL2;ICAM1
	FRS-mediated FGFR2 signaling Homo sapiens R-HSA-	5.90E-0	NRAS;ITGB3;MAPK1;PTPN11;KRAS;JAK2;IL2	Non-alcoholic fatty	7.21E-1	IL1A;IL6;CXCL8;TGFB1;PIK3CA;CASP3;IL1B;AKT1;TNF	Granulation tissue	2.81E-0	TGFB1;IL1B;TNF;MMP9;VEGFA

	5654700	6		liver disease	0			9	
	FRS-mediated FGFR4 signaling Homo sapiens R-HSA-5654712	5.90E-06	NRAS;ITGB3;MAPK1;PTPN11;KRAS;JAK2;IL2	NF-kappa B signaling pathway	7.24E-10	CXCL8;CD40LG;DDX58;IL1B;PTGS2;TNF;TLR4;ICAM1	Mammary gland cell line	3.78E-09	TGFB1;CASP3;STAT3;AKT1;MMP9;TP53
	FRS-mediated FGFR3 signaling Homo sapiens R-HSA-5654706	5.90E-06	NRAS;ITGB3;MAPK1;PTPN11;KRAS;JAK2;IL2	MAPK signaling pathway	8.60E-10	IL1A;NRAS;TGFB1;CASP3;IL1B;AKT1;MAPK1;KRAS;TNF;TP53;VEGFA	Mesenchyme	4.82E-09	IL6;TGFB1;IL1B;STAT3;AKT1;KRAS;TNF;MMP9;TP53;VEGFA
	FRS-mediated FGFR1 signaling Homo sapiens R-HSA-5654693	5.90E-06	NRAS;ITGB3;MAPK1;PTPN11;KRAS;JAK2;IL2	African trypanosomiasis	1.10E-09	IL10;IL6;IFNG;IL1B;TNF;ICAM1	Amniotic fluid	9.30E-09	CRP;CD40LG;IL1B;ALB;TNF;F3
	Interleukin receptor SHC signaling Homo sapiens R-HSA-912526	7.53E-06	NRAS;PIK3CA;ITGB3;MAPK1;KRAS;JAK2;IL2	MicroRNAs in cancer	1.50E-09	NRAS;PIK3CA;ITGB3;CASP3;STAT3;MAPK1;KRAS;PTGS2;MMP9;TP53;VEGFA	Flower	9.54E-09	IL6;ALB;APOE;F2;TNF
	VEGFR2 mediated cell proliferation Homo sapiens R-HSA-5218921	8.16E-06	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2;VEGFA	Non-small cell lung cancer	1.71E-09	NRAS;PIK3CA;STAT3;AKT1;MAPK1;KRAS;TP53	Acute myeloid leukemia	1.64E-08	NRAS;CASP3;STAT3;AKT1;TNF;TP53

							cell		
	Interleukin-2 signaling Homo sapiens R-HSA-451927	9.05E-06	NRAS;PIK3CA;ITGB3;MAPK1;KRAS;JAK2;IL2	Growth hormone synthesis, secretion and action	2.13E-09	NRAS;PIK3CA;STAT1;STAT3;AKT1;MAPK1;KRAS;JAK2	Femur	3.03E-08	CRP;IL6;TGFB1;ALB;TNF;VEGFA
	Signaling by ERBB2 Homo sapiens R-HSA-1227986	9.30E-06	NRAS;PIK3CA;AKT1;KRAS	Thyroid hormone signaling pathway	2.43E-09	NRAS;PIK3CA;STAT1;ITGB3;AKT1;MAPK1;KRAS;TP53	Pollen	4.02E-08	IL10;IL4;CD4;CD40LG;IL13;ALB
	Signaling by EGFRvIII in Cancer Homo sapiens R-HSA-5637812	1.08E-05	NRAS;PIK3CA;KRAS	Shigellosis	2.44E-09	CXCL8;PIK3CA;IFNB1;IL1B;CCL5;AKT1;MAPK1;TNF;TP53;TLR4	Alveolar bone	5.75E-08	IL1A;IL6;TGFB1;IL1B;TNF;MMP9
	Constitutive Signaling by EGFRvIII Homo sapiens R-HSA-5637810	1.08E-05	NRAS;PIK3CA;KRAS	Salmonella infection	2.75E-09	IL6;CXCL8;PIK3CA;CASP3;IL1B;AKT1;MAPK1;TNF;TLR4;TLR2	Tibia	6.27E-08	CRP;IL6;TGFB1;IL1B;TNF;VEGFA
	Cellular responses	1.	IL1A;IL6;CXCL8;IFNB1;STAT3;MAPK	Systemi	5.	IL10;FCGR2A;CD40L	Gutmu	6.	IL10;CD4;CD40LG;TNF

	to stress Homo sapiens R-HSA-2262752	17E-05	1;TP53;VEGFA	c lupus erythematosus	80E-09	G;IFNG;TNF;ELANE;HLA-DRB1;HLA-DQB1	cosa	69E-08	
	G beta:gamma signalling through PI3Kgamma Homo sapiens R-HSA-392451	1.21E-05	PIK3CA;AKT1;JAK2;IL2	Viral carcinogenesis	7.76E-09	NRAS;PIK3CA;CASP3;STAT3;MAPK1;KRAS;HLA-A;CCR5;TP53	Middle ear	8.75E-08	CD40LG;IL1B;ALB;TNF;TLR2
	NCAM signaling for neurite out-growth Homo sapiens R-HSA-375165	1.29E-05	PRNP;NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Apoptosis	8.65E-09	NRAS;PIK3CA;CASP3;AKT1;MAPK1;KRAS;TNF;TP53	Chronic lymphocytic leukemia cell	8.75E-08	IL4;CD40LG;AKT1;TP53;IL2
	Platelet degranulation Homo sapiens R-HSA-114608	1.45E-05	TGFB1;ITGB3;SERPINE1;ALB;VEGFA	Phospholipase D signaling pathway	1.20E-08	NRAS;CXCL8;PIK3CA;AKT1;MAPK1;PTPN11;KRAS;F2	g/g	8.75E-08	IL10;IL6;CTLA4;TNF;TP53
	G-protein beta:gamma signalling Homo sapiens R-	1.54E	PIK3CA;AKT1;JAK2;IL2	Prostate cancer	1.41E	NRAS;PIK3CA;AKT1;MAPK1;KRAS;MMP9;TP53	Tachyzoite	9.10E	IL10;IL4;CD4;IFNG

	HSA-397795	-05			-08			-08	
	Signaling by GPCR Homo sapiens R-HSA-372790	1.77E-05	CXCL8;ITGB3;F2;IL2;NRAS;PIK3CA;CCL5;CCL3;AKT1;CCL2;MAPK1;KRAS;JAK2;CCR5	Endometrial cancer	1.82E-08	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TP53	Vitreous humor	9.10E-08	IL6;ALB;CCL2;VEGFA
	Response to elevated platelet cytosolic Ca2+ Homo sapiens R-HSA-76005	1.82E-05	TGFB1;ITGB3;SERPINE1;ALB;VEGFA	Viral myocarditis	2.25E-08	CD40LG;CASP3;HLA-A;HLA-DRB1;ICAM1;HLA-DQB1	Gastric ulcer	9.10E-08	IL1B;PTGS2;TNF;VEGFA
	Extracellular matrix organization Homo sapiens R-HSA-1474244	1.92E-05	TGFB1;ITGB3;CASP3;SERPINE1;MMP9;ELANE;ICAM1	Cytosolic DNA-sensing pathway	3.03E-08	IL6;IFNA1;DDX58;IFNB1;IL1B;CCL5	Cancer stem cell	1.11E-07	TGFB1;STAT3;AKT1;KRAS;TP53;VEGFA
	Signaling by cytosolic FGFR1 fusion mutants Homo sapiens R-HSA-1839117	1.93E-05	PIK3CA;STAT1;STAT3	Chemical carcinogenesis	3.19E-08	NRAS;PIK3CA;STAT3;AKT1;MAPK1;KRAS;JAK2;PTGS2;VEGFA	3T3-L1 cell	2.28E-07	IL6;SERPINE1;STAT3;AKT1;CCL2;TNF
	Activation of IRF3/IRF7 mediated by TBK1/IKK	1.93E-	PTPN11;TLR4;TLR3	Acute myeloid leukemi	4.41E-	NRAS;PIK3CA;STAT3;AKT1;MAPK1;KRAS	Hybridoma cell line	2.43E-	IL6;CD40LG;ALB

	epsilon Homo sapiens R-HSA-936964	05		a	08			07	
	Activated TLR4 signalling Homo sapiens R-HSA-166054	1.98E-05	MAPK1;PTPN11;TLR4;TLR3;TLR2	Central carbon metabolism in cancer	5.75E-08	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TP53	Germ	3.38E-07	CD4;TGFB1;CD40LG;ALB;KRAS;TP53
	Downstream signaling events of B Cell Receptor (BCR) Homo sapiens R-HSA-1168372	2.14E-05	NRAS;PIK3CA;AKT1;MAPK1;PTPN11;KRAS	Sphingolipid signaling pathway	5.83E-08	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TNF;TP53	Nasal lavage fluid	4.80E-07	IL4;IL13;ALB;TNF
	Peptide ligand-binding receptors Homo sapiens R-HSA-375276	2.20E-05	CXCL8;CCL5;CCL3;CCL2;CCR5;F2	Neurotrophin signaling pathway	5.83E-08	NRAS;PIK3CA;AKT1;MAPK1;PTPN11;KRAS;TP53	Oral cancer cell	4.80E-07	CASP3;AKT1;MMP9;TP53
	Constitutive Signaling by Ligand-Responsive EGFR Cancer Variants Homo sapiens R-	2.28E-05	NRAS;PIK3CA;KRAS	Melanoma	6.82E-08	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TP53	2t	4.85E-07	IL4;IFNG;IL2

	HSA-1236382								
	Signaling by Ligand-Responsive EGFR Variants in Cancer Homo sapiens R-HSA-5637815	2.28E-05	NRAS;PIK3CA;KRAS	Neutrophil extracellular trap formation	8.05E-08	FCGR2A;PIK3CA;ITGB3;AKT1;MAPK1;TLR4;ELANE;TLR2	Phagocyte	5.80E-07	ITGB3;SERPINE1;CTLA4;F2
	Signaling by EGFR in Cancer Homo sapiens R-HSA-1643713	2.28E-05	NRAS;PIK3CA;KRAS	Glioma	8.73E-08	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TP53	Kidney cancer cell	6.94E-07	CASP3;AKT1;TP53;VEGFA
	Toll Like Receptor 4 (TLR4) Cascade Homo sapiens R-HSA-166016	2.99E-05	MAPK1;PTPN11;TLR4;TLR3;TLR2	Prion disease	9.98E-08	IL1A;PRNP;IL6;PIK3CA;CASP3;IL1B;CCL5;MAPK1;TNF	HT-1080 cell	1.14E-06	SERPINE1;AKT1;MMP9;TP53
	CD209 (DC-SIGN) signaling Homo sapiens R-HSA-5621575	3.12E-05	NRAS;CD209;KRAS	Antigen processing and presentation	1.11E-07	CD4;IFNG;HLA-A;TNF;HLA-DRB1;HLA-DQB1	Wound fluid	1.35E-06	MMP9;ELANE;VEGFA
	Translocation of ZAP-70 to Immunological synapse	3.12E	CD4;HLA-DRB1;HLA-DQB1	Pathways of neu	1.21E	IL1A;PRNP;NRAS;IL6;NOS2;CASP3;IL1B;MAPK1;KRA	Urothelium	1.70E	PIK3CA;AKT1;PTGS2;TP53;VEGFA

	Homo sapiens R-HSA-202430	-05		rodegeneration	-07	S;PTGS2;TNF		-06	
	CTLA4 inhibitory signaling Homo sapiens R-HSA-389513	3.61E-05	AKT1;CTLA4;PTPN11	Signaling pathways regulating pluripotency of stem cells	2.06E-07	NRAS;PIK3CA;STAT3;AKT1;MAPK1;KRAS;JAK2	Multiple myeloma cell	1.77E-06	IL6;CASP3;STAT3;VEGFA
	Signaling by FGFR3 point mutants in cancer Homo sapiens R-HSA-8853338	3.61E-05	NRAS;PIK3CA;KRAS	Cell adhesion molecules	2.61E-07	CD4;CD40LG;CTLA4;HLA-A;HLA-DRB1;ICAM1;HLA-DQB1	Amastigote	2.62E-06	IL10;CD4;APOE;TNF
	Signaling by FGFR3 in disease Homo sapiens R-HSA-5655332	3.61E-05	NRAS;PIK3CA;KRAS	Gastric cancer	2.73E-07	NRAS;TGFB1;PIK3CA;AKT1;MAPK1;KRAS;TP53	okt8	2.88E-06	CD40LG;HLA-A;IL2
	Gastrin-CREB signalling pathway via PKC and MAPK	3.75E-	NRAS;PIK3CA;ITGB3;MAPK1;KRAS;JAK2;F2;IL2	Small cell lung cancer	2.97E-	PIK3CA;NOS2;CASP3;AKT1;PTGS2;TP53	Lymphoid cell line	2.88E-	CD4;CD40LG;IL2

	Homo sapiens R-HSA-881907	0 5			0 7			0 6	
	SHC-mediated cascade:FGFR4 Homo sapiens R-HSA-5654719	4.14E-05	NRAS;PTPN11;KRAS	Staphylococcus aureus infection	3.60E-07	IL10;FCGR2A;HLA-DRB1;ICAM1;MBL2;HLA-DQB1	U2-OS cell	2.96E-06	CASP3;AKT1;MMP9;TP53
	Signaling by PTK6 Homo sapiens R-HSA-8848021	4.56E-05	NRAS;STAT3;AKT1;KRAS	Hepatocellular carcinoma	6.15E-07	NRAS;TGFB1;PIK3CA;AKT1;MAPK1;KRAS;TP53	Needle	3.58E-06	CRP;CD4;KRAS;F2;TP53
	Phosphorylation of CD3 and TCR zeta chains Homo sapiens R-HSA-202427	4.72E-05	CD4;HLA-DRB1;HLA-DQB1	Insulin resistance	7.70E-07	IL6;PIK3CA;STAT3;AKT1;PTPN11;TNF	Rheumatoid arthritis disease specific synovial fibroblast	3.96E-06	IL6;IL1B;TNF
	Diseases associated with the TLR signaling cascade	4.72E-	TLR4;TLR3;TLR2	Cholinergic synapse	1.00E-	NRAS;PIK3CA;AKT1;MAPK1;KRAS;JAK2	SK-N-SH cell	6.83E-	CASP3;AKT1;TP53

	Homo sapiens R-HSA-5602358	05			06			06	
	Diseases of Immune System Homo sapiens R-HSA-5260271	4.72E-05	TLR4;TLR3;TLR2	GnRH secretion	1.25E-06	NRAS;PIK3CA;AKT1;MAPK1;KRAS	Mononuclear cell	7.03E-06	ITGB3;SERPINE1;CTLA4;F2
	RAF activation Homo sapiens R-HSA-5673000	5.36E-05	NRAS;KRAS;JAK2	Platelet activation	1.73E-06	FCGR2A;PIK3CA;ITGB3;AKT1;MAPK1;F2	Biofilm	7.03E-06	IL6;IL1B;TNF;TLR2
	Toll-Like Receptors Cascades Homo sapiens R-HSA-168898	5.78E-05	MAPK1;PTPN11;TLR4;TLR3;TLR2	Adipocytokine signaling pathway	1.83E-06	STAT3;AKT1;PTPN11;JAK2;TNF	Rosette	8.49E-06	CD4;CD40LG;ALB;IL2
	SHC-mediated cascade:FGFR2 Homo sapiens R-HSA-5654699	6.04E-05	NRAS;PTPN11;KRAS	RIG-I-like receptor signaling pathway	1.96E-06	CXCL8;IFNA1;DDX58;IFNB1;TNF	Whole plant	8.49E-06	IL10;IL4;ACE;IFNG
	Signaling by the B Cell Receptor	6.3	NRAS;PIK3CA;AKT1;MAPK1;PTPN11;KRAS	Rap1 sign	2.7	NRAS;PIK3CA;ITGB3;AKT1;M	T-98G cell	8.6	CASP3;AKT1;TP53

	(BCR) Homo sapiens R-HSA-983705	1E-05		alinag pathway	3E-06	APK1;KRAS;VEGFA		7E-06	
	GRB2 events in EGFR signaling Homo sapiens R-HSA-179812	6.61E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Apelin signaling pathway	3.09E-06	NRAS;NOS2;SERPINE1;AKT1;MAPK1;KRAS	T-24 cell	1.08E-05	CASP3;AKT1;TP53
	SHC1 events in EGFR signaling Homo sapiens R-HSA-180336	6.61E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Estrogen signaling pathway	3.09E-06	NRAS;PIK3CA;AKT1;MAPK1;KRAS;MMP9	Periodontal ligament	1.31E-05	IL6;TGFB1;IL1B;TNF
	SOS-mediated signalling Homo sapiens R-HSA-112412	6.61E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	B cell receptor signaling pathway	4.06E-06	NRAS;PIK3CA;AKT1;MAPK1;KRAS	Marrow cell	1.33E-05	SERPINE1;CTLA4;F2
	SHC1 events in ERBB4 signaling Homo sapiens R-HSA-1250347	6.61E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Thyroid cancer	4.19E-06	NRAS;MAPK1;KRAS;TP53	RAJI cell	1.61E-05	CD40LG;CD209;IL2
	RAF/MAP kinase cascade Homo	6.61	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Breast cancer	4.65	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TP53	Interstitial cell	1.61	TGFB1;CASP3;PTGS2

	sapiens R-HSA-5673001	E-05			E-06			E-05	
	Caspase activation via extrinsic apoptotic signalig pathway Homo sapiens R-HSA-5357769	6.78E-05	CASP3;TLR4;TLR3	ErbB signalin g pathway	5.15E-06	NRAS;PIK3CA;AKT1;MAPK1;KRAS	Interverteb ral disc	1.80E-05	IL6;TGFB1;CASP3;TNF
	ARMS-mediated activation Homo sapiens R-HSA-170984	7.26E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Ras signalin g pathway	5.27E-06	NRAS;PIK3CA;AKT1;MAPK1;PTPN11;KRAS;VEGFA	Inferior vena cava	1.93E-05	SERPINE1;ALB;F2
	Signalling to p38 via RIT and RIN Homo sapiens R-HSA-187706	7.26E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	mTOR signalin g pathway	6.08E-06	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TNF	Plasma cell	2.05E-05	IL1RN;TGFB1;ACE;ITGB3;F2;ICAM1;MBL2
	Frs2-mediated activation Homo sapiens R-HSA-170968	7.43E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Hypertrophic cardiomyopathy	6.82E-06	IL6;TGFB1;ACE;ITGB3;TNF	Oocyst	2.28E-05	CD4;CD40LG;IFNG
	Prolonged ERK activation events Homo sapiens R-	7.77E-	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Choline metabolism in	1.03E-	NRAS;PIK3CA;AKT1;MAPK1;KRAS	A-431 cell	2.28E-	STAT1;CASP3;AKT1

	HSA-169893	05		cancer	05			05	
	Activation of RAS in B cells Homo sapiens R-HSA-1169092	8.51E-05	NRAS;KRAS	Longevity regulating pathway	1.26E-05	NRAS;PIK3CA;AKT1;KRAS;TP53	Neural stem cell	2.35E-05	CASP3;STAT3;AKT1;TP53;VEGFA
	Signalling to RAS Homo sapiens R-HSA-167044	8.51E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Serotonergic synapse	2.07E-05	NRAS;CASP3;MAPK1;KRAS;PTGS2	Leukocyte	2.92E-05	IFNA1;IL1B;CCL5;CCL3;HLA-DRB1;TLR2
	Signalling to ERKs Homo sapiens R-HSA-187687	9.93E-05	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Regulation of actin cytoskeleton	4.36E-05	NRAS;PIK3CA;ITGB3;MAPK1;KRAS;F2	Blood	3.02E-05	IL1RN;ITGB3;PTGS2;TNF;ICAM1;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;JAK2;ELANE;MBL2;PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;HLA-A;MMP9;IL2;CD4;FCGR2A;IL1B;ALB;KRAS;TP53;TLR4;HLA-DRB1;HLA-DQB1;TLR2
	FGFR1 mutant receptor activation Homo sapiens R-HSA-1839124	1.03E-04	PIK3CA;STAT1;STAT3	Autophagy	5.21E-05	NRAS;PIK3CA;AKT1;MAPK1;KRAS	Sporozoite	3.61E-05	CD4;IFNG;IL2
	PI5P, PP2A and IER3 Regulate PI3K/AKT Signaling Homo sapiens R-	1.05E-0	PIK3CA;AKT1;MAPK1;PTPN11	Insulin signaling pathwa	5.21E-0	NRAS;PIK3CA;AKT1;MAPK1;KRAS	Portal vein	4.72E-0	IL6;ALB;F2

	HSA-6811558	4		y	5			5	
	TRAF6 mediated IRF7 activation Homo sapiens R-HSA-933541	1.14E-04	IFNA1;DDX58;IFNB1	Epithelial cell signaling in Helicobacter pylori infection	5.42E-05	CXCL8;CASP3;CCL5;PTPN11	Amnion	4.72E-05	IFNA1;IFNB1;PTGS2
	Apoptosis Homo sapiens R-HSA-109581	1.19E-04	CASP3;AKT1;TP53;TLR4;TLR3	Complement and coagulation cascades	1.16E-04	SERPINE1;F2;F3;MBL2	Autonomic nervous system	5.42E-05	IL6;ACE;IL1B;TNF
	Programmed Cell Death Homo sapiens R-HSA-5357801	1.29E-04	CASP3;AKT1;TP53;TLR4;TLR3	TGF-beta signaling pathway	1.71E-04	TGFB1;IFNG;MAPK1;TNF	Fetal membrane	6.04E-05	IL1B;TNF;MMP9
	Negative regulation of the PI3K/AKT network	1.44E	PIK3CA;AKT1;MAPK1;PTPN11	Aldosterone-reg	1.76E	PIK3CA;MAPK1;KRAS	SH-SY5Y cell	6.05E	PRNP;CASP3;AKT1;TP53

	Homo sapiens R-HSA-199418	-04		ulated sodium reabsorption	-04			-05	
	Generation of second messenger molecules Homo sapiens R-HSA-202433	1.49E-04	CD4;HLA-DRB1;HLA-DQB1	Fc gamma R-mediated phagocytosis	1.93E-04	FCGR2A;PIK3CA;AKT1;MAPK1	Syncytium	7.58E-05	CD4;CCL5;CCR5
	Platelet Aggregation (Plug Formation) Homo sapiens R-HSA-76009	1.76E-04	ITGB3;AKT1;F2	Axon guidance	1.99E-04	NRAS;PIK3CA;MAPK1;PTPN11;KRAS	Neuro-2a cell	1.03E-04	PRNP;CASP3;AKT1
	Interleukin-1 processing Homo sapiens R-HSA-448706	1.78E-04	IL1A;IL1B	Progesterone-mediated oocyte maturation	2.17E-04	PIK3CA;AKT1;MAPK1;KRAS	Renal vein	1.27E-04	ALB;F2
	MyD88-independent TLR3/TLR4 cascade Homo	1.93E	MAPK1;PTPN11;TLR4;TLR3	Transcriptional misr	2.55E	IL6;CXCL8;MMP9;TP53;ELANE	U-373 MG cell	1.27E	IL1B;TP53

	sapiens R-HSA-166166	-04		egulation in cancer	-04			-04	
	Toll Like Receptor 3 (TLR3) Cascade Homo sapiens R-HSA-168164	1.93E-04	MAPK1;PTPN11;TLR4;TLR3	Focal adhesion	3.14E-04	PIK3CA;ITGB3;AKT1;MAPK1;VEGFA	Genital mucosa	1.27E-04	CD4;CCR5
	TRIF-mediated TLR3/TLR4 signaling Homo sapiens R-HSA-937061	1.93E-04	MAPK1;PTPN11;TLR4;TLR3	Diabetic cardiomyopathy	3.29E-04	TGFB1;ACE;PIK3CA;AKT1;MMP9	Amyloid plaque	1.49E-04	PRNP;IL1B;APOE
	FCERI mediated MAPK activation Homo sapiens R-HSA-2871796	2.05E-04	NRAS;ITGB3;MAPK1;KRAS;JAK2;IL2	Type II diabetes mellitus	3.38E-04	PIK3CA;MAPK1;TNF	Myoblast	2.09E-04	TGFB1;CASP3;AKT1;TNF
	Downstream TCR signaling Homo sapiens R-HSA-202424	2.09E-04	CD4;PIK3CA;HLA-DRB1;HLA-DQB1	Leukocyte transendothelial migration	3.58E-04	PIK3CA;PTPN11;MMP9;ICAM1	Rhizome	2.37E-04	CASP3;TNF
	Negative regulation of MAPK pathway	2.23	NRAS;MAPK1;KRAS	Regulation of	5.74	PIK3CA;AKT1;PTGS2	C6 glioma cell	2.37	AKT1;TP53

	Homo sapiens R-HSA-5675221	E-04		lipolysis in adipocytes	E-04			E-04	
	Intrinsic Pathway for Apoptosis Homo sapiens R-HSA-109606	2.58E-04	CASP3;AKT1;TP53	Long-term depression	7.40E-04	NRAS;MAPK1;KRAS	Thymoma cell	2.37E-04	IL1A;CD4
	Signaling by FGFR2 in disease Homo sapiens R-HSA-5655253	2.77E-04	NRAS;PIK3CA;KRAS	Long-term potentiation	0.00102	NRAS;MAPK1;KRAS	Mesothelioma cell line	3.04E-04	CASP3;AKT1
	Interleukin-1 signaling Homo sapiens R-HSA-446652	2.96E-04	IL1A;IL1RN;IL1B	Mitophagy	0.00107	NRAS;KRAS;TP53	U-251 MG cell	3.04E-04	AKT1;TP53
	EGFR Transactivation by Gastrin Homo sapiens R-HSA-2179392	3.04E-04	NRAS;KRAS	Oxytocin signaling pathway	0.00111	NRAS;MAPK1;KRAS;PTGS2	vx2	3.04E-04	F2;VEGFA
	SHC-related events triggered by IGF1R Homo	3.04E	NRAS;KRAS	p53 signaling pat	0.001	CASP3;SERPINE1;TP53	Laryngeal cell line	3.04E	CD40LG;TP53

	sapiens R-HSA-2428933	-04		hway	31			-04	
	Class A/1 (Rhodopsin-like receptors) Homo sapiens R-HSA-373076	3.72E-04	CXCL8;CCL5;CCL3;CCL2;CCR5;F2	Gap junction	0.002244	NRAS;MAPK1;KRAS	Submucosa	4.59E-04	CD4;TNF;TP53
	TRIF-mediated programmed cell death Homo sapiens R-HSA-2562578	3.79E-04	TLR4;TLR3	GnRH signaling pathway	0.002662	NRAS;MAPK1;KRAS	Fetal serum	4.63E-04	CD40LG;ALB
	TCR signaling Homo sapiens R-HSA-202403	4.08E-04	CD4;PIK3CA;HLA-DRB1;HLA-DQB1	Dilated cardiomyopathy	0.002887	TGFB1;ITGB3;TNF	Ampulla	5.54E-04	KRAS;TP53
	MyD88 deficiency (TLR2/4) Homo sapiens R-HSA-5602498	4.63E-04	TLR4;TLR2	Melanogenesis	0.003131	NRAS;MAPK1;KRAS	Stellate cell	5.54E-04	IL6;TGFB1
	IRAK4 deficiency (TLR2/4) Homo sapiens R-HSA-5603041	4.63E-04	TLR4;TLR2	Primary immunodeficiency	0.005562	CD4;CD40LG	ECV-304 cell	5.54E-04	TNF;VEGFA

	PI-3K cascade:FGFR1 Homo sapiens R-HSA-5654689	4.63E-04	PIK3CA;AKT1;MAPK1;PTPN11	Ferroptosis	0.006652	PRNP;TP53	Venule	5.54E-04	IL1B;ALB
	PI-3K cascade:FGFR3 Homo sapiens R-HSA-5654710	4.63E-04	PIK3CA;AKT1;MAPK1;PTPN11	Carbohydrate digestion and absorption	0.008449	PIK3CA;AKT1	b12	5.54E-04	CD4;CCR5
	PI3K events in ERBB4 signaling Homo sapiens R-HSA-1250342	4.63E-04	PIK3CA;AKT1;MAPK1;PTPN11	Alcoholism	0.017758	NRAS;MAPK1;KRAS	Blastocyst	5.71E-04	TGFB1;CASP3;STAT3;ALB
	PIP3 activates AKT signaling Homo sapiens R-HSA-1257604	4.63E-04	PIK3CA;AKT1;MAPK1;PTPN11	Amyotrophic lateral sclerosis	0.022441	NOS2;CASP3;TNF;TP53	Lumbar spine	6.37E-04	CRP;IL6;ALB
	PI-3K cascade:FGFR4 Homo sapiens R-HSA-5654720	4.63E-04	PIK3CA;AKT1;MAPK1;PTPN11	cAMP signaling pathway	0.025944	PIK3CA;AKT1;MAPK1	Nasopharyngeal carcinom	6.54E-04	CASP3;TP53

							a cell line		
	PI-3K cascade:FGFR2 Homo sapiens R-HSA-5654695	4.63E-04	PIK3CA;AKT1;MAPK1;PTPN11	Inflammatory mediator regulation of TRP channels	0.033944	PIK3CA;IL1B	Adult T-cell lymphoma cell	6.54E-04	CD4;IL2
	C-type lectin receptors (CLRs) Homo sapiens R-HSA-5621481	4.77E-04	NRAS;CD209;IL1B;KRAS	AMPK signaling pathway	0.048944	PIK3CA;AKT1	Ankle joint	6.54E-04	IL1B;TNF
	GAB1 signalosome Homo sapiens R-HSA-180292	5.07E-04	PIK3CA;AKT1;MAPK1;PTPN11	Cell cycle	0.051888	TGFB1;TP53	Abdominal adipose tissue	6.70E-04	CRP;SERPINE1;AKT1
	PI3K/AKT activation Homo sapiens R-HSA-198203	5.07E-04	PIK3CA;AKT1;MAPK1;PTPN11	Arginine biosynthesis	0.062996	NOS2	Resting cell	7.61E-04	CD4;IL2
	PECAM1 interactions	5.	ITGB3;PTPN11	Renin-	0.	ACE	Cyst	8.	CD40LG;KRAS;TP53

	Homo sapiens R-HSA-210990	54E-04		angiotensin system	06573			15E-04	
	ECM proteoglycans Homo sapiens R-HSA-3000178	5.74E-04	TGFB1;ITGB3;SERPINE1	Spinocerebellar ataxia	0.06669	PIK3CA;AKT1	Esophageal cancer cell line	8.76E-04	CASP3;TP53
	p38MAPK events Homo sapiens R-HSA-171007	6.54E-04	NRAS;KRAS	Retrograde endocannabinoid signaling	0.07079	MAPK1;PTGS2	Human brain microvascular endothelial cell	8.76E-04	TNF;ICAM1
	Early Phase of HIV Life Cycle Homo sapiens R-HSA-162594	7.61E-04	CD4;CCR5	Adrenergic signaling in cardiomyocytes	0.07246	AKT1;MAPK1	Fibrosarcoma cell	0.00113	NRAS;MMP9
	Regulation of TP53 Activity through Association with Co-	7.61E-	AKT1;TP53	Hippo signaling pat	0.0835	TGFB1;SERPINE1	Aerial part	0.00111	NOS2;TNF

	factors Homo sapiens R-HSA-6804759	04		hway	9			3	
	TRAF3-dependent IRF activation pathway Homo sapiens R-HSA-918233	7.61E-04	DDX58;IFNB1	cGMP-PKG signaling pathway	0.08711	AKT1;MAPK1	Saphenous vein	0.001133	SERPINE1;MMP9
	Factors involved in megakaryocyte development and platelet production Homo sapiens R-HSA-983231	7.98E-04	IFNA1;IFNB1;JAK2;TP53	Proteasome	0.12722	IFNG	Tear gland	0.001133	CD4;CD40LG
	Prolactin receptor signaling Homo sapiens R-HSA-1170546	8.76E-04	PTPN11;JAK2	Arginine and proline metabolism	0.13748	NOS2	Jugular vein	0.001133	ALB;F2
	TRAF6 mediated induction of TAK1 complex Homo sapiens R-HSA-937072	1.00E-03	TLR4;TLR3	Cholesterol metabolism	0.13748	APOE	Style	0.001127	CRP;ACE
	Spry	1	MAPK1;PTPN11	Ova	0	PTGS2	dr9	0	HLA-A;HLA-DRB1

	regulation of FGF signaling Homo sapiens R-HSA-1295596	.00E-03		rian steroid ogenesis	.140003			.001423	
	GRB2 events in ERBB2 signaling Homo sapiens R-HSA-1963640	1.00E-03	NRAS;KRAS	Thermogenesis	0.149591	NRAS;KRAS	Penis	0.001773	TGFB1;TP53
	Ligand-dependent caspase activation Homo sapiens R-HSA-140534	0.001133	TLR4;TLR3	Calcium signaling pathway	0.157811	NOS2;VEGFA	Glandular epithelium	0.001733	PTGS2;VEGFA
	SHC-mediated cascade:FGFR3 Homo sapiens R-HSA-5654704	0.001227	NRAS;KRAS	Arachidonic acid metabolism	0.165114	PTGS2	Peripheral blood stem cell	0.001919	CD4;IL2
	SHC1 events in ERBB2 signaling Homo sapiens R-HSA-1250196	0.001227	NRAS;KRAS	Parkinson disease	0.167116	CASP3;TP53	HEp-2 cell	0.001919	IFNB1;CASP3
	Role of LAT2/NTAL/LAB on calcium mobilizatio	0.0011	PIK3CA;AKT1;MAPK1;PTPN11	Basal cell carcino	0.17	TP53	Blood platelet	0.0022	SERPINE1;PTGS2;NRAS;CASP3;CCL5;AKT1;MAPK1;APOE;JAK2;ELANE;PRNP;TGFB1;ACE;STAT1;STAT3;PTPN11;HLA-

	n Homo sapiens R-HSA-2730905	33		ma	07			55	A;F2;MMP9;FCGR2A;CD40LG;IFNG;PIK3CA;IL7;ALB;KRAS;TLR4
	HDL-mediated lipid transport Homo sapiens R-HSA-194223	0.00142	ALB;APOE	Endocytosis	0.17033	HLA-A;CCR5	Urine	0.00266	ALB;F2
	Syndecan interactions Homo sapiens R-HSA-3000170	0.00157	TGFB1;ITGB3	Renin secretion	0.18477	ACE	Neurofibrillary tangle	0.00286	PRNP;APOE
	PI3K Cascade Homo sapiens R-HSA-109704	0.00164	PIK3CA;AKT1;PTPN11	Adherens junction	0.18952	MAPK1	Seminiferous tubule	0.00286	CASP3;TP53
	RIG-I/MDA5 mediated induction of IFN-alpha/beta pathways Homo sapiens R-HSA-168928	0.00164	IFNA1;DDX58;IFNB1	Inositol phosphate metabolism	0.19431	PIK3CA	HMEpC cell	0.00286	AKT1;TP53
	Nef-mediates down modulation of cell surface receptors	0.00173	CD4;HLA-A	Thyroid hormone synthesi	0.19908	ALB	SAOS-2 cell	0.00308	CASP3;TP53

	by recruiting them to clathrin adapters Homo sapiens R-HSA-164938			s					
	Signal transduction by L1 Homo sapiens R-HSA-445144	0.001773	ITGB3;MAPK1	Arrhythmogenic right ventricular cardiomyopathy	0.203811	ITGB3	Spleen	0.003222	IL1RN;IFNA1;ITGB3;SERPINE1;TNF;ICAM1;CASP3;AKT1;CTLA4;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;STAT1;IFNB1;STAT3;PTPN11;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	SHC-mediated cascade:FGFR1 Homo sapiens R-HSA-5654688	0.001773	NRAS;KRAS	Bacterial invasion of epithelial cells	0.203811	PIK3CA	Keloid	0.00333	TGFB1;SERPINE1
	CD28 dependent PI3K/Akt signaling Homo sapiens R-HSA-389357	0.00199	PIK3CA;AKT1	Peroxisome	0.215533	NOS2	Myotube	0.00335	IL6;AKT1;TNF
	GPCR ligand	0.	CXCL8;CCL5;CCL3;CCL2;CCR5;F2	Hunting	0.	CASP3;TP53	Lung	0.	NRAS;KRAS;TP53

	binding Homo sapiens R-HSA-500792	0.002		tondisease	2.2816		cancer cell	0.0035	
	Regulation of TP53 Activity through Acetylation Homo sapiens R-HSA-6804758	0.00208	AKT1;TP53	ECM-receptor interaction	0.22937	ITGB3	Vascular tissue	0.00353	APOE;VEGFA
	PI3K/AKT Signaling in Cancer Homo sapiens R-HSA-2219528	0.00221	PIK3CA;AKT1;PTPN11	Circadian entrainment	0.24969	MAPK1	Neutrophil	0.00377	MMP9;ELANE
	IKK complex recruitment mediated by RIP1 Homo sapiens R-HSA-937041	0.00226	TLR4;TLR3	Phosphatidylinositol signaling system	0.24969	PIK3CA	Ring stage	0.00377	KRAS;TP53
	ATF4 activates genes Homo sapiens R-HSA-380994	0.00246	CXCL8;CCL2	Parathyroid hormone synthesis, secretion	0.26947	MAPK1	Endochondral bone	0.00377	TGFB1;VEGFA

				and action					
	Oxidative Stress Induced Senescence Homo sapiens R-HSA-2559580	0.00246	IFNB1;MAPK1;TP53	Glucagon signaling pathway	0.27164	AKT1	High endothelial venule	0.00401	CD4;ICAM1
	MyD88:Mal cascade initiated on plasma membrane Homo sapiens R-HSA-166058	0.00254	MAPK1;TLR4;TLR2	Glutamatergic synapse	0.28663	MAPK1	Monocyte	0.00423	IL1RN;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;MAPK1;APOE;JAK2;ELANE;MBL2;PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;HLA-A;F2;F3;VEGFA;CD4;FCGR2A;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Toll Like Receptor TLR1:TLR2 Cascade Homo sapiens R-HSA-168179	0.00254	MAPK1;TLR4;TLR2	Oocyte meiosis	0.31774	MAPK1	Merozoite	0.00426	CD4;CD40LG
	Toll Like Receptor TLR6:TLR2 Cascade Homo sapiens R-HSA-168188	0.00254	MAPK1;TLR4;TLR2	Dopaminergic synapse	0.32238	AKT1	NCI-H226Br cell	0.00426	FCGR2A;ICAM1
	Toll Like Receptor 2 (TLR2) Cascade Homo sapiens R-	0.00255	MAPK1;TLR4;TLR2	Vascular smooth mus	0.32258	MAPK1	adipose-derived ste	0.00442	TGFB1;VEGFA

	HSA-181438	4		cle con trac tion			m cell	6	
	PTK6 Regulates RHO GTPases, RAS GTPase and MAP kinases Homo sapiens R-HSA-8849471	0.002666	NRAS;KRAS	Cus hing syn dro me	0.36853	MAPK1	Con cep tus	0.00452	IFNA1;PTGS2
	Integrin alphaIIb beta3 signaling Homo sapiens R-HSA-354192	0.002886	ITGB3;AKT1	Wnt sign alin g pat hwa y	0.38888	TP53	Lun g	0.00584	IL1RN;IFNA1;ITGB3;SERPINE1;TNF;ICAM1;CASP3;AKT1;CTLA4;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	The role of Nef in HIV-1 replication and disease pathogenesis Homo sapiens R-HSA-164952	0.003088	CD4;HLA-A	Neu roac tive liga nd-rece ptor inte ract ion	0.6388	F2	Blas to mer e	0.006883	TGFB1;ALB
	PERK regulates	0.	CXCL8;CCL2				Call us	0.	TGFB1;VEGFA

	gene expression Homo sapiens R-HSA-381042	0.0308						0.00683	
	Activation of BH3-only proteins Homo sapiens R-HSA-114452	0.0033	AKT1;TP53				Cancellous bone	0.00683	IL6;TGFB1
	Negative regulation of FGFR3 signaling Homo sapiens R-HSA-5654732	0.0033	MAPK1;PTPN11				Dental pulp	0.00683	TGFB1;VEGFA
	Molecules associated with elastic fibres Homo sapiens R-HSA-2129379	0.0053	TGFB1;ITGB3				Pelvis	0.00715	CRP;TP53
	Negative regulation of FGFR4 signaling Homo sapiens R-HSA-5654733	0.0037	MAPK1;PTPN11				Yolk sac	0.00715	ALB;VEGFA
	Degradation of the extracellular matrix Homo sapiens R-HSA-	0.0037	CASP3;MMP9;ELANE				Cerebrospinal fluid	0.00747	APOE;F2

	1474228								
	Thrombin signalling through proteinase activated receptors (PARs) Homo sapiens R-HSA-456926	0.004401	MAPK1;F2				Bone matrix	0.007477	TGFB1;MMP9
	Activation of Matrix Metalloproteinases Homo sapiens R-HSA-1592389	0.004401	MMP9;ELANE				Germ cell	0.007765	TGFB1;CASP3;AKT1;TP53
	Oncogene Induced Senescence Homo sapiens R-HSA-2559585	0.004401	MAPK1;TP53				Astrocytoma cell	0.008499	CCL2;TP53
	Negative regulation of FGFR1 signaling Homo sapiens R-HSA-5654726	0.004401	MAPK1;PTPN11				Finger	0.009266	CD4;TGFB1;CCR5;F2;TP53
	CD28 co-stimulation Homo sapiens R-HSA-389356	0.004426	PIK3CA;AKT1				T-lymphocyte	0.009936	IL10;CASP3;CCL3;PTPN11
	Lipoprotein	0	ALB;APOE				Bla	0	CRP;STAT1;ALB;HLA-

	metabolism Homo sapiens R-HSA-174824	.00452					dder	.00979	A;HLA-DQB1
	Negative regulation of FGFR2 signaling Homo sapiens R-HSA-5654727	0.00452	MAPK1;PTPN11				Cuticle	0.01444	F2;F3
	Regulation of TP53 Degradation Homo sapiens R-HSA-6804757	0.00478	AKT1;TP53				Glial cell	0.01466	TP53
	Regulation of TP53 Expression and Degradation Homo sapiens R-HSA-6806003	0.00505	AKT1;TP53				Pan IN cell	0.01466	KRAS
	Fcgamma receptor (FCGR) dependent phagocytosis Homo sapiens R-HSA-2029480	0.00536	FCGR2A;PIK3CA;MAPK1				3t6	0.01466	FCGR2A
	Association of TriC/CCT with target proteins during	0.005	STAT3;TP53				SET-2 cell	0.014	JAK2

	biosynthesis Homo sapiens R-HSA-390471	91						66	
	Collagen degradation Homo sapiens R-HSA-1442490	0.005591	MMP9;ELANE				Cholangiocarcinoma cell	0.014666	STAT3
	Formation of Fibrin Clot (Clotting Cascade) Homo sapiens R-HSA-140877	0.005591	F2;F3				gk1.5	0.014666	CD4
	Nuclear signaling by ERBB4 Homo sapiens R-HSA-1251985	0.005591	PTPN11;JAK2				Hairy cell leukemia cell	0.014666	IFNA1
	Elastic fibre formation Homo sapiens R-HSA-1566948	0.006652	TGFB1;ITGB3				Inflammatory cell	0.014666	F3
	Non-integrin membrane-ECM interactions Homo sapiens R-HSA-	0.006883	TGFB1;ITGB3				Blood plasma	0.015199	SERPINE1;F2;F3

	3000171								
	GPCR downstream signaling Homo sapiens R-HSA-388396	0.00794	CXCL8;PIK3CA;CCL5;AKT1;JAK2;CCR5;F2;IL2				Vascular system	0.01574	PRNP;PIK3CA;IL1B;SERPINE1;HLA-A;PTGS2;TP53
	Defensins Homo sapiens R-HSA-1461973	0.00849	CD4;TLR2				RAMOS cell	0.01757	CD40LG
	Creation of C4 and C2 activators Homo sapiens R-HSA-166786	0.00992	CRP;MBL2				Anaplastic large cell lymphoma cell line	0.01757	STAT3
	Immunoregulatory interactions between a Lymphoid and a non-Lymphoid cell Homo sapiens R-HSA-198933	0.01119	CD40LG;HLA-A;ICAM1				Retinal ganglion cell line	0.01757	CASP3
	Initial triggering of complement Homo sapiens R-HSA-	0.01272	CRP;MBL2				Tongue cancer cell line	0.01757	MMP9

	166663								
	Role of phospholipids in phagocytosis Homo sapiens R-HSA-2029485	0.01357	FCGR2A;PIK3CA				Vesicular gland	0.01757	PTGS2
	Constitutive Signaling by Aberrant PI3K in Cancer Homo sapiens R-HSA-2219530	0.014	PIK3CA;PTPN11				foreign-body giant cell	0.01757	IL4
	Extrinsic Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140834	0.01466	F3				Human lens epithelial cell line	0.01757	ELANE
	SMAC binds to IAPs Homo sapiens R-HSA-111463	0.01466	CASP3				Sertoli cell	0.01916	IL1A;TGFB1
	SMAC-mediated dissociation of IAP:caspase complexes Homo sapiens R-HSA-111464	0.01466	CASP3				Dentin	0.01916	TGFB1;MMP9

	SMAC-mediated apoptotic response Homo sapiens R-HSA-111469	0.01466	CASP3				Osteoclastoma cell	0.02047	ITGB3
	Cytochrome c-mediated apoptotic response Homo sapiens R-HSA-111461	0.01466	CASP3				Urinary bladder cancer cell	0.02047	TGFB1
	Activation of caspases through apoptosome-mediated cleavage Homo sapiens R-HSA-111459	0.01466	CASP3				RT-4 cell	0.02047	TP53
	Integrin cell surface interactions Homo sapiens R-HSA-216083	0.01673	ITGB3;ICAM1				Retinal pigment epithelium cell line	0.02047	VEGFA
	Regulation of RAS by GAPs Homo sapiens R-HSA-5658442	0.01673	NRAS;KRAS				BA/F3 cell	0.02047	JAK2

	Lectin pathway of complement activation Homo sapiens R-HSA-166662	0.01757	MBL2				BEL-7402 cell	0.02047	CASP3
	RSK activation Homo sapiens R-HSA-444257	0.01757	MAPK1				Bm	0.02047	IL7
	NADE modulates death signalling Homo sapiens R-HSA-205025	0.01757	CASP3				Bronchoalveolar stem cell	0.02047	KRAS
	SMAD2/3 Phosphorylation Motif Mutants in Cancer Homo sapiens R-HSA-3304356	0.01757	TGFB1				pg13	0.02047	TP53
	CLEC7A/inflammasome pathway Homo sapiens R-HSA-5660668	0.01757	IL1B				Mesenchymal epithelium	0.02336	TGFB1
	Synthesis of 15-eicosatetraenoic acid derivatives	0.017	PTGS2				Metacyclic for	0.023	APOE

	Homo sapiens R-HSA-2142770	57					m	36	
	Negative feedback regulation of MAPK pathway Homo sapiens R-HSA-5674499	0.017757	MAPK1				Umbilical cord	0.023336	PTPN11
	TNFR1-mediated ceramide production Homo sapiens R-HSA-5626978	0.017757	TNF				7d4	0.023336	IL2
	Lipid digestion, mobilization, and transport Homo sapiens R-HSA-73923	0.018666	ALB;APOE				A-172 cell	0.023336	TP53
	ISG15 antiviral mechanism Homo sapiens R-HSA-1169408	0.019116	DDX58;STAT1				Empyema fluid	0.023336	CRP
	Antiviral mechanism by IFN-stimulated genes Homo sapiens R-HSA-	0.019116	DDX58;STAT1				Epithelial lining fluid	0.023336	ELANE

	1169410								
	Infectious disease Homo sapiens R-HSA-5663205	0.019377	CD4;TGFB1;HLA-A;CCR5				Lymphocyte	0.025555	CCL3;CTLA4
	Signaling by TGF-beta Receptor Complex Homo sapiens R-HSA-170834	0.019666	TGFB1;SERPINE1				Mesenteric vein	0.026244	ALB
	Binding and Uptake of Ligands by Scavenger Receptors Homo sapiens R-HSA-2173782	0.020177	ALB;APOE				Histiocytic lymphoma cell	0.026244	IL1B
	SLC transporter disorders Homo sapiens R-HSA-5619102	0.020477	ALB				SGC-7901 cell	0.026244	CASP3
	Apoptotic factor-mediated response Homo sapiens R-HSA-111471	0.020477	CASP3				Bone marrow stromal cell line	0.026244	IL7
	Loss of Function of TGFBR1 in	0.0	TGFB1				C6/36 cell	0.0	CD40LG

	Cancer Homo sapiens R-HSA-3656534	2047						2624	
	TGFBR1 KD Mutants in Cancer Homo sapiens R-HSA-3656532	0.02047	TGFB1				Eht	0.02624	ACE
	Loss of Function of SMAD2/3 in Cancer Homo sapiens R-HSA-3304349	0.02047	TGFB1				Ga MG cell	0.02624	TP53
	SMAD2/3 MH2 Domain Mutants in Cancer Homo sapiens R-HSA-3315487	0.02047	TGFB1				Liver	0.02626	IL1RN;ITGB3;SERPINE1;TNF;ICAM1;CASP3;AKT1;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	Transcriptional regulation of white adipocyte differentiation Homo sapiens R-	0.02279	TGFB1;TNF				Spike	0.02669	CD4;CD40LG

	HSA-381340								
	Complement cascade Homo sapiens R-HSA-166658	0.02333	CRP;MBL2				Dendritic cell	0.02733	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;PTGS2;F3;ICAM1;CD4;FCGR2A;IL1B;CCL5;CCL3;AKT1;MAPK1;KRAS;JAK2;CCR5;TP53;HLA-DRB1;MBL2;HLA-DQB1;TLR2
	VEGF ligand-receptor interactions Homo sapiens R-HSA-194313	0.02336	VEGFA				Endoderm	0.02903	TGFB1;ALB
	VEGF binds to VEGFR leading to receptor dimerization Homo sapiens R-HSA-195399	0.02336	VEGFA				Mast cell line	0.02912	CCL2
	Activation of PUMA and translocation to mitochondria Homo sapiens R-HSA-139915	0.02336	TP53				Mature cell	0.02912	CD4
	Signaling by TGF-beta Receptor Complex in Cancer Homo sapiens R-	0.02336	TGFB1				Pterygium	0.02912	TP53

	HSA-3304351								
	Nicotinamide salvaging Homo sapiens R-HSA-197264	0.02336	PTGS2				Retinoblastoma cell line	0.02912	TP53
	TP53 Regulates Metabolic Genes Homo sapiens R-HSA-5628897	0.02555	AKT1;TP53				SK-N-MC cell	0.02912	CASP3
	Transport of gamma-carboxylated protein precursors from the endoplasmic reticulum to the Golgi apparatus Homo sapiens R-HSA-159763	0.02624	F2				Blast cell	0.02912	ITGB3
	Alpha-defensins Homo sapiens R-HSA-1462054	0.02624	CD4				Colonocyte	0.02912	PTGS2
	Nef Mediated CD4 Down-regulation Homo sapiens R-	0.02662	CD4				Thoracic spine	0.02911	CRP

	HSA-167590	4						2	
	AKT phosphorylates targets in the nucleus Homo sapiens R-HSA-198693	0.026244	AKT1				Entericnervous system	0.029122	PRNP
	PTK6 Regulates RTKs and Their Effectors AKT1 and DOK1 Homo sapiens R-HSA-8849469	0.026244	AKT1				Glioblastoma multiforme cell	0.029122	TP53
	Unfolded Protein Response (UPR) Homo sapiens R-HSA-381119	0.026699	CXCL8;CCL2				p1	0.029122	JAK2
	Platelet homeostasis Homo sapiens R-HSA-418346	0.027227	NOS2;PTPN11				Head and neck cancer cell	0.029122	TP53
	HIV Infection Homo sapiens R-HSA-162906	0.027878	CD4;HLA-A;CCR5				Hypopharynx	0.029121	TP53

		3						2	
	Netrin mediated repulsion signals Homo sapiens R-HSA-418886	0.029122	PTPN11				IMR-32 cell	0.029122	TP53
	Removal of aminoterminal propeptides from gamma-carboxylated proteins Homo sapiens R-HSA-159782	0.029122	F2				Mammary epithelial cell line	0.029122	TGFB1
	Gamma-carboxylation of protein precursors Homo sapiens R-HSA-159740	0.029122	F2				Gallbladder	0.030833	IL1RN;IFNA1;SERPINE1;ICAM1;CASP3;AKT1;CTLA4;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	Nef mediated downregulation of MHC class I complex cell surface	0.029122	HLA-A				Meconium	0.031998	ALB

	expression Homo sapiens R-HSA-164940								
	eNOS activation Homo sapiens R-HSA-203615	0.02912	AKT1				Oropharynx	0.03198	TP53
	Tetrahydrobiopterin (BH4) synthesis, recycling, salvage and regulation Homo sapiens R-HSA-1474151	0.02912	AKT1				BTO:0000491	0.03198	ALB
	Ligand-independent caspase activation via DCC Homo sapiens R-HSA-418889	0.02912	CASP3				Chondrocyte cell line	0.03198	IL1B
	Signal attenuation Homo sapiens R-HSA-74749	0.02912	MAPK1				Trophoblast cell line	0.03198	MMP9
	Regulation of gene expression by Hypoxia-inducible	0.029	VEGFA				Elementary bod	0.031	CD40LG

	Factor Homo sapiens R-HSA-1234158	12					y	98	
	Activation of the AP-1 family of transcription factors Homo sapiens R-HSA-450341	0.02912	MAPK1				Peripheral blood	0.03268	PTGS2;HLA-DRB1
	Transport of organic anions Homo sapiens R-HSA-879518	0.03198	ALB				Medulloblastoma cell line	0.03484	TP53
	Interleukin-7 signaling Homo sapiens R-HSA-1266695	0.03198	IL7				Osteophyte	0.03484	TGFB1
	Gamma-carboxylation, transport, and amino-terminal cleavage of proteins Homo sapiens R-HSA-159854	0.03198	F2				Monocytic leukemia cell	0.03484	MMP9
	Apoptotic cleavage of cell	0.0	CASP3				RKO cell	0.0	TP53

	adhesion proteins Homo sapiens R-HSA-351906	3198						3484	
	EPH-Ephrin signaling Homo sapiens R-HSA-2682334	0.03206	MMP9;VEGFA				Sternum	0.03484	CRP
	Chaperonin-mediated protein folding Homo sapiens R-HSA-390466	0.03206	STAT3;TP53				Corn silk	0.03484	VEGFA
	TNFR2 non-canonical NF-kB pathway Homo sapiens R-HSA-5668541	0.03206	CD40LG;TNF				pro-B-lymphocyte cell line	0.03484	IL7
	L1CAM interactions Homo sapiens R-HSA-373760	0.03268	ITGB3;MAPK1				NAMALWA cell	0.03769	IFNA1
	Regulation of actin dynamics for phagocytic cup formation Homo	0.03331	FCGR2A;MAPK1				Bone marrow stem cell	0.03769	VEGFA

	sapiens R-HSA-2029482								
	G alpha (i) signalling events Homo sapiens R-HSA-418594	0.03392	CXCL8;CCL5;CCR5				Subcutaneous tissue	0.03769	ALB
	Endosomal/Vacuolar pathway Homo sapiens R-HSA-1236977	0.03484	HLA-A				Endometrial cancer cell line	0.03769	AKT1
	Caspase-mediated cleavage of cytoskeletal proteins Homo sapiens R-HSA-264870	0.03484	CASP3				Foam cell	0.03769	F3
	TP53 Regulates Transcription of Caspase Activators and Caspases Homo sapiens R-HSA-6803207	0.03484	TP53				Primordium	0.03782	TGFB1;AKT1
	TP53 Regulates Transcription of Death Receptors	0.0334	TP53				Lymph node	0.038	IL1RN;SERPINE1;ICAM1;CASP3;AKT1;CTLA4;JAK2;CCR5;MBL2;IL10;DDX58;IL13;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;

	and Ligands Homo sapiens R-HSA-6803211	84						44	TP53;TLR4;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	NF-kB activation through FADD/RIP-1 pathway mediated by caspase-8 and -10 Homo sapiens R-HSA-933543	0.03484	DDX58				PA-1 cell	0.04053	NRAS
	ERKs are inactivated Homo sapiens R-HSA-202670	0.03484	MAPK1				Preosteoclast	0.04053	MMP9
	Protein folding Homo sapiens R-HSA-391251	0.03586	STAT3;TP53				SW-1353 cell	0.04053	IL1B
	MHC class II antigen presentation Homo sapiens R-HSA-2132295	0.03716	HLA-DRB1;HLA-DQB1				Sympathetic nervous system	0.04053	ACE

	Signal regulatory protein (SIRP) family interactions Homo sapiens R-HSA-391160	0.037669	PTPN11				Gastrointestinal mucosa	0.040053	PTGS2
	Dissolution of Fibrin Clot Homo sapiens R-HSA-75205	0.037669	SERPINE1				HOS cell	0.040053	CCR5
	TP53 Regulates Transcription of Genes Involved in G1 Cell Cycle Arrest Homo sapiens R-HSA-6804116	0.037669	TP53				rt1	0.040053	CD4
	AKT phosphorylates targets in the cytosol Homo sapiens R-HSA-198323	0.037669	AKT1				Somatic cell	0.042555	ALB;TP53
	Activation of DNA fragmentation factor Homo sapiens R-HSA-	0.037669	CASP3				Superior vena cava	0.043336	ALB

	211227								
	Apoptosis induced DNA fragmentation Homo sapiens R-HSA-140342	0.037669	CASP3				Trypomastigote	0.043336	TLR2
	POU5F1 (OCT4), SOX2, NANOG activate genes related to proliferation Homo sapiens R-HSA-2892247	0.037669	STAT3				NCI-H1299 cell	0.046199	TP53
	Downregulation of ERBB2:ERBB3 signaling Homo sapiens R-HSA-1358803	0.037669	AKT1				Regio parietalis capitis	0.046199	APOE
	Advanced glycosylation endproduct receptor signaling Homo sapiens R-HSA-879415	0.037669	MAPK1				CEM cell	0.046199	CD4
	Trafficking and processing of endosomal	0.037	TLR3				Immature cell	0.046	CD4

	TLR Homo sapiens R-HSA-1679131	69						19	
	TNFR1-induced proapoptotic signaling Homo sapiens R-HSA-5357786	0.037669	TNF				B-lymphocyte cell line	0.046675	STAT1;MMP9;HLA-DRB1
	SUMOylation of transcription factors Homo sapiens R-HSA-3232118	0.040053	TP53				Megakaryocyte cell line	0.049	ITGB3
	TP53 regulates transcription of several additional cell death genes whose specific roles in p53-dependent apoptosis remain uncertain Homo sapiens R-HSA-6803205	0.040053	TP53				Np	0.049	IL1B
	Nicotinate metabolism Homo sapiens R-HSA-	0.040	PTGS2				Stalk cell	0.049	VEGFA

	196807	53							
	Synthesis of Prostaglandins (PG) and Thromboxanes (TX) Homo sapiens R-HSA-2162123	0.040053	PTGS2				Stoma	0.0499	ALB
	Golgi Cisternae Pericentriolar Stack Reorganization Homo sapiens R-HSA-162658	0.040053	MAPK1				Cervical mucus	0.0499	CD40LG
	GRB2:SOS provides linkage to MAPK signaling for Integrins Homo sapiens R-HSA-354194	0.043336	ITGB3				TZM-bl cell	0.0499	CCR5
	p130Cas linkage to MAPK signaling for integrins Homo sapiens R-HSA-372708	0.043336	ITGB3				WEHI-231 cell	0.0499	CD40LG
	Disorders of	0.	ALB				b21	0.	HLA-A

	transmembrane transporters Homo sapiens R-HSA-5619115	0.04336						0.049	
	Activation of BAD and translocation to mitochondria Homo sapiens R-HSA-111447	0.04336	AKT1				mbl2	0.049	MBL2
	Recycling of bile acids and salts Homo sapiens R-HSA-159418	0.04336	ALB				Tonsil	0.04968	CRP;IL1RN;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;AKT1;CCL2;MAPK1;APOE;JAK2;MBL2;IL10;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;CD40LG;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1
	Metabolism of Angiotensinogen to Angiotensins Homo sapiens R-HSA-2022377	0.04619	ACE				Chondrocyte	0.05181	NOS2
	TGF-beta receptor signaling in EMT (epithelial	0.046	TGFB1				Venom gland	0.051	F2

	to mesenchymal transition) Homo sapiens R-HSA-2173791	19						81	
	PI3K events in ERBB2 signaling Homo sapiens R-HSA-1963642	0.046199	PIK3CA				Zygote	0.051881	ALB
	TNF receptor superfamily (TNFSF) members mediating non-canonical NF-kB pathway Homo sapiens R-HSA-5676594	0.049	CD40LG				Trophozoite	0.054661	CD40LG
	Chylomicron-mediated lipid transport Homo sapiens R-HSA-174800	0.049	APOE				Adult liver stem cell	0.05774	ALB
	KSRP (KHSRP) binds and destabilizes mRNA Homo sapiens R-	0.049	AKT1				Egg yolk	0.05774	APOE

	HSA-450604								
	Butyrate Response Factor 1 (BRF1) binds and destabilizes mRNA Homo sapiens R-HSA-450385	0.049	AKT1				Large intestine	0.0574	PIK3CA
	Formation of Senescence-Associated Heterochromatin Foci (SAHF) Homo sapiens R-HSA-2559584	0.049	TP53				Pancreatic beta cell line	0.060019	CASP3
	Platelet sensitization by LDL Homo sapiens R-HSA-432142	0.049	PTPN11				Chorioallantois	0.060019	AKT1
	Regulation of signaling by CBL Homo sapiens R-HSA-912631	0.05181	PIK3CA				Ectoderm	0.061008	TGFB1;TP53
	TP53 Regulates Transcription of Genes Involved in G2 Cell	0.0518	TP53				Parenchyma	0.0615	PRNP;TGFB1;DDX58;STAT1;SERPINE1;STAT3;PTPN11;PTGS2;F3;ICAM1;VEGFA;IL6;IL7;CASP3;IL1B;AKT1;CCL2;KRAS;APOE;TP53;HLA-DQB1

	Cycle Arrest Homo sapiens R-HSA-6804114	1						9	
	Scavenging by Class A Receptors Homo sapiens R-HSA-3000480	0.054611	APOE				Glioblastoma cell	0.062996	NOS2
	TP53 Regulates Transcription of Genes Involved in Cytochrome C Release Homo sapiens R-HSA-6803204	0.054611	TP53				Tubercle	0.062996	ALB
	Regulation of TP53 Activity through Methylation Homo sapiens R-HSA-6804760	0.054611	TP53				g2	0.062996	TP53
	Host Interactions of HIV factors Homo sapiens R-HSA-162909	0.055655	CD4;HLA-A				Bulb	0.065733	PIK3CA
	Cell-Cell communication Homo sapiens R-	0.05	PIK3CA;PTPN11				Fascia	0.06	F2

	HSA-1500931	7 1 8						5 7 3	
	eNOS activation and regulation Homo sapiens R-HSA-203765	0 . 0 5 7 4	AKT1				Female pudendum	0 . 0 7 1 2 4	TP53
	Metabolism of nitric oxide Homo sapiens R-HSA-202131	0 . 0 5 7 4	AKT1				Mantle cell lymphoma cell	0 . 0 7 1 2 4	AKT1
	Signaling by Hippo Homo sapiens R-HSA-2028269	0 . 0 5 7 4	CASP3				Thymus	0 . 0 7 1 5 2	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;HLA-A;MMP9;ICAM1;CD4;CCL5;ALB;AKT1;CCL2;MAPK1;KRAS;APOE;TP53;HLA-DRB1;HLA-DQB1
	Regulation of gene expression in beta cells Homo sapiens R-HSA-210745	0 . 0 5 7 4	AKT1				Carcass	0 . 0 7 3 9 8	HLA-A
	IL-6-type cytokine receptor ligand interactions Homo sapiens R-HSA-6788467	0 . 0 5 7 4	JAK2				Erythroid progenitor cell	0 . 0 7 3 9 8	JAK2
	Regulation	0	F2				Pha	0	CCL5;HLA-

	of Insulin-like Growth Factor (IGF) transport and uptake by Insulin-like Growth Factor Binding Proteins (IGFBPs) Homo sapiens R-HSA-381426	.06019					rynx	.07531	A;MMP9;HLA-DRB1
	TP53 regulates transcription of additional cell cycle genes whose exact role in the p53 pathway remain uncertain Homo sapiens R-HSA-6804115	0.06019	TP53				Meniscus	0.07672	IL1B
	RIP-mediated NFkB activation via ZBP1 Homo sapiens R-HSA-1810476	0.06019	TLR3				Neuron	0.07672	TLR3
	ERK/MAPK targets Homo	0.0	MAPK1				Barrett's	0.0	TP53

	sapiens R-HSA-198753	6019					esophagus	76722	
	Nephrin interactions Homo sapiens R-HSA-373753	0.062966	PIK3CA				Urinary bladder	0.079442	IL1RN;SERPINE1;ICAM1;CASP3;AKT1;CTLA4;JAK2;CCR5;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	Common Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140875	0.062966	F2				Perichondrium	0.079444	TGFB1
	Intrinsic Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140837	0.062966	F2				Choroid	0.079444	VEGFA
	HIV Life Cycle Homo sapiens R-HSA-162587	0.065007	CD4;CCR5				Ureter	0.079444	TGFB1
	TRAF6	0	DDX58				Ma	0	CD40LG

	mediated NF-kB activation Homo sapiens R-HSA-933542	.0684 9					ntle	.0794 4	
	Nuclear Events (kinase and transcription factor activation) Homo sapiens R-HSA-198725	0.0684 9	MAPK1				Colon	0.0815 7	IL1RN;IFNA1;ITGB3;SERPINE1;ICAM1;CASP3;AKT1;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	Metabolism of vitamins and cofactors Homo sapiens R-HSA-196854	0.0709	APOE;PTGS2				Myeloid progenitor cell	0.0821 6	PTPN11
	Nitric oxide stimulates guanylate cyclase Homo sapiens R-HSA-392154	0.0712 4	NOS2				Myoepithelium	0.0821 6	TP53
	Antigen Presentation: Folding, assembly and	0.071	HLA-A				Supporting cell	0.084	CASP3

	peptide loading of class I MHC Homo sapiens R-HSA-983170	24						88	
	Constitutive Signaling by AKT1 E17K in Cancer Homo sapiens R-HSA-5674400	0.07124	AKT1				Gastric juice	0.08488	ALB
	Regulation of TP53 Activity Homo sapiens R-HSA-5633007	0.07333	AKT1;TP53				Macrophage	0.08758	IL1B
	Recycling pathway of L1 Homo sapiens R-HSA-437239	0.07398	MAPK1				Preosteoblast	0.08758	TGFB1
	Downregulation of TGF-beta receptor signaling Homo sapiens R-HSA-2173788	0.07398	TGFB1				Animal cap	0.08758	TGFB1
	Regulation of Hypoxia-inducible Factor (HIF) by oxygen	0.0733	VEGFA				Ascidian	0.087	MBL2

	Homo sapiens R-HSA-1234174	98						58	
	Cellular response to hypoxia Homo sapiens R-HSA-2262749	0.07398	VEGFA				Natural killer cell line	0.09296	IL2
	ZBP1(DAI) mediated induction of type I IFNs Homo sapiens R-HSA-1606322	0.07398	TLR3				Pancreatic juice	0.09296	KRAS
	TNFR1-induced NFkappaB signaling pathway Homo sapiens R-HSA-5357956	0.07398	TNF				Pancreatic cancer cell line	0.09296	KRAS
	CREB phosphorylation through the activation of Ras Homo sapiens R-HSA-442742	0.07672	MAPK1				Thyroid nodule	0.09296	NRAS
	VEGFR2 mediated vascular permeability Homo sapiens R-	0.07667	AKT1				Epiphyseal growth plat	0.09299	VEGFA

	HSA-5218920	2					e	6	
	Ca-dependent events Homo sapiens R-HSA-111996	0.079444	MAPK1				Filopodium	0.092966	AKT1
	MAPK targets/ Nuclear events mediated by MAP kinases Homo sapiens R-HSA-450282	0.084888	MAPK1				Mouth	0.095499	IL1RN;FCGR2A;STAT3;MAPK1;TP53;ICAM1
	Regulation of TNFR1 signaling Homo sapiens R-HSA-5357905	0.087758	TNF				Cervical spine	0.095564	CRP
	TGF-beta receptor signaling activates SMADs Homo sapiens R-HSA-2173789	0.090027	TGFB1				Secretory cell	0.098332	ELANE
	Regulation of beta-cell development Homo sapiens R-HSA-186712	0.090027	AKT1				Kidney	0.103223	IL1RN;IFNA1;ITGB3;SERPINE1;ICAM1;CASP3;AKT1;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;

									NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	SMAD2/SMAD3:SMAD4 heterotrimer regulates transcription Homo sapiens R-HSA-2173796	0.090277	SERPINE1				Notochord	0.106299	TGFB1
	EPHA-mediated growth cone collapse Homo sapiens R-HSA-3928663	0.095644	VEGFA				BTO:0001439	0.106299	F2
	Synthesis of PIPs at the plasma membrane Homo sapiens R-HSA-1660499	0.095644	PIK3CA				Satellite cell	0.108933	TGFB1
	ROS, RNS production in response to bacteria Homo sapiens R-HSA-1222556	0.095644	NOS2				Colorectum	0.108933	PIK3CA
	Negative	0	DDX58				Adi	0	IL1RN;IFNA1;ITGB3;SER

	regulators of RIG-I/MDA5 signaling Homo sapiens R-HSA-936440	.0956 4					pose tissue	.1090 9	PINE1;ICAM1;NRAS;CASP3;CCL5;AKT1;CCL2;MAPK1;APOE;JAK2;CCR5;MBL2;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;STAT3;PTPN11;HLA-A;F3;MMP9;VEGFA;IL6;CD4;FCGR2A;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Metabolism of proteins Homo sapiens R-HSA-392499	0.0958 1	CXCL8;ACE;STAT3;CCL2;F2;TP53				Orbit	0.1141 9	F2
	Post NMDA receptor activation events Homo sapiens R-HSA-438064	0.0983 2	MAPK1				Stomach	0.1142 1	IL1RN;IFNA1;SERPINE1;ICAM1;CASP3;AKT1;CTLA4;JAK2;CCR5;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	Bile acid and bile salt metabolism Homo sapiens R-HSA-194068	0.0983 2	ALB				CL-48 cell	0.1158 1	ALB;TLR4
	RHO GTPases Activate	0.1	MAPK1				Carcinom	0.1	TGFB1

	WASPs and WAVEs Homo sapiens R-HSA-5663213	0.098					a cell	16811	
	NCAM1 interactions Homo sapiens R-HSA-419037	0.10364	PRNP				Osteocyte	0.11942	TGFB1
	Apoptotic cleavage of cellular proteins Homo sapiens R-HSA-111465	0.10364	CASP3				Umbilical vein endothelial cell	0.12978	ACE
	Transport of vitamins, nucleosides, and related molecules Homo sapiens R-HSA-425397	0.10629	ALB				Stratified epithelium	0.13236	TP53
	Beta defensins Homo sapiens R-HSA-1461957	0.10629	TLR2				Prepuce	0.13492	AKT1
	Activation of NMDA receptor upon	0.10	MAPK1				Bone marrow	0.13	CRP;IL1RN;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CTLA4;CCL2;MAPK1;APOE;JAK2;ELAN

	glutamate binding and postsynaptic events Homo sapiens R-HSA-442755	893						87	E;MBL2;IL10;PRNP;TGFB1;ACE;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;CD40LG;IFNG;PIK3CA;CD209;IL7;IL1B;ALB;KRAS;TP53;TLR4;HLA-DRB1;TLR2
	Gamma carboxylation, hypusine formation and arylsulfatase activation Homo sapiens R-HSA-163841	0.108933	F2				Molaris	0.145111	IL1B
	mTOR signalling Homo sapiens R-HSA-165159	0.108933	AKT1				Leydig cell	0.145111	IL1A
	G alpha (q) signalling events Homo sapiens R-HSA-416476	0.109133	PIK3CA;F2				Prostate gland epithelium	0.147211	PRNP;F3;TLR2
	PKB-mediated events Homo sapiens R-HSA-109703	0.111156	AKT1				Endosperm	0.147644	ALB
	Host	0	TGFB1				ae3	0	TP53

	Interactions with Influenza Factors Homo sapiens R-HSA-168253	.114199						.147644	
	Pre-NOTCH Transcription and Translation Homo sapiens R-HSA-1912408	0.114199	TP53				Endothelial cell	0.150016	PTGS2
	TNF signaling Homo sapiens R-HSA-75893	0.114199	TNF				Embryoid body	0.150016	VEGFA
	Netrin-1 signaling Homo sapiens R-HSA-373752	0.116811	PTPN11				Optic nerve	0.155518	CASP3
	Retinoid metabolism and transport Homo sapiens R-HSA-975634	0.116811	APOE				Long bone	0.155518	TGFB1
	BMAL1:CLOCK,NPAS2 activates circadian gene expression	0.116818	SERPINE1				Bronchial epithelial	0.162121	PRNP;IL1RN;TGFB1;DDX58;STAT1;SERPINE1;STAT3;PTPN11;PTGS2;F3;ICAM1;VEGFA;IL1A;CASP3;IL1B;AKT1;MAPK1;KRAS

	Homo sapiens R-HSA-1368108	1					cell	9	
	Transcriptional regulation of pluripotent stem cells Homo sapiens R-HSA-452723	0.116811	STAT3				Tooth enamel	0.167611	ALB
	Deactivation of the beta-catenin transactivating complex Homo sapiens R-HSA-3769402	0.116811	AKT1				Spindle cell	0.177742	TP53
	Classical antibody-mediated complement activation Homo sapiens R-HSA-173623	0.119422	CRP				Leukemia cell	0.182228	NRAS
	TP53 Regulates Transcription of Cell Death Genes Homo sapiens R-HSA-5633008	0.119422	TP53				Pancreatic beta cell	0.182228	HLA-DQB1

	PLC beta mediated events Homo sapiens R-HSA-112043	0.12202	MAPK1				Palate	0.18477	TGFB1
	Transcriptional activity of SMAD2/SMAD3:SMAD4 heterotrimer Homo sapiens R-HSA-2173793	0.12202	SERPINE1				Lymphoblast	0.18711	HLA-DRB1
	G-protein mediated events Homo sapiens R-HSA-112040	0.12462	MAPK1				Connective tissue	0.19367	CRP;SERPINE1;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;PRNP;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;MMP9;VEGFA;IL1A;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4
	RMTs methylate histone arginines Homo sapiens R-HSA-3214858	0.12462	JAK2				Pancreatic islet	0.19447	CRP;PRNP;DDX58;STAT1;SERPINE1;STAT3;PTPN11;PTGS2;F3;ICAM1;VEGFA;IL6;CCL5;ALB;AKT1;CCL2;KRAS;HLA-DQB1
	Scavenging of heme from plasma Homo sapiens R-HSA-2168880	0.12722	ALB				Placenta	0.19974	IL1RN;ITGB3;SERPINE1;ICAM1;CASP3;AKT1;JAK2;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELA

									NE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD209;IL7;ALB;KRAS;HLA-DRB1
	Metabolism of lipids and lipoproteins Homo sapiens R-HSA-556833	0.1295	PIK3CA;ALB;APOE;PTGS2				Lymph	0.200017	AKT1;HLA-A;HLA-DRB1;HLA-DQB1
	EPH-ephrin mediated repulsion of cells Homo sapiens R-HSA-3928665	0.132366	MMP9				Colonic adenocarcinoma cell	0.200617	NOS2
	TP53 Regulates Transcription of Cell Cycle Genes Homo sapiens R-HSA-6791312	0.132366	TP53				Spinal cord	0.225335	CRP;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;ELANE;PRNP;TGFB1;ACE;DDX58;STAT1;IFNB1;STAT3;PTPN11;HLA-A;F2;F3;VEGFA;IL6;CD4;FCGR2A;IFNG;PIK3CA;IL1B;ALB;KRAS;TP53;TLR4;HLA-DRB1;HLA-DQB1;TLR2
	Death Receptor Signalling Homo sapiens R-HSA-73887	0.132366	TNF				Prostate cancer cell line	0.231666	TNF
	FCGR activation Homo	0.1	FCGR2A				Heart	0.2	CRP;IFNA1;ITGB3;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;AKT1;CC

	sapiens R-HSA-2029481	3492						3355	L2;MAPK1;APOE;JAK2;CCR5;ELANE;MBL2;PRNP;TGFB1;ACE;DDX58;STAT1;STAT3;PTPN11;HLA-A;F2;F3;MMP9;VEGFA;IL6;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;IL1B;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Metabolism of fat-soluble vitamins Homo sapiens R-HSA-6806667	0.140003	APOE				Hair cell	0.23662	CASP3
	Apoptotic execution phase Homo sapiens R-HSA-75153	0.140003	CASP3				Uterine cervix	0.24268	CRP;IL1RN;IFNA1;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;ACE;NOS2;DDX58;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;CD4;IFNG;PIK3CA;CD209;IL7;ALB;TP53;TLR4;TLR3
	Vpu mediated degradation of CD4 Homo sapiens R-HSA-180534	0.140003	CD4				Pancreas	0.24615	IL1RN;SERPINE1;ICAM1;CASP3;AKT1;JAK2;MBL2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD209;IL7;A

									LB;KRAS;HLA-DRB1
	Autodegradation of the E3 ubiquitin ligase COP1 Homo sapiens R-HSA-349425	0.140003	TP53				Gut	0.253022	CRP;SERPINE1;ICAM1;NRAS;CASP3;AKT1;MAPK1;APOE;JAK2;ELANE;PRNP;ACE;DDX58;STAT1;STAT3;PTPN11;HLA-A;F2;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;HLA-DRB1;HLA-DQB1
	Arachidonic acid metabolism Homo sapiens R-HSA-2142753	0.145111	PTGS2				Trachea	0.262225	STAT1;STAT3;MAPK1;F3
	Assembly of collagen fibrils and other multimeric structures Homo sapiens R-HSA-2022090	0.147764	MMP9				Bud	0.262933	TGFB1
	Stabilization of p53 Homo sapiens R-HSA-69541	0.147764	TP53				Adrenal gland	0.273667	IL1RN;SERPINE1;ICAM1;CASP3;AKT1;JAK2;CCR5;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;IL1B;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGS2;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;IL6;CD4;FCGR2A;CD209;IL7;ALB;KRAS;HLA-DRB1
	Pre-NOTCH Expression and	0.1	TP53				Vegetative	0.2	TP53

	Processing Homo sapiens R-HSA-1912422	5518					cell	8874	
	Recruitment and ATM-mediated phosphorylation of repair and signaling proteins at DNA double strand breaks Homo sapiens R-HSA-5693565	0.15768	TP53				BTO:0004410	0.291444	TNF;ICAM1;NRAS;CASP3;CCL5;AKT1;MAPK1;JAK2;ELANE;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;STAT3;PTPN11;HLA-A;CD4;IFNG;PIK3CA;IL7;ALB;KRAS;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	DNA Damage/Telomere Stress Induced Senescence Homo sapiens R-HSA-2559586	0.160177	TP53				Nerve	0.295006	HLA-A
	DNA Double Strand Break Response Homo sapiens R-HSA-5693606	0.160177	TP53				Muscle	0.298447	PRNP;PIK3CA;ALB;AKT1;HLA-A;HLA-DRB1;ICAM1
	The role of GTSE1 in G2/M progression	0.16	TP53				Intestine	0.30	PRNP;IL1RN;STAT1;STAT3;PTPN11;HLA-A;MMP9;ICAM1;CD4;PIK3CA;AKT1;CCL2;MAPK

	after G2 checkpoint Homo sapiens R-HSA-8852276	0.17						906	1;KRAS;APOE;TP53;HLA-DRB1;HLA-DQB1
	PI Metabolism Homo sapiens R-HSA-1483255	0.16266	PIK3CA				Esophagus	0.31611	CRP;IL1RN;IFNA1;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;ELANE;IL10;PRNP;TGFB1;ACE;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;IL1B;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;TLR2
	Translocation of GLUT4 to the plasma membrane Homo sapiens R-HSA-1445148	0.16266	AKT1				Keratinocyte	0.33378	ITGB3
	MAP kinase activation in TLR cascade Homo sapiens R-HSA-450294	0.16266	MAPK1				Neural crest	0.33576	TGFB1
	Cell death signalling via NRAGE, NRIF and NADE Homo sapiens R-	0.16514	CASP3				Fibroblast	0.34166	IL6

	HSA-204998								
	TP53 Regulates Transcription of DNA Repair Genes Homo sapiens R-HSA-6796648	0.16514	TP53				Mammary gland	0.34384	F2;VEGFA
	Circadian Clock Homo sapiens R-HSA-400253	0.17007	SERPINE1				Small intestine	0.34574	PRNP;TGFB1;ACE;DDX58;STAT1;STAT3;PTPN11;F2;F3;ICAM1;VEGFA;CASP3;CCL5;ALB;AKT1;CCL2;KRAS;TLR4;MBL2;HLA-DQB1
	p53-Dependent G1/S DNA damage checkpoint Homo sapiens R-HSA-69580	0.17007	TP53				Synovium	0.34751	PTGS2
	p53-Dependent G1 DNA Damage Response Homo sapiens R-HSA-69563	0.17007	TP53				Natural killer cell	0.3582	IL1RN;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;MAPK1;JAK2;ELANE;MBL2;PRNP;TGFB1;ACE;DDX58;STAT1;STAT3;PTPN11;HLA-A;F3;IFNG;PIK3CA;ALB;KRAS;TP53;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	ER-Phagosome pathway Homo sapiens R-HSA-1236974	0.17497	HLA-A				Peripheral nerve	0.37228	CD40LG

	G1/S DNA Damage Checkpoints Homo sapiens R-HSA-69615	0.17497	TP53				B-lymphocyte	0.38256	ICAM1;NRAS;CASP3;CCL5;AKT1;MAPK1;APOE;JAK2;ELANE;TGFB1;NOS2;DDX58;STAT1;STAT3;PTPN11;HLA-A;CD4;FCGR2A;IFNG;PIK3CA;ALB;KRAS;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Vesicle-mediated transport Homo sapiens R-HSA-5653656	0.17713	ALB;AKT1;APOE				Oral mucosa	0.38297	CRP;IL1RN;IFNA1;SERPINE1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;IL6;CD4;IFNG;PIK3CA;IL7;ALB;KRAS;TP53;TLR4;TLR3
	Cytosolic sensors of pathogen-associated DNA Homo sapiens R-HSA-1834949	0.17742	TLR3				Duodenum	0.39512	CRP;IL1RN;IFNA1;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;CCR5;IL10;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;CD40LG;IFNG;PIK3CA;CD209;IL7;IL1B;ALB;KRAS;TP53;TLR4;TLR3;TLR2
	TRAF6 Mediated Induction of proinflammatory cytokines Homo sapiens R-HSA-168180	0.19192	MAPK1				B-lymphoblastoid cell	0.39755	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;ICAM1;VEGFA;PIK3CA;IL7;CASP3;CCL5;CCL3;AKT1;MAPK1;KRAS;TP53;MBL2;HLA-DQB1
	G alpha (12/13)	0.	PIK3CA				Ear	0.	PIK3CA

	signalling events Homo sapiens R-HSA-416482	1990 8						4244	
	G2/M DNA damage checkpoint Homo sapiens R-HSA-69473	0.20617	TP53				Prostate gland	0.436 45	CRP;IL1RN;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;ELANE;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;IL1B;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Regulation of HSF1-mediated heat shock response Homo sapiens R-HSA-3371453	0.21086	MAPK1				Skeletal muscle	0.445 62	CRP;ITGB3;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;AKT1;CCL2;MAPK1;APOE;JAK2;MBL2;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Peptide hormone metabolism Homo sapiens R-HSA-2980736	0.21 32	ACE				BTO:0005453	0.45 534	PRNP;TGFB1;NOS2;DDX58;STAT1;STAT3;PTPN11;HLA-A;ICAM1;NRAS;CD4;PIK3CA;CASP3;ALB;AKT1;MAPK1;KRAS;JAK2;TLR3;ELANE;HLA-DRB1;HLA-DQB1
	Opioid Signalling	0.	MAPK1				Brain	0.	ALB

	Homo sapiens R-HSA-111885	2132					cortex cell line	46563	
	Antigen processing-Cross presentation Homo sapiens R-HSA-1236975	0.21553	HLA-A				Cytotoxic T-lymphocyte	0.47588	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;F3;ICAM1;PIK3CA;CASP3;CCL5;AKT1;MAPK1;KRAS;CCR5;MBL2
	Toll Like Receptor 10 (TLR10) Cascade Homo sapiens R-HSA-168142	0.21553	MAPK1				Ovary	0.49025	CRP;IFNA1;ITGB3;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;AKT1;CCL2;MAPK1;APOE;JAK2;CCR5;ELANE;MBL2;IL10;PRNP;TGFB1;ACE;DDX58;STAT1;IFNB1;STAT3;PTPN11;HLA-A;F2;F3;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;CD40LG;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Toll Like Receptor 5 (TLR5) Cascade Homo sapiens R-HSA-168176	0.21553	MAPK1				Olfactory bulb	0.49514	PRNP;DDX58;STAT1;STAT3;PTPN11;F3;ICAM1;FCGR2A;CCL2;KRAS;APOE;HLA-DRB1;MBL2
	MyD88 cascade initiated on plasma membrane Homo sapiens R-HSA-975871	0.21553	MAPK1				Seminal vesicle	0.49582	CRP;IFNA1;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;ACE;NOS2;DDX58;IFNB1;IL13;STAT3;F2;F3;MMP9;IL2;VEGFA;IL1A;CD4;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3

	p75 NTR receptor-mediated signalling Homo sapiens R-HSA-193704	0.21786	CASP3				Colonic cancer cell	0.49777	ALB;KRAS
	TRAF6 mediated induction of NFkB and MAP kinases upon TLR7/8 or 9 activation Homo sapiens R-HSA-975138	0.21786	MAPK1				Rectum	0.50876	CRP;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;ELANE;MBL2;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL1A;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Collagen formation Homo sapiens R-HSA-1474290	0.22248	MMP9				BTO:0000964	0.52014	ALB
	MyD88 dependent cascade initiated on endosome Homo sapiens R-HSA-975155	0.22248	MAPK1				Uterus	0.52384	CRP;IL1RN;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;CCR5;PRNP;TGFB1;ACE;DDX58;STAT1;STAT3;PTPN11;F3;VEGFA;IL1A;IL6;CD4;FCGR2A;PIK3CA;IL7;IL1B;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Toll Like Receptor 7/8 (TLR7/8) Cascade	0.222	MAPK1				Epididymis	0.5355	CRP;IL1RN;IFNA1;SERPINE1;PTGS2;ICAM1;NRAS;AKT1;CCL2;MAPK1;APOE;JAK2;MBL2;IL10;ACE;NOS2;DDX58;STAT1

	Homo sapiens R-HSA-168181	48						7	;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;CD4;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3
	Regulation of mRNA stability by proteins that bind AU-rich elements Homo sapiens R-HSA-450531	0.22479	AKT1				Skin	0.576511	CRP;IL1RN;ITGB3;SERPINE1;ICAM1;NRAS;CASP3;CCL5;AKT1;CCL2;MAPK1;APOE;JAK2;ELANE;MBL2;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;HLA-A;F2;F3;MMP9;IL2;VEGFA;IL1A;CD4;FCGR2A;CD40LG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Toll Like Receptor 9 (TLR9) Cascade Homo sapiens R-HSA-168138	0.22937	MAPK1				Ophthalmic nerve	0.57937	PRNP;IL6;DDX58;STAT3;CCL2;PTPN11;APOE;F3;ICAM1;VEGFA
	Regulation of TP53 Activity through Phosphorylation Homo sapiens R-HSA-6804756	0.23166	TP53				Bone	0.58441	TGFB1;SERPINE1;MAPK1;APOE
	Cellular response to heat stress Homo sapiens R-HSA-3371556	0.24746	MAPK1				Bronchus	0.58991	CRP;IL1RN;IFNA1;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;CD4;FCGR2A;IFNG;PIK3CA;C

									D209;IL7;ALB;KRAS;TP53;TLR4;TLR3
	SUMO E3 ligases SUMOylate target proteins Homo sapiens R-HSA-3108232	0.24746	TP53				Breast	0.62325	CRP;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;MMP9;IL2;VEGFA;IL1A;IL6;FCGR2A;PIK3CA;CD209;IL7;ALB;TP53;TLR4;TLR3
	Visual phototransduction Homo sapiens R-HSA-2187338	0.24969	APOE				Retina	0.62714	CRP;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;ELANE;MBL2;PRNP;TGFB1;ACE;DDX58;STAT1;IFNB1;STAT3;PTPN11;HLA-A;F2;F3;VEGFA;IL6;IFNG;PIK3CA;ALB;KRAS;TLR3;HLA-DRB1;HLA-DQB1
	Metabolism of water-soluble vitamins and cofactors Homo sapiens R-HSA-196849	0.25191	PTGS2				Corpus callosum	0.62946	SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;MBL2;PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;F3;VEGFA;IL6;CD4;FCGR2A;PIK3CA;KRAS;TP53;TLR4
	CLEC7A (Dectin-1) signaling Homo sapiens R-HSA-5607764	0.25413	IL1B				Umbilical cord blood	0.64233	MMP9
	SUMOylation Homo sapiens R-HSA-2990846	0.2558	TP53				Hypothalamus	0.6778	IFNA1;ITGB3;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;AKT1;CCL2;MAPK1;APOE;JAK2;CCR5;PRNP;TGFB1;DDX58;ST

		54						7	AT1;STAT3;PTPN11;HLA-A;F3;VEGFA;IL6;CD4;FCGR2A;PIK3CA;CD209;IL7;IL1B;KRAS;TP53;TLR4;TLR3;HLA-DRB1;HLA-DQB1;TLR2
	Mitotic Prophase Homo sapiens R-HSA-68875	0.271664	MAPK1				Erythroid cell	0.6864	PRNP;DDX58;STAT3;AKT1;MAPK1;PTPN11;KRAS;JAK2;F3;ICAM1;MBL2;VEGFA
	Transcriptional Regulation by TP53 Homo sapiens R-HSA-3700989	0.274111	AKT1;TP53				Uterine endometrium	0.691164	CRP;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;TGFB1;ACE;DDX58;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;CD4;PIK3CA;IL7;ALB;KRAS;TP53;TLR4;TLR3
	Signaling by NOTCH Homo sapiens R-HSA-157118	0.30339	TP53				Eye	0.69754	PRNP;TGFB1;STAT1;SERPINE1;STAT3;HLA-A;VEGFA;NRAS;PIK3CA;ALB;AKT1;CCL2;MAPK1;APOE;HLA-DRB1
	Neurotransmitter Receptor Binding And Downstream Transmission In The Postsynaptic Cell Homo sapiens R-HSA-112314	0.34361	MAPK1				T-cell chronic lymphocytic leukemia cell	0.70431	PRNP;STAT1;ALB;MAPK1;PTPN11;ICAM1

	DNA Double-Strand Break Repair Homo sapiens R-HSA-5693532	0.349455	TP53				Nasopharynx	0.707005	CRP;IL1RN;IFNA1;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;JAK2;IL10;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;ALB;TLR4;TLR3
	Influenza Infection Homo sapiens R-HSA-168254	0.353311	TGFB1				Parathyroid gland	0.709977	CRP;IFNA1;PTGS2;NRAS;CASP3;AKT1;CCL2;MAPK1;JAK2;MBL2;IL10;ACE;DDX58;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;FCGR2A;IFNG;PIK3CA;IL7;ALB;KRAS;TP53;TLR3
	G2/M Checkpoints Homo sapiens R-HSA-69481	0.359006	TP53				Salivary gland	0.710053	CRP;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;CCR5;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;MMP9;VEGFA;IL1A;IL6;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;IL1B;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;TLR2
	Phospholipid metabolism Homo sapiens R-HSA-1483257	0.379711	PIK3CA				Helper T-lymphocyte	0.722445	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;ICAM1;CD4;PIK3CA;CCL5;AKT1;MAPK1;KRAS;MBL2
	Cell Cycle, Mitotic Homo sapiens R-HSA-69278	0.396994	MAPK1;TP53				Adrenal cortex	0.725955	PRNP;DDX58;STAT3;AKT1;CCL2;PTPN11;APOE;F3;HLA-DRB1;ICAM1;HLA-DQB1;VEGFA

	G2/M Transition Homo sapiens R-HSA-69275	0.401449	TP53				Trigeminal ganglion	0.732626	PRNP;DDX58;IL7;STAT3;CCL2;PTPN11;APOE;F3;ICAM1;HLA-DQB1;VEGFA
	Mitotic G2-G2/M phases Homo sapiens R-HSA-453274	0.405055	TP53				Ascites	0.741552	AKT1;HLA-A
	Cell Cycle Checkpoints Homo sapiens R-HSA-69620	0.417344	TP53				Tongue	0.749441	CASP3
	Generic Transcription Pathway Homo sapiens R-HSA-212436	0.431366	SERPINE1;AKT1;TP53				Oviduct	0.758868	CRP;IL1RN;IFNA1;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;JAK2;IL10;ACE;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;CD4;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3
	TCF dependent signaling in response to WNT Homo sapiens R-HSA-201681	0.446144	AKT1				Spinal ganglion	0.765411	PRNP;DDX58;STAT3;PTPN11;KRAS;APOE;F3;ICAM1;MBL2
	Post-translational protein modification Homo sapiens R-	0.457070	F2;TP53				Superior cervical	0.773292	PRNP;DDX58;IL7;STAT3;AKT1;CCL2;PTPN11;KRAS;CCR5;F3;HLA-DQB1;VEGFA

	HSA-597592	6					ganglion	2	
	Transmission across Chemical Synapses Homo sapiens R-HSA-112315	0.465633	MAPK1				Thyroid gland	0.783299	IL1RN;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;STAT3;PTPN11;HLA-A;F3;MMP9;VEGFA;IL1A;CD4;FCGR2A;PIK3CA;CD209;IL1B;ALB;KRAS;TP53;TLR4;TLR3;HLA-DRB1;TLR2
	Chromatin organization Homo sapiens R-HSA-4839726	0.489005	JAK2				Prefrontal cortex	0.815644	PRNP;DDX58;STAT1;STAT3;PTPN11;F3;ICAM1;VEGFA;PIK3CA;AKT1;MAPK1;KRAS;APOE;MBL2
	Chromatin modifying enzymes Homo sapiens R-HSA-3247509	0.489005	JAK2				Embryonic brain	0.821833	PRNP;DDX58;CASP3;STAT3;AKT1;CCL2;PTPN11;KRAS;APOE;F3;ICAM1;VEGFA
	Cell Cycle Homo sapiens R-HSA-1640170	0.500061	MAPK1;TP53				Pons	0.852209	PRNP;IL6;DDX58;STAT3;CCL2;PTPN11;APOE;F3;ICAM1;MBL2
	RHO GTPase Effectors Homo sapiens R-HSA-195258	0.531449	MAPK1				Pronephros	0.881448	TP53

	SLC-mediated transmembrane transport Homo sapiens R-HSA-425407	0.549377	ALB				Amygdala	0.888377	PRNP;DDX58;STAT1;STAT3;AKT1;MAPK1;PTPN11;KRAS;APOE;F3;ICAM1;VEGFA
	M Phase Homo sapiens R-HSA-68886	0.549377	MAPK1				Testis	0.891167	IL1RN;IFNA1;ITGB3;SERPINE1;ICAM1;CASP3;AKT1;JAK2;IL10;DDX58;IL13;HLA-A;F2;F3;MMP9;IL1A;IFNG;PIK3CA;TP53;TLR4;TLR3;HLA-DQB1;TLR2;CRP;NRAS;CCL5;CCL3;CCL2;MAPK1;APOE;ELANE;PRNP;TGFB1;ACE;NOS2;STAT1;IFNB1;STAT3;PTPN11;IL2;VEGFA;CD4;FCGR2A;CD40LG;CD209;IL7;ALB;KRAS;HLA-DRB1
	DNA Repair Homo sapiens R-HSA-73894	0.571774	TP53				Frontal lobe	0.891955	CRP;ICAM1;NRAS;CASP3;AKT1;MAPK1;APOE;JAK2;ELANE;PRNP;TGFB1;ACE;DDX58;STAT1;IFNB1;STAT3;PTPN11;HLA-A;F2;F3;VEGFA;IL4;IL6;CD4;IFNG;PIK3CA;ALB;KRAS;TLR4;HLA-DRB1
	Signaling by Wnt Homo sapiens R-HSA-195721	0.584439	AKT1				Cardiac muscle	0.894008	CRP;SERPINE1;PTGS2;ICAM1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;MBL2;IL10;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;VEGFA;IL1A;IL6;CD4;FCGR2A;IFNG;PIK3CA;CD209;IL7;ALB;KRAS;TP53;TLR4;TLR3

	Neuronal System Homo sapiens R-HSA-112316	0.5918	MAPK1				Globus pallidus	0.894 13	PRNP;DDX58;STAT3;PTPN11;KRAS;APOE;F3;ICAM1
	Class I MHC mediated antigen processing & presentation Homo sapiens R-HSA-983169	0.5967	HLA-A				Erythroleukemia cell	0.9075 6	STAT1;ITGB3;CASP3;STAT3;AKT1;MAPK1;PTPN11;JAK2;ICAM1
	Signaling by Rho GTPases Homo sapiens R-HSA-194315	0.6523	MAPK1				Subthalamic nucleus	0.9238 9	PRNP;DDX58;STAT3;PTPN11;KRAS;APOE;F3;ICAM1;MBL2
	Metabolism Homo sapiens R-HSA-1430728	0.6748 3	PIK3CA;ALB;AKT1;APOE;PTGS2				MOLT-4 cell	0.9297	PRNP;DDX58;CASP3;STAT3;AKT1;PTPN11;KRAS;ICAM1;VEGFA
	Membrane Trafficking Homo sapiens R-HSA-199991	0.7146 5	AKT1				Brain	0.9349 3	SERPINE1;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;MBL2;IL10;PRNP;TGFB1;ACE;DDX58;STAT1;STAT3;PTPN11;HLA-A;F2;F3;MMP9;VEGFA;CD4;FCGR2A;IFNG;PIK3CA;IL1B;ALB;KRAS;TP53;TLR4;HLA-DRB1;HLA-DQB1
	Transmembrane	0.	ALB				Cervica	0.	STAT1;CASP3;STAT3;AKT1;MAPK1;PTPN11;KRA

	transport of small molecules Homo sapiens R-HSA-382551	8316 1					l carcinoma cell	93603	S;HLA-A;HLA-DRB1;ICAM1
	Gene Expression Homo sapiens R-HSA-74160	0.869 95	SERPINE1;AKT1;TP53				Hippocampus	0.93936	CRP;IFNA1;SERPINE1;PTGS2;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;PRNP;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;VEGFA;IL1A;CD4;FCGR2A;IFNG;PIK3CA;CD209;ALB;TLR4
							Medulla oblongata	0.94227	PRNP;DDX58;STAT3;PTPN11;KRAS;APOE;F3;ICAM1;MBL2
							Vagina	0.94781	CRP;IL1RN;DDX58;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;NRAS;PIK3CA;CD209;IL7;ALB;AKT1;CCL2;MAPK1;APOE;JAK2;TP53;TLR4
							Smooth muscle	0.95384	CRP;IFNA1;DDX58;IFNB1;SERPINE1;IL13;STAT3;PTPN11;F2;PTGS2;IL2;VEGFA;NRAS;IFNG;PIK3CA;IL7;CASP3;ALB;AKT1;CCL2;MAPK1;JAK2
							Temporal lobe	0.9555	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;PTGS2;F3;VEGFA;NRAS;IL6;CD4;PIK3CA;AKT1;MAPK1;KRAS;APOE;JAK2;TLR4
							Cer	0	SERPINE1;PTGS2;ICAM

							ebral cortex	.9627 5	1;NRAS;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;PRNP;TGFB1;ACE;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;MMP9;VEGFA;IL1A;IL6;CD4;FCGR2A;PIK3CA;CD209;IL7;IL1B;ALB;KRAS;TP53;TLR4;TLR3;TLR2
							Cingulate cortex	0.9633	PRNP;DDX58;STAT3;PTPN11;KRAS;APOE;F3;ICAM1;MBL2
							Cerebral peduncle	0.9704 4	PRNP;DDX58;STAT3;AKT1;PTPN11;KRAS;APOE;F3;ICAM1
							Caudate nucleus	0.9712	PRNP;DDX58;STAT3;MAPK1;PTPN11;APOE;F3;ICAM1
							Pineal gland	0.9789 9	PRNP;DDX58;STAT1;STAT3;AKT1;PTPN11;KRAS;APOE;F3;ICAM1;VEGFA
							Parietal lobe	0.9791	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;PTGS2;F3;ICAM1;VEGFA;NRAS;IL6;CD4;PIK3CA;CASP3;AKT1;MAPK1;KRAS;APOE;JAK2;TLR4;MBL2

							Lateral ventricle	0.982 27	CRP;SERPINE1;PTGS2;NRAS;AKT1;CCL2;MAPK1;APOE;JAK2;IL10;PRNP;NOS2;IFNB1;IL13;STAT3;PTPN11;F2;IL2;VEGFA;IL1A;CD4;FCGR2A;PIK3CA;CD209;ALB;TP53;TLR4
							Thalamus	0.98584	PRNP;DDX58;STAT1;STAT3;PTPN11;APOE;F3;ICAM1
							Occipital lobe	0.99172	PRNP;TGFB1;DDX58;STAT1;STAT3;PTPN11;PTGS2;F3;ICAM1;VEGFA;NRAS;CD4;PIK3CA;CASP3;AKT1;MAPK1;KRAS;APOE;JAK2;TLR4;MBL2
							Cerebellum	0.99204	IFNA1;SERPINE1;ICAM1;NRAS;CASP3;AKT1;CCL2;MAPK1;APOE;JAK2;MBL2;IL10;PRNP;NOS2;DDX58;STAT1;IFNB1;IL13;STAT3;PTPN11;F2;F3;IL2;VEGFA;IL1A;IL6;CD4;FCGR2A;CD40LG;PIK3CA;CD209;ALB;KRAS;TP53;TLR4;TLR3

Supplementary Table 5: Host-antiviral drug.

Genes	**Reactome**			**Kegg**			**Tissue**		
ACE	Term	P-val	Genes	Term	P-val	Genes	Term	P-val	Genes

		ue			ue			ue	
CA1	Phase 2 - plateau phase Homo sapiens R-HSA-5576893	2.85E-34	CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA1C;CACNA2D4;CACNA1F;CACNG6;CACNB1;CACNG7;CACNB2;CACNG8;CACNB3;CACNB4;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	Neuroactive ligand-receptor interaction	3.22E-45	GABRB3;GABRB2;PRSS1;GABRB1;HTR2C;ADRA1D;PTH1R;NR3C1;ADRA1B;ADRA1A;ADORA1;BDKRB1;CHRNB4;PTH2R;F2;GABRG3;ADRA2B;GABRG2;ADRA2A;GABRG1;ADORA2A;AGTR1;CRH;GRIA1;CHRNA3;CALCA;CHRNA2;CALCB;GLRA1;GRIN2A;MC2R;GLRA3;GABRE;DRD2;GABRD;DRD3;DRD4;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;GABRA5;GABRA4;GABRA3;HTR1A;OPRK1;CCK;GRIN2C;GRIN2B;GRIN2D;GRIN1;GRIN3B;GRIN3A	Adult	2.52E-69	IL1RN;SERPINE1;NR3C1;FGF1;FGF2;TNF;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;TNFSF11;AKT1;HGF;HLA-A;AR;AGTR1;PGR;TP53;GRIA1;CALCA;ABCB1;CACNA1C;DPP4;GRIN2A;APOE;DRD2;ELANE;DRD4;JUN;ACE;TGFB1;VDR;HTR1A;GRIN2C;GRIN2B;IL2;SELP;IL4;IL6;IL7;ALB;REN;SCN2A;FGFR4;SHBG;HLA-DRB1;FGFR2;FGFR1;IFNA1;HTR2C;SLC6A2;SLC6A3;SLC6A4;CA1;CA2;CASP3;CA4;CTLA4;JAK2;CCR5;IL10;MMP2;IL13;FOS;F2;F3;MMP9;F7;IL1A;F8;IFNG;IL1B;CRH;PPARG;SCN4A;TLR4;TLR2;CRP;SERPINC1;NR1I2;PTGS2;CYP17A1;NT5E;NRAS;CCL5;CCL2;KCNJ11;IFNB1;STAT3;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;KRAS
CA2	Transmission across Chemical Synapses Homo	6.03E-	GABRB3;GRIA1;GABRB2;GABRB1;CHRNA3;CHRNA2;CACNA1B;CACNA1A;CACNA1E;SLC6A3;GRIN2A;CACNG8;	MAPK signaling pat	9.57E-	FGF1;FGF2;TNF;FGF4;IKBKB;MYC;CASP3;AKT1;CHUK;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;FOS;C	Immune syste	1.77E-	IL1RN;IFNA1;ITGB3;SERPINE1;NR3C1;FGF2;TNF;ICAM1;IKBKB;MYC;CASP3;AKT1;JAK2;CCR5;JAK3;JAK1;MBL2

	sapiens R-HSA-112315	34	MAPK1;CACNG2;CACNG3;CACNG4;KCNJ3;GABRA2;GABRQ;GABRA1;CHRNB4;GABRA6;GABRA5;CACNA2D1;GABRA4;GABRA3;CACNA2D3;CACNA2D2;GRIN2C;GABRG3;GRIN2B;GABRG2;GRIN2D;GRIN1;CACNB1;CACNB2;CACNB3;CACNB4	hway	45	ACNB1;IL1A;CACNB2;CACNB3;CACNB4;IL1B;TP53;CACNA1B;CACNA1A;CACNA1D;CACNA1C;CACNA1F;CACNA1E;CACNA1H;CACNA1G;CACNG6;CACNA1I;CACNG7;NRAS;CACNG8;PPP3R2;MAPK1;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;JUN;TGFB1;VEGFA;FGF19;KRAS;FGFR4;FGFR2;FGFR1	m	49	;IL10;IFNAR2;ANXA1;CHUK;DDX58;HGF;MMP2;IL13;HLA-A;FOS;F2;F3;MMP9;AR;IL1A;F8;ADORA2A;IFNG;IL1B;AGTR1;CRH;PPARG;TP53;TLR4;PPIA;TLR3;HLA-DQB1;TLR2;CRP;ABCB1;LRP1;SERPINC1;PTGS2;ATP2C1;CSF2RA;DPP4;NT5E;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;APOE;ELANE;PRNP;JUN;ACE;TGFB1;NOS2;STAT1;IFNB1;VDR;STAT3;PTPN11;IL2;VEGFA;SELP;IL4;IL6;CD4;CD40LG;FCGR2A;IL7;ALB;REN;HLA-DRB1;PF4;FGFR1
CA4	Phase 1 - inactivation of fast Na+ channels Homo sapiens R-HSA-5576894	1.09E-33	CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA1C;CACNA2D4;CACNA1F;CACNG6;CACNB1;CACNG7;CACNB2;CACNG8;CACNB3;CACNB4;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	Nicotine addiction	4.05E-41	GABRB3;GRIA1;GABRB2;GABRB1;CACNA1B;CACNA1A;GRIN2A;GABRE;GABRD;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;GABRA5;GABRA4;GABRA3;GRIN2C;GABRG3;GRIN2B;GABRG2;GABRG1;GRIN1;GRIN2D;GRIN3B;GRIN3A	HUVEC cell	1.69E-35	SERPINE1;FGF1;PTGS2;TNF;FGF2;ICAM1;CDH5;CASP3;AKT1;CCL2;MAPK1;APOE;JUN;TGFB1;ACE;F10;HGF;MMP2;STAT3;MMP9;F3;VEGFA;SELP;IL4;IL1A;IL6;IFNG;IL1B;ALB;PPARG;TP53;TLR4
CA12	Neuronal System Homo sapiens R-HSA-112316	1.61E-	GABRB3;GRIA1;GABRB2;GABRB1;CHRNA3;CHRNA2;CACNA1B;CACNA1A;CACNA1E;SLC6A3;GRIN2A;CACNG8;	Pathways in cancer	1.20E-	CXCL8;IFNA1;FGF1;FGF2;FGF4;CKS1B;IKBKB;MYC;CASP3;AKT1;BDKRB1;JAK2;JAK3;JAK1;IFNAR2;CHUK;HGF;MM	Synovial tissu	3.96E-	CRP;IL1RN;PTGS2;TNF;FGF2;ICAM1;CASP3;CCL5;CCL3;AKT1;TNFSF11;CCL2;IL10;JUN;TGFB1;MMP2;STAT3;MM

		31	MAPK1;CACNG2;CACNG3;CACNG4;KCNJ3;GABRA2;GABRQ;KCNH2;GABRA1;CHRNB4;GABRA6;KCNJ11;GABRA5;CACNA2D1;GABRA4;GABRA3;CACNA2D3;CACNA2D2;GRIN2C;GABRG3;GRIN2B;GABRG2;GRIN2D;GRIN1;CACNB1;CACNB2;CACNB3;CACNB4;KCNMA1		30	P2;IL13;FOS;F2;MMP9;AR;IFNG;PIK3CA;IL3RA;AGTR1;PPARG;TP53;IFNAR1;CSF2RB;PTGS2;CSF2RA;NRAS;MAPK1;JUN;TGFB1;NOS2;STAT1;STAT3;IL2;VEGFA;IL4;IL6;IL7;FGF19;KRAS;FGFR4;FGFR2;FGFR1	e	35	P9;IL2;VEGFA;IL4;IL1A;CD4;IL6;CD40LG;IFNG;IL1B;TLR4;TLR2
CA14	Phase 0 - rapid depolarisation Homo sapiens R-HSA-5576892	2.59E-31	CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA1C;CACNA2D4;CACNA1F;CACNG6;CACNB1;CACNG7;CACNB2;CACNG8;CACNB3;CACNB4;SCN4A;CACNA1S;CACNG1;CACNG2;SCN2A;CACNG3;CACNG4;CACNG5	Hypertrophic cardiomyopathy	3.04E-29	ITGB3;CACNA1D;CACNA1C;CACNA1F;TNF;CACNG6;CACNG7;CACNG8;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;ACE;TGFB1;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;PRKAB1;CACNB1;CACNB2;CACNB3;IL6;CACNB4	Bronchoalveolar lavage	3.54E-34	CRP;SERPINC1;SERPINE1;PTGS2;TNF;ICAM1;CCL5;CCL3;CCL2;ELANE;IL10;TGFB1;ACE;NOS2;MMP2;IL13;MMP9;F3;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;ALB;TLR4;TLR2
CA3	Cytokine Signaling in Immune system Homo sapiens R-HSA-1280215	1.95E-29	IL1RN;IFNA1;ITGB3;FGF1;FGF2;TNF;ICAM1;FGF4;IKBKB;CASP3;TNFSF11;JAK2;JAK3;JAK1;IFNAR2;CHUK;DDX58;HGF;IL13;HLA-A;IL1A;IFNG;PIK3CA;IL1B;IL3RA;HLA-DQB1;IFNAR1;CSF2RB;CSF2RA;GRIN2A;NRAS;PTK2B;MAPK1;STAT1;IFNB1;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6	Hepatitis B	2.67E-27	CXCL8;IFNA1;TNF;IKBKB;NRAS;MYC;CASP3;AKT1;MAPK1;PTK2B;JAK2;JAK3;JAK1;JUN;TGFB1;CHUK;DDX58;IFNB1;STAT1;STAT3;FOS;MMP9;IL6;PIK3CA;KRAS;TP53;TLR4;TLR3;IFNAR1;TLR2	Stromal cell	1.01E-33	SERPINE1;PTGS2;TNF;FGF2;ICAM1;DPP4;NT5E;MYC;CASP3;CCL5;CCL3;AKT1;TNFSF11;CCL2;CCR5;IL10;JUN;TGFB1;HGF;MMP2;STAT3;MMP9;IL2;VEGFA;IL4;AR;IL1A;IL6;CD4;IFNG;IL7;IL1B;PGR;PPARG;TP53;FGFR2

			;CD4;CD40LG;IL7;FGF19;KRAS;FGFR4;HLA-DRB1;FGFR2;FGFR1						
CAT	NCAM signaling for neurite out-growth Homo sapiens R-HSA-375165	2.83E-25	ITGB3;CSF2RB;CACNA1D;CACNA1C;FGF1;FGF2;CSF2RA;CACNA1H;FGF4;CACNA1G;CACNA1I;GRIN2A;NRAS;MAPK1;CACNA1S;JAK2;JAK3;JAK1;PRNP;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;CACNB1;CACNB2;CACNB3;CACNB4;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Calcium signaling pathway	8.65E-27	CACNA1B;CACNA1A;HTR2C;CACNA1D;ADRA1D;CACNA1C;FGF1;CACNA1F;ADRA1B;FGF2;CACNA1E;ADRA1A;CACNA1H;FGF4;CACNA1G;CACNA1I;GRIN2A;PPP3R2;BDKRB1;PTK2B;CACNA1S;NOS2;HGF;GRIN2C;GRIN2D;GRIN1;VEGFA;ADORA2A;FGF19;AGTR1;PPIF;FGFR4;FGFR2;FGFR1	U-937 cell	1.55E-33	IFNA1;TNF;ICAM1;MYC;CASP3;AKT1;CCL2;MAPK1;ELANE;IL10;JUN;TGFB1;STAT1;IFNB1;FOS;MMP9;F3;IL2;IL4;IL1A;IL6;CD4;FCGR2A;IFNG;IL1B;TLR4;TP53
AQP1	Neurotransmitter Receptor Binding And Downstream Transmission In The Postsynaptic Cell Homo sapiens R-HSA-112314	5.58E-25	GRIA1;GABRB3;GABRB2;CHRNA3;GABRB1;CHRNA2;GRIN2A;CACNG8;MAPK1;CACNG2;CACNG3;CACNG4;KCNJ3;GABRQ;GABRA2;GABRA1;CHRNB4;GABRA6;GABRA5;GABRA4;GABRA3;GRIN2C;GABRG3;GRIN2B;GABRG2;GRIN2D;GRIN1	Oxytocin signaling pathway	1.23E-26	CACNA1D;CACNA1C;CACNA1F;PTGS2;CACNG6;CACNG7;CACNG8;NRAS;PPP3R2;MAPK1;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;KCNJ3;JUN;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;FOS;PRKAB1;CACNB1;CACNB2;CACNB3;CACNB4;KRAS	Ganglion	2.86E-30	GRIA1;CALCA;CACNA1B;HTR2C;CACNA1D;PTGS2;NR3C1;FGF1;SLC6A2;FGF2;TNF;SLC6A3;SLC6A4;GRIN2A;CA1;CASP3;ADORA1;AKT1;APOE;DRD2;DRD3;DRD4;PRNP;JUN;ACE;HTR1A;OPRK1;CCK;FOS;GRIN2C;GRIN2B;GRIN2D;GRIN1;VEGFA;AR;IL6;ADORA2A;IL1B;ALB;CRH;TP53
GSS	Signaling by Interleukins Homo sapiens R-HSA-449147	8.52E-2	IL1RN;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;IKBKB;GRIN2A;NRAS;CASP3;PTK2B;MAPK1;JAK2;JAK3;JAK1;CHUK;STAT1;HGF;IL1	Influenza A	1.74E-2	PRSS1;CXCL8;IFNA1;TMPRSS2;TNF;ICAM1;IKBKB;CASP3;CCL5;AKT1;CCL2;MAPK1;JAK2;JAK1;IFNAR2;CHUK;DDX58;IFNB1;STAT1;IL	Atherosclerotic pla	1.24E-2	IL10;CRP;TGFB1;ACE;MMP2;SERPINE1;TNF;MMP9;F3;ICAM1;VEGFA;SELP;IL6;IL1B;CCL5;ALB;AGTR1;AKT1;CCL2;PPARG;REN;APOE

		5	3;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL1A;IL6;CD4;PIK3CA;IL7;IL1B;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1		6	1A;IL6;IFNG;PIK3CA;IL1B;TLR7;TLR4;HLA-DRB1;TLR3;IFNAR1;HLA-DQB1	que	7	;TLR4
SLC7A11	Developmental Biology Homo sapiens R-HSA-1266738	1.09E-23	ITGB3;FGF1;FGF2;TNF;FGF4;AKT1;JAK2;JAK3;JAK1;MMP2;MMP9;CACNB1;CACNB2;CACNB3;CACNB4;IL3RA;PPARG;SCN4A;SDC2;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1H;CACNA1G;CACNA1I;GRIN2A;NRAS;CACNG8;MAPK1;CACNA1S;CACNG2;CACNG3;CACNG4;PRNP;JUN;TGFB1;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;VEGFA;FGF19;KRAS;SCN2A;FGFR4;FGFR2;FGFR1	Chagas disease	3.68E-26	CXCL8;SERPINE1;TNF;IKBKB;CCL5;CCL3;AKT1;CCL2;MAPK1;IL10;JUN;ACE;TGFB1;CHUK;NOS2;IFNB1;FOS;IL2;IL6;IFNG;PIK3CA;IL1B;TLR9;TLR4;TLR2	Vascular cell	7.53E-26	CRP;TGFB1;SERPINE1;PTGS2;TNF;FGF2;MMP9;F3;ICAM1;VEGFA;SELP;CDH5;IL6;IL1B;AKT1;CCL2;PPARG;REN;APOE
ACY1	Depolarization of the Presynaptic Terminal Triggers the Opening of Calcium Channels Homo sapiens R-HSA-112308	7.45E-23	CACNB1;CACNB2;CACNB3;CACNB4;CACNA2D1;CACNA1B;CACNA2D3;CACNA1A;CACNA2D2;CACNG2;CACNA1E;CACNG4	Kaposi sarcoma-associated herpesvirus infection	6.06E-25	CXCL8;IFNA1;PTGS2;FGF2;ICAM1;IKBKB;NRAS;PPP3R2;MYC;CASP3;AKT1;MAPK1;CCR5;JAK2;JAK1;IFNAR2;JUN;CHUK;IFNB1;STAT1;STAT3;HLA-A;FOS;VEGFA;IL6;PIK3CA;KRAS;TP53;TLR3;IFNAR1	Mast cell	2.66E-25	PTGS2;TNF;FGF2;ICAM1;CCL5;CCL3;AKT1;CCL2;ELANE;IL10;TGFB1;ACE;IL13;PTPN11;MMP9;IL2;VEGFA;SELP;IL4;IL6;CD4;CD40LG;IFNG;IL1B;ALB;CRH;TLR4;TLR2

				ect ion					
IKBKB	GABA A receptor activation Homo sapiens R-HSA-977441	7.45E-23	GABRA2;GABRB3;GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;GABRG3;GABRG2	Coronavirus disease	7.02E-25	CXCL8;IFNA1;TMPRSS2;TNF;IKBKB;CCL2;MAPK1;JAK1;MBL2;IFNAR2;JUN;ACE;CHUK;IFNB1;STAT1;DDX58;STAT3;FOS;F2;IL2;SELP;ACE2;IL6;FCGR2A;PIK3CA;IL1B;AGTR1;TLR7;TLR4;TLR3;TLR2;IFNAR1	Tendon	3.69E-25	CRP;IL1RN;PTGS2;TNF;FGF2;ICAM1;CASP3;CCL5;AKT1;TNFSF11;CCL2;IL10;TGFB1;MMP2;MMP9;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;ALB
CHUK	Axon guidance Homo sapiens R-HSA-422475	2.45E-22	SDC2;ITGB3;CSF2RB;CACNA1D;CACNA1C;FGF1;FGF2;CSF2RA;CACNA1H;FGF4;CACNA1G;CACNA1I;GRIN2A;NRAS;MAPK1;CACNA1S;JAK2;JAK3;JAK1;PRNP;MMP2;PTPN11;GRIN2C;GRIN2B;MMP9;IL2;GRIN2D;GRIN1;VEGFA;CACNB1;CACNB2;CACNB3;CACNB4;FGF19;IL3RA;SCN4A;KRAS;SCN2A;FGFR4;FGFR2;FGFR1	Dilated cardiomyopathy	6.72E-24	TGFB1;ITGB3;CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA2D4;CACNA1C;CACNA1F;TNF;CACNB1;CACNG6;CACNB2;CACNG7;CACNB3;CACNG8;CACNB4;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	Gingiva	2.35E-24	IL10;CRP;TGFB1;MMP2;PTGS2;TNF;MMP9;ICAM1;IL4;IL1A;IL6;CD4;CD40LG;IFNG;CASP3;IL1B;TNFSF11;CCL2;TLR4;ELANE;TLR2
GRIN2B	Cardiac conduction Homo sapiens R-HSA-5576891	1.40E-21	KCNH2;KCNJ11;CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA2D4;CACNA1C;CACNA1F;CACNB1;CACNG6;CACNB2;CACNG7;CACNB3;CACNG8;CACNB4;SCN4A;CACNA1S;CACNG1;SCN2A;CACNG2;CACNG3;CACNG4;CACNG5	Measles	6.78E-24	IFNA1;IKBKB;CASP3;AKT1;JAK3;JAK1;IFNAR2;JUN;CHUK;DDX58;IFNB1;STAT1;STAT3;FOS;IL2;IL1A;IL6;PIK3CA;CD209;IL1B;TLR9;TLR7;TP53;TLR4;IFNAR1;TLR2	Vasculature	3.73E-24	CRP;SERPINE1;PTGS2;TNF;FGF2;ICAM1;CDH5;CA4;AKT1;CCL2;APOE;TGFB1;ACE;MMP2;MMP9;F3;VEGFA;SELP;IL6;IL1B;ALB;AGTR1;REN;PPARG;TP53
G	Ligand-	6	GABRB3;GABRA2;	Lipi	1	CXCL8;IFNA1;TNF;I	Blo	1	IL10;CRP;JUN;ABC

RIN1	gated ion channel transport Homo sapiens R-HSA-975298	.22E-21	GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;GABRG3;GABRG2;GLRA1;GLRA3	d and atherosclerosis	.60E-23	CAM1;IKBKB;NRAS;PPP3R2;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;JAK2;JUN;CHUK;IFNB1;STAT3;FOS;MMP9;SELP;IL6;CD40LG;PIK3CA;IL1B;PPARG;KRAS;TP53;TLR4;TLR2	odvessel endothelium	.66E-22	B1;ACE;NOS2;SERPINC1;MMP2;SERPINE1;FOS;F2;MMP9;AQP1;F7;IL6;CASP3;IL1B;ALB;AGTR1;AKT1;CCL2;REN;PPARG;APOE
GRIN2A	Immune System Homo sapiens R-HSA-168256	1.15E-20	IL1RN;IFNA1;ITGB3;FGF1;FGF2;TNF;ICAM1;FGF4;IKBKB;CASP3;TNFSF11;AKT1;CTLA4;JAK2;JAK3;JAK1;MBL2;IFNAR2;CHUK;DDX58;HGF;IL13;HLA-A;FOS;IL1A;IFNG;PIK3CA;IL1B;IL3RA;TLR9;TLR7;TLR4;TLR3;HLA-DQB1;TLR2;IFNAR1;CRP;CSF2RB;CSF2RA;GRIN2A;NRAS;PTK2B;MAPK1;JUN;NOS2;STAT1;IFNB1;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6;CD4;CD40LG;FCGR2A;CD209;IL7;FGF19;KRAS;FGFR4;HLA-DRB1;FGFR2;FGFR1	AGE-RAGE signaling pathway in diabetic complications	1.87E-23	JUN;TGFB1;CXCL8;STAT1;MMP2;SERPINE1;STAT3;TNF;F3;ICAM1;VEGFA;IL1A;IL6;NRAS;PIK3CA;CASP3;IL1B;AGTR1;AKT1;CCL2;MAPK1;KRAS;JAK2	Artery	6.35E-22	CRP;CALCA;SERPINC1;SERPINE1;CACNA1C;ADRA1A;NR3C2;PGRMC1;CASP3;ADORA1;AKT1;CCL2;APOE;IL10;P2RY12;JUN;ACE;TGFB1;NOS2;MMP2;HTR1A;FOS;F2;MMP9;ACE2;F7;IL6;CYP11B2;IL1B;KCNMA1;ALB;AGTR1;REN;PPARG
GRIN2D	Signal Transduction Homo sapiens R-HSA-162582	3.60E-19	CXCL8;ITGB3;SERPINE1;HTR2C;ADRA1D;PTH1R;NR3C1;FGF1;ADRA1B;FGF2;TNF;ADRA1A;FGF4;IKBKB;CDH5;MYC;CASP3;ADORA1;AKT1;BDKRB1;JAK	GABAergic synapse	3.11E-23	GABRB3;GABRA2;GABRQ;GABRB2;GABRA1;GABRP;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;CACNA1B;CACNA1A;CACNA1D;CACNA1C;CACN	Neointima	3.27E-21	TGFB1;ACE;MMP2;SERPINE1;TNF;FGF2;MMP9;F3;ICAM1;VEGFA;SELP;IL1B;AGTR1;AKT1;CCL2;PPARG;REN;APOE

			2;CCR5;JAK3;JAK1;ANXA1;CHUK;MMP2;PTH2R;F2;PRKAB1;MMP9;ADRA2B;ADRA2A;AR;ADORA2A;PIK3CA;IL3RA;AGTR1;TLR9;CRH;PGR;TP53;CALCA;CALCB;LRP1;SDC2;CSF2RB;CSF2RA;GRIN2A;MC2R;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;APOE;DRD2;DRD3;DRD4;P2RY12;JUN;TGFB1;STAT1;STAT3;HTR1A;OPRK1;CCK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;VEGFA;IL6;FGF19;KRAS;FGFR4;FGFR2;PF4;FGFR1			A1F;GABRG3;GABRG2;GABRG1;CACNA1S;GABRE;GABRD			
GRIN3A	Muscle contraction Homo sapiens R-HSA-397014	8.65E-19	CACNA1D;CACNA1C;CACNA1F;CACNG6;CACNG7;CACNG8;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;KCNH2;ANXA1;KCNJ11;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;CACNB1;CACNB2;CACNB3;CACNB4;SCN4A;SCN2A	Arrhythmogenic right ventricular cardiomyopathy	3.20E-23	ITGB3;CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA2D4;CACNA1C;CACNA1F;CACNB1;CACNG6;CACNB2;CACNG7;CACNB3;CACNG8;CACNB4;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	Marrow	8.18E-21	CALCA;TGFB1;IFNA1;ITGB3;HLA-A;TNF;FGF2;IL2;VEGFA;IL1A;IL6;CD4;CD40LG;IL7;IL1B;ALB;CCL3;TNFSF11;PPARG;JAK2;HLA-DRB1
AGT	Hemostasis Homo sapiens	1.4	IFNA1;SERPINC1;ITGB3;SERPINE1;CSF2RB;SLC7A11;CSF	Retrograd	3.7	GRIA1;GABRB3;GABRB2;GABRB1;CACNA1B;CACNA1A;	Synovia	1.7	IL10;CRP;TGFB1;MMP2;TNF;MMP9;IL4;IL1A;CD4;IL6;C

R1	R-HSA-109582	5E-18	2RA;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;P2RY12;TGFB1;F10;NOS2;IFNB1;HGF;F11;PTPN11;F2;F3;ADRA2B;IL2;ADRA2A;VEGFA;SELP;F7;F8;PIK3CA;KCNMA1;ALB;IL3RA;KRAS;TP53;PPIA;PF4	endocannabinoid signaling	1E-23	CACNA1D;CACNA1C;CACNA1F;PTGS2;MAPK1;CACNA1S;GABRE;GABRD;KCNJ3;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;GABRA5;GABRA4;GABRA3;GABRG3;GABRG2;GABRG1		8E-20	D40LG;IFNG;IL1B;CCL5;ALB;TNFSF11;CCL2;ELANE
SLC6A2	Signaling by SCF-KIT Homo sapiens R-HSA-1433557	2.65E-18	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;STAT1;STAT3;PTPN11;GRIN2C;GRIN2B;MMP9;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Toll-like receptor signaling pathway	4.96E-23	IFNAR2;JUN;CXCL8;IFNA1;CHUK;IFNB1;STAT1;FOS;TNF;IKBKB;IL6;PIK3CA;IL1B;CCL5;TLR9;CCL3;AKT1;MAPK1;TLR7;TLR4;TLR3;IFNAR1;TLR2	Mesenchymal stem cell	7.83E-20	IL10;TGFB1;HGF;MMP2;STAT3;TNF;FGF2;MMP9;FGF4;ICAM1;VEGFA;CDH5;IL6;CD4;MYC;CASP3;IL1B;ALB;AKT1;TNFSF11;CCL2;PPARG;TP53;TLR4
SLC6A4	MAPK family signaling cascades Homo sapiens R-HSA-5683057	6.73E-18	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;MYC;MAPK1;JAK2;JAK3;JAK1;JUN;MMP2;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Adrenergic signaling in cardiomyocytes	5.33E-23	CACNA1D;ADRA1D;CACNA1C;CACNA1F;ADRA1B;ADRA1A;CACNG6;CACNG7;CACNG8;AKT1;MAPK1;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;CACNB1;CACNB2;CACNB3;CACNB4;AGTR1	Knee	1.07E-19	IL10;CRP;IL1RN;TGFB1;F10;SERPINC1;MMP2;F2;PTGS2;TNF;FGF2;MMP9;F3;VEGFA;IL1A;IL6;F8;PGRMC1;IL1B;ALB;TNFSF11
GRIN2C	IRS-mediated signalling Homo sapiens R-HSA-	6.73E-1	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2	Leishmaniasis	1.07E-2	IL10;JUN;TGFB1;NOS2;STAT1;FOS;PTGS2;TNF;IL4;IL1A;FCGR2A;IFNG;IL1B;MAPK1;JAK2;TLR4;HLA-DRB1;JAK1;HLA-	Capillary	5.73E-1	CRP;ABCB1;TGFB1;ACE;SERPINC1;MMP2;SERPINE1;F2;MMP9;AQP1;IL6;CASP3;IL1B;ALB;AGTR1;AKT1;CCL2;REN;APOE;SCN2A

	112399	8	D;GRIN1;PIK3CA;FGF19;IL3RA;TLR9;KRAS;FGFR4;FGFR2;FGFR1		1	DQB1;TLR2		9	
GRIN3B	Insulin receptor signalling cascade Homo sapiens R-HSA-74751	8.89E-18	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;TLR9;KRAS;FGFR4;FGFR2;FGFR1	Malaria	6.98E-21	IL10;CXCL8;TGFB1;LRP1;HGF;SDC2;TNF;ICAM1;SELP;IL6;CD40LG;IFNG;IL1B;TLR9;CCL2;TLR4;TLR2	Blood clot	6.27E-19	CRP;P2RY12;F10;SERPINC1;ITGB3;SERPINE1;F11;F2;MMP9;F3;SELP;F7;F8;CD40LG;ALB;APOE;PF4
KCNJ3	IGF1R signaling cascade Homo sapiens R-HSA-2428924	9.74E-18	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;TLR9;KRAS;FGFR4;FGFR2;FGFR1	Human cytomegalovirus infection	1.24E-20	CXCL8;IFNA1;ITGB3;PTGS2;TNF;IKBKB;NRAS;PPP3R2;MYC;CASP3;CCL5;CCL3;AKT1;CCL2;MAPK1;PTK2B;CCR5;JAK1;CHUK;IFNB1;STAT3;HLA-A;VEGFA;IL6;PIK3CA;IL1B;KRAS;TP53	Fruit	2.27E-18	CRP;JUN;TGFB1;MMP2;FOS;F2;PTGS2;TNF;MMP9;ICAM1;VEGFA;IL6;CD4;CD40LG;CASP3;IL1B;ALB;AKT1;PPARG;TP53
OPRK1	Signaling by Type 1 Insulin-like Growth Factor 1 Receptor (IGF1R) Homo sapiens R-HSA-2404192	9.74E-18	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;TLR9;KRAS;FGFR4;FGFR2;FGFR1	Cardiac muscle contraction	1.56E-20	CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA2D4;CACNA1C;CACNA1F;CACNB1;CACNG6;CACNB2;CACNG7;CACNB3;CACNG8;CACNB4;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	Breast cancer cell line	2.60E-18	ABCB1;SERPINE1;PTGS2;TNF;FGF2;MYC;CASP3;AKT1;MAPK1;JAK2;JUN;TGFB1;VDR;MMP2;STAT3;FOS;F2;MMP9;VEGFA;AR;IL6;PIK3CA;ALB;PPARG;PGR;TP53
JAK1	IRS-related events triggered by IGF1R	9.74E	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;PTPN1	PD-L1 expressi	2.55E	JUN;CHUK;STAT1;STAT3;PTPN11;FOS;IKBKB;NRAS;CD4;PPP3R2;IFNG;PIK3CA;TLR9;AKT1;M	Blood vessel	6.54E	CRP;TGFB1;ACE;SERPINC1;MMP2;MMP9;IL6;IL1B;ALB;CCL2;PPARG;REN;APOE

	Homo sapiens R-HSA-2428928	-18	1;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;TLR9;KRAS;FGFR4;FGFR2;FGFR1	on and PD-1 checkpoint pathway in cancer	-20	APK1;KRAS;JAK2;TLR4;JAK1;TLR2	wall	-18	
JAK2	Signaling by GPCR Homo sapiens R-HSA-372790	1.02E-17	CXCL8;ITGB3;HTR2C;ADRA1D;PTH1R;FGF1;ADRA1B;FGF2;ADRA1A;FGF4;ADORA1;AKT1;BDKRB1;JAK2;CCR5;JAK3;JAK1;ANXA1;PTH2R;F2;ADRA2B;ADRA2A;ADORA2A;PIK3CA;IL3RA;AGTR1;CRH;CALCA;CALCB;CSF2RB;CSF2RA;GRIN2A;MC2R;NRAS;CCL5;CCL3;CCL2;MAPK1;DRD2;DRD3;DRD4;P2RY12;HTR1A;OPRK1;CCK;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;FGFR4;FGFR2;PF4;FGFR1	PI3K-Akt signaling pathway	3.47E-20	IFNA1;ITGB3;FGF1;FGF2;FGF4;IKBKB;NRAS;MYC;AKT1;MAPK1;JAK2;JAK3;JAK1;IFNAR2;CHUK;IFNB1;HGF;IL2;VEGFA;IL4;IL6;PIK3CA;IL7;FGF19;IL3RA;KRAS;FGFR4;TP53;TLR4;FGFR2;TLR2;IFNAR1;FGFR1	Peritoneal cavity	1.52E-17	IL10;IL6;CD4;TGFB1;IL1B;ALB;CCL2;TNF;IL2;ICAM1;VEGFA
PTK2B	Innate Immune System Homo sapiens R-HSA-168249	1.48E-1	CRP;IFNA1;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;IKBKB;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;MBL2;JUN;CHUK;IFNB1;	Morphine addiction	4.11E-2	GABRB3;GABRA2;GABRQ;GABRB2;GABRA1;GABRP;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;CACNA1B;CACNA1A;GABRG3;	Rot nodule	8.20E-1	CRP;CALCA;TGFB1;MMP2;F2;TNF;FGF2;MMP9;IL2;VEGFA;NRAS;PGRMC1;CD4;CD40LG;MYC;ALB;PGR;KRAS;TP53;HLA-DRB1

		7	DDX58;PTPN11;FOS;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;CD4;FCGR2A;PIK3CA;CD209;IL1B;FGF19;IL3RA;TLR9;TLR7;KRAS;FGFR4;TLR4;TLR3;FGFR2;TLR2;FGFR1		0	GABRG2;GABRG1;ADORA1;GABRE;GABRD;KCNJ3		7	
JAK3	Gastrin-CREB signalling pathway via PKC and MAPK Homo sapiens R-HSA-881907	1.50E-17	ITGB3;HTR2C;CSF2RB;ADRA1D;FGF1;ADRA1B;FGF2;CSF2RA;ADRA1A;FGF4;GRIN2A;NRAS;BDKRB1;MAPK1;JAK2;JAK3;JAK1;ANXA1;CCK;GRIN2C;F2;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;AGTR1;KRAS;FGFR4;FGFR2;FGFR1	Rheumatoid arthritis	6.56E-20	JUN;CXCL8;TGFB1;FOS;TNF;ICAM1;VEGFA;IL1A;IL6;IFNG;IL1B;CCL5;CCL3;CTLA4;TNFSF11;CCL2;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Fiber	1.02E-16	CRP;CALCA;FGF2;TNF;SLC6A3;SLC6A4;CA3;CASP3;CA4;AKT1;APOE;CACNA1S;TGFB1;MMP2;PTH2R;CCK;FOS;F2;MMP9;VEGFA;IL6;IL1B;ALB;CRH;PPARG;TP53
SLC12A3	Signaling by Insulin receptor Homo sapiens R-HSA-74752	7.34E-17	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;TLR9;KRAS;FGFR4;FGFR2;FGFR1	Tuberculosis	1.05E-19	IFNA1;TNF;PPP3R2;CASP3;AKT1;MAPK1;JAK2;JAK1;IL10;TGFB1;NOS2;VDR;IFNB1;STAT1;IL1A;IL6;FCGR2A;IFNG;CD209;IL1B;TLR9;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Neonate	2.38E-16	IL10;CRP;KCNJ11;SERPINC1;F2;TNF;F3;IL2;IL4;F7;IL6;CD40LG;IFNG;IL1B;ALB;REN;TLR4
KCNMA1	Downstream signal transduction Homo sapiens R-HSA-186763	9.18E-17	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;STAT1;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Osteoclast differentiation	1.29E-19	IFNAR2;JUN;TGFB1;CHUK;IFNB1;STAT1;ITGB3;FOS;TNF;IKBKB;IL1A;PPP3R2;FCGR2A;IFNG;PIK3CA;IL1B;AKT1;TNFSF11;MAPK1;PPARG;IFNAR1;JAK1	Cranium	3.61E-16	CRP;CALCA;TGFB1;MMP2;PTH1R;FOS;F2;PTGS2;TNF;FGF2;MMP9;VEGFA;IL1A;IL6;PGRMC1;IL1B;TNFSF11;TP53;FGFR2;FGFR1

F2	MAPK1/MAPK3 signaling Homo sapiens R-HSA-5684996	1.30E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;MAPK1;JAK2;JAK3;JAK1;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Toxoplasmosis	1.59E-19	IL10;TGFB1;CHUK;NOS2;STAT1;STAT3;TNF;IKBKB;CD40LG;IFNG;CASP3;PPIF;AKT1;MAPK1;CCR5;JAK2;TLR4;HLA-DRB1;JAK1;HLA-DQB1;TLR2	Trophoblast	3.69E-16	IL10;TGFB1;IFNA1;MMP2;SERPINE1;STAT3;HLA-A;TNF;FGF2;MMP9;F3;FGF4;VEGFA;IL6;IFNG;CASP3;IL1B;CRH;AKT1;PGR;TP53
NR3C1	VEGFA-VEGFR2 Pathway Homo sapiens R-HSA-4420097	1.54E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;CDH5;GRIN2A;NRAS;AKT1;PTK2B;MAPK1;JAK2;JAK3;JAK1;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;VEGFA;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Inflammatory bowel disease	1.13E-18	IL10;JUN;TGFB1;STAT1;IL13;STAT3;TNF;IL2;IL4;IL1A;IL6;IFNG;IL1B;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Prostate gland cancer cell	3.96E-16	ST14;JUN;TGFB1;VDR;HGF;MMP2;STAT3;TMPRSS2;PTGS2;TNF;FGF2;MMP9;VEGFA;AR;IL6;MYC;CASP3;AKT1;TP53
ANXA1	Signaling by Leptin Homo sapiens R-HSA-2586552	1.58E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;MAPK1;JAK2;JAK3;JAK1;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Th17 cell differentiation	1.27E-18	JUN;TGFB1;CHUK;STAT1;STAT3;FOS;IL2;IL4;IKBKB;IL6;CD4;PPP3R2;IFNG;IL1B;MAPK1;JAK2;JAK3;HLA-DRB1;JAK1;HLA-DQB1	Lamina propria	4.70E-16	IL10;TGFB1;IL13;TNF;IL2;ICAM1;IL4;IL6;CD4;CD40LG;IFNG;IL1B;TLR4;TLR2
HTR1A	Signaling by VEGF Homo sapiens R-HSA-194138	2.92E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;CDH5;GRIN2A;NRAS;AKT1;PTK2B;MAPK1;JAK2;JAK3;JAK1;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;VEGFA;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	JAK-STAT signaling pathway	1.96E-18	IFNAR2;IL10;IFNA1;IFNB1;STAT1;IL13;STAT3;CSF2RB;PTPN11;CSF2RA;IL2;IL4;IL6;IFNG;PIK3CA;IL7;MYC;IL3RA;AKT1;JAK2;JAK3;IFNAR1;JAK1	Sputum	6.41E-16	IL10;CRP;IL13;TNF;MMP9;IL4;IL6;CD4;CD40LG;IFNG;IL1B;CCL5;ALB;ELANE
DR	Signaling by ERBB4	3.	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FG	Chem	9.	CHRNA3;CACNA1B;CACNA1A;CACNA	Perit	1.	IL10;IL4;GLRA1;IL6;CD4;IFNA1;IL1B;A

D2	Homo sapiens R-HSA-1236394	42E-16	F4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;PGR;KRAS;FGFR4;FGFR2;FGFR1	ical carcinogenesis	46E-18	1D;CACNA1C;PTGS2;CACNA1F;FGF2;FGF4;NRAS;MYC;TNFSF11;AKT1;MAPK1;CACNA1S;JAK2;JUN;CHRNB4;VDR;STAT3;FOS;VEGFA;AR;PIK3CA;PGR;KRAS	oneal exudate	82E-15	LB;TNF;IL2
DRD3	Interleukin-2 signaling Homo sapiens R-HSA-451927	3.75E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;PTK2B;MAPK1;JAK2;JAK3;JAK1;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Cytokine-cytokine receptor interaction	1.84E-17	IL1RN;CXCL8;IFNA1;CSF2RB;TNF;CSF2RA;CCL5;CCL3;TNFSF11;CCL2;CCR5;IL10;IFNAR2;TGFB1;IFNB1;IL13;IL2;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL7;IL1B;IL3RA;PF4;IFNAR1	HaCaT cell	3.39E-15	JUN;IL6;TGFB1;STAT1;CASP3;IL1B;AKT1;PTGS2;TNF;MMP9;TP53
DRD4	Platelet activation, signaling and aggregation Homo sapiens R-HSA-76002	4.12E-16	ITGB3;SERPINE1;CSF2RB;CSF2RA;AKT1;MAPK1;JAK2;JAK3;JAK1;P2RY12;TGFB1;HGF;PTPN11;F2;ADRA2B;IL2;ADRA2A;VEGFA;SELP;F8;PIK3CA;ALB;IL3RA;PPIA;PF4	Epstein-Barr virus infection	2.35E-17	IFNAR2;JUN;IFNA1;CHUK;IFNB1;STAT1;DDX58;STAT3;HLA-A;TNF;ICAM1;IKBKB;IL6;PIK3CA;MYC;CASP3;AKT1;TP53;JAK3;HLA-DRB1;JAK1;HLA-DQB1;TLR2;IFNAR1	Spike	4.21E-15	HTR1A;CACNA1A;CACNA1D;CCK;GRIN2B;GABRG2;CACNA1H;CACNA1G;DPP4;ACE2;CACNA1I;CA1;GRIN2A;CD4;CD40LG;ADORA1
ADRA1A	Signaling by PDGF Homo sapiens R-HSA-186797	5.22E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;STAT1;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Hepatitis C	2.19E-16	IFNAR2;IFNA1;CHUK;DDX58;IFNB1;STAT1;STAT3;TNF;IKBKB;NRAS;IFNG;PIK3CA;MYC;CASP3;AKT1;MAPK1;KRAS;TP53;TLR3;IFNAR1;JAK1	Embryonic fibroblast	6.17E-15	JUN;TGFB1;CHUK;LRP1;DDX58;STAT1;IFNB1;STAT3;TNF;FGF2;IKBKB;MYC;CASP3;AKT1;PPARG;TP53

ADRA1B	Fc epsilon receptor (FCERI) signaling Homo sapiens R-HSA-2454202	5.79E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;IKBKB;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;JUN;CHUK;PTPN11;FOS;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	C-type lectin receptor signaling pathway	2.98E-16	IL10;JUN;CHUK;STAT1;PTPN11;PTGS2;TNF;IL2;IKBKB;IL6;NRAS;PPP3R2;PIK3CA;CD209;IL1B;AKT1;MAPK1;KRAS	MC3T3-E1 cell	1.18E-14	JUN;TGFB1;VDR;PTH1R;FOS;PTGS2;TNF;FGF2;VEGFA;IL6;CASP3;AKT1;TNFSF11
ADRA1D	FRS-mediated FGFR2 signaling Homo sapiens R-HSA-5654700	8.57E-16	ITGB3;CSF2RB;PTPN11;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	T cell receptor signaling pathway	2.98E-16	IL10;JUN;CHUK;FOS;TNF;IL2;IL4;IKBKB;NRAS;CD4;PPP3R2;CD40LG;IFNG;PIK3CA;AKT1;CTLA4;MAPK1;KRAS	NIH-3T3 cell	1.25E-14	JUN;TGFB1;STAT3;FOS;FGF1;TNF;FGF2;FGF4;NRAS;MYC;ALB;AKT1;MAPK1;PPARG;KRAS;JAK2;TP53
PRSS1	FRS-mediated FGFR4 signaling Homo sapiens R-HSA-5654712	8.57E-16	ITGB3;CSF2RB;PTPN11;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Th1 and Th2 cell differentiation	6.44E-16	JUN;CHUK;STAT1;IL13;FOS;IL2;IKBKB;IL4;CD4;PPP3R2;IFNG;MAPK1;JAK2;JAK3;HLA-DRB1;JAK1;HLA-DQB1	Ovarian cancer cell line	1.29E-14	JUN;ABCB1;TGFB1;MMP2;SERPINE1;STAT3;F2;TNF;MMP9;VEGFA;MYC;CASP3;AKT1;TP53
TMPRSS2	FRS-mediated FGFR3 signaling Homo sapiens R-HSA-	8.57E-1	ITGB3;CSF2RB;PTPN11;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;J	Serotonergic synapse	1.38E-1	GABRB3;GABRB2;GABRB1;CACNA1B;HTR1A;CACNA1A;HTR2C;CACNA1D;CACNA1C;CACNA1F;PTGS2;SLC6A4;NRAS;CASP3;MAPK	Cervical cancer cel	2.60E-1	JUN;IFNA1;STAT1;IFNB1;MMP2;STAT3;FOS;TNF;IL6;CD4;MYC;CASP3;ALB;AKT1;APOE;TP53

	5654706	6	AK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1		5	1;KRAS;CACNA1S;KCNJ3	line	4	
ST14	FRS-mediated FGFR1 signaling Homo sapiens R-HSA-5654693	8.57E-16	ITGB3;CSF2RB;PTPN11;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Human T-cell leukemia virus 1 infection	1.73E-15	JUN;TGFB1;CHUK;HLA-A;FOS;TNF;IL2;ICAM1;IKBKB;NRAS;IL6;CD4;PPP3R2;PIK3CA;MYC;AKT1;MAPK1;KRAS;TP53;JAK3;HLA-DRB1;JAK1;HLA-DQB1	Mesenchyme	9.86E-14	TGFB1;HGF;MMP2;STAT3;FGF1;FGF2;TNF;MMP9;VEGFA;AR;CDH5;NT5E;IL6;MYC;IL1B;TNFSF11;AKT1;PPARG;PGR;KRAS;TP53;FGFR2;FGFR1
CCK	Interleukin-3, 5 and GM-CSF signaling Homo sapiens R-HSA-512988	8.59E-16	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;MAPK1;JAK2;JAK3;JAK1;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Yersinia infection	3.10E-15	IL10;JUN;CXCL8;CHUK;IFNB1;FOS;TNF;IL2;IKBKB;IL6;CD4;FCGR2A;PIK3CA;IL1B;AKT1;CCL2;MAPK1;PTK2B;TLR4	Peritoneal fluid	1.64E-13	IL10;IL6;IL1B;SERPINE1;ALB;CCL2;TNF;VEGFA
MMP2	NGF signalling via TRKA from the plasma membrane Homo sapiens R-HSA-187037	1.07E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;ADORA2A;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Fluid shear stress and atherosclerosis	4.08E-15	JUN;CHUK;SDC2;ITGB3;MMP2;FOS;TNF;MMP9;ICAM1;VEGFA;IKBKB;CDH5;IL1A;IFNG;PIK3CA;IL1B;AKT1;CCL2;TP53	Myofibroblast	1.78E-13	TGFB1;MMP2;HGF;SERPINE1;TNF;FGF2;MMP9;VEGFA;IL6;IL1B;FGF19;AKT1;CCL2;PPARG
MMP	Interleukin receptor	2.0	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;	Proteoglycan	4.6	TGFB1;SDC2;HGF;ITGB3;MMP2;STAT3;PTPN11;FGF2;T	Conjunct	3.6	IL4;IL6;CD4;TGFB1;CD40LG;IL1B;IL13;ALB;TNF;MMP9;I

9	SHC signaling Homo sapiens R-HSA-912526	1E-15	GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;PIK3CA;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	cans in cancer	3E-15	NF;MMP9;VEGFA;NRAS;PIK3CA;MYC;CASP3;AKT1;MAPK1;KRAS;TP53;TLR4;TLR2;FGFR1	iva	3E-13	CAM1;VEGFA
LTA4H	GPCR ligand binding Homo sapiens R-HSA-500792	2.28E-15	CALCA;CALCB;CXCL8;HTR2C;ADRA1D;PTH1R;ADRA1B;ADRA1A;MC2R;CCL5;ADORA1;CCL3;BDKRB1;CCL2;CCR5;DRD2;DRD3;DRD4;P2RY12;ANXA1;HTR1A;OPRK1;PTH2R;CCK;F2;ADRA2B;ADRA2A;ADORA2A;AGTR1;CRH;PF4	cAMP signaling pathway	1.39E-14	GRIA1;JUN;HTR1A;CACNA1D;FOS;CACNA1C;GRIN2C;CACNA1F;GRIN2B;GRIN2D;GRIN1;GRIN2A;MC2R;GRIN3B;GRIN3A;ADORA2A;PIK3CA;ADORA1;AKT1;MAPK1;CACNA1S;DRD2	MG-63 cell	1.10E-12	IL6;TGFB1;CASP3;MMP2;IL1B;AKT1;TNFSF11;TNF;MMP9;TP53
BDKRB1	VEGFR2 mediated cell proliferation Homo sapiens R-HSA-5218921	2.64E-15	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;VEGFA;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	IL-17 signaling pathway	1.84E-14	JUN;CXCL8;CHUK;IL13;FOS;PTGS2;TNF;MMP9;IKBKB;IL4;IL6;IFNG;CASP3;IL1B;CCL2;MAPK1	Colorectal cancer cell	1.15E-12	TGFB1;MMP2;STAT3;PTGS2;MMP9;VEGFA;PIK3CA;MYC;CASP3;CA7;AKT1;KRAS;TP53
SLC12A1	Downstream signaling of activated FGFR2 Homo sapiens R-HSA-5654696	2.73E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	TNF signaling pathway	1.99E-14	JUN;CHUK;IFNB1;FOS;PTGS2;TNF;MMP9;ICAM1;IKBKB;IL6;PIK3CA;CASP3;IL1B;CCL5;AKT1;CCL2;MAPK1	Pancreatic cancer cell	1.71E-12	JUN;TGFB1;HGF;STAT3;PTGS2;MMP9;VEGFA;MYC;CASP3;IL1B;AKT1;KRAS;TP53
VDR	Downstream signaling of activated FGFR4	2.73E-	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;G	GnRH secretion	2.07E-	KCNJ11;CACNA1D;CACNA1C;CACNA1F;CACNA1H;CACNA1G;CACNA1I;NRAS;PIK3CA;AKT1;MAPK1;KRAS;CACNA	Hip	2.35E-	CRP;CALCA;F10;VDR;SERPINC1;SERPINE1;F2;TNF;F3;F7;IL6;IL1B;ALB;TNFSF11;SHBG

	Homo sapiens R-HSA-5654716	15	RIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1		14	1S;KCNJ3		12	
P2RY12	Downstream signaling of activated FGFR3 Homo sapiens R-HSA-5654708	2.73E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Alzheimer disease	4.53E-14	LRP1;CACNA1D;CACNA1C;PTGS2;CACNA1F;TNF;IKBKB;GRIN2A;NRAS;PPP3R2;CASP3;AKT1;MAPK1;APOE;CACNA1S;CHUK;NOS2;GRIN2C;GRIN2B;GRIN2D;GRIN1;IL1A;IL6;PIK3CA;IL1B;PPIF;KRAS	Microvessel	2.80E-12	IL6;TGFB1;ACE;MMP2;IL1B;ALB;AKT1;MMP9;AQP1
F10	Signalling by NGF Homo sapiens R-HSA-166520	2.73E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;IKBKB;GRIN2A;NRAS;CASP3;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;STAT3;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;ADORA2A;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Amphetamine addiction	6.35E-14	GRIA1;JUN;CACNA1D;FOS;CACNA1C;GRIN2C;GRIN2B;SLC6A3;GRIN1;GRIN2D;GRIN2A;GRIN3B;PPP3R2;GRIN3A	Gingival fluid	2.80E-12	CRP;IL10;IL1A;IL6;IL1B;TNFSF11;TNF;MMP9;ELANE
F11	Signaling by FGFR4 Homo sapiens R-HSA-5654743	3.42E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Prion disease	2.01E-13	PRNP;CACNA1B;CACNA1D;CACNA1C;GRIN2C;CACNA1F;GRIN2B;TNF;GRIN2D;GRIN1;IL1A;GRIN2A;GRIN3B;IL6;PPP3R2;GRIN3A;PIK3CA;IL1B;CASP3;CCL5;PPIF;MAPK1;CACNA1S	K-562 cell	4.32E-12	JUN;ABCB1;IFNA1;ITGB3;STAT3;TNF;IL2;IFNG;MYC;CASP3;AKT1;JAK2;TP53
F7	Downstream signaling of activated	3.42E	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;	Cholinergic syn	3.64E	CHRNB4;CHRNA3;CACNA1B;CACNA1A;CACNA1D;CACNA1C;FOS;CACNA1F;NRAS;PIK3CA;AKT	Acutely m	1.61E	CD4;TGFB1;IFNA1;IL7;CASP3;AKT1;KRAS;NR3C1;TNF;TP53;IL2

	FGFR1 Homo sapiens R-HSA-5654687	-15	PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	apse	-13	1;MAPK1;KRAS;CACNA1S;JAK2;KCNJ3	phoblastic leukemia cell	-111	
F8	Signaling by FGFR3 Homo sapiens R-HSA-5654741	3.68E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Rap1 signaling pathway	8.18E-13	HGF;ITGB3;FGF1;GRIN2B;FGF2;GRIN1;VEGFA;FGF4;GRIN2A;NRAS;ADORA2A;PIK3CA;FGF19;AKT1;MAPK1;KRAS;DRD2;FGFR4;FGFR2;FGFR1	DAUDI cell	2.25E-11	CD4;CD40LG;IFNA1;IFNG;IFNB1;MYC;HLA-A;IL2;IFNAR1
LRP1	Signaling by FGFR1 Homo sapiens R-HSA-5654736	4.60E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Human immunodeficiency virus 1 infection	9.78E-13	JUN;IFNA1;CHUK;IFNB1;HLA-A;FOS;TNF;IKBKB;NRAS;CD4;PPP3R2;PIK3CA;CASP3;AKT1;MAPK1;PTK2B;KRAS;CCR5;TLR4;TLR2	Tibia	4.01E-11	CRP;CALCA;IL6;TGFB1;VDR;IL1B;TNFSF11;PTH1R;SLC7A11;TNF;FGF2;VEGFA
GGCX	GRB2 events in EGFR signaling Homo sapiens R-HSA-179812	8.08E-15	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK	Natural killer cell mediated	3.76E-12	IFNAR2;IFNA1;IFNB1;PTPN11;HLA-A;TNF;ICAM1;NRAS;PPP3R2;IFNG;PIK3CA;CASP3;MAPK1;PTK2B;KRAS;IFNAR1	Periosteum	4.56E-11	IL1A;ITGB3;STAT3;CCL3;PTK2B;CCL2;MAPK1;TNF;MMP9

			1;FGFR1	tedcytotoxicity					
MC2R	SHC1 events in EGFR signaling Homo sapiens R-HSA-180336	8.08E-15	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Type II diabetes mellitus	4.75E-12	IKBKB;KCNJ11;PIK3CA;CACNA1B;CACNA1A;MAPK1;CACNA1D;CACNA1C;CACNA1E;TNF;CACNA1G	Mammary gland cell line	1.00E-10	AR;TGFB1;MYC;CASP3;MMP2;STAT3;AKT1;PGR;MMP9;TP53
CRH	SOS-mediated signalling Homo sapiens R-HSA-112412	8.08E-15	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Ras signaling pathway	5.23E-12	CHUK;HGF;PTPN11;FGF1;GRIN2B;FGF2;GRIN1;VEGFA;FGF4;IKBKB;GRIN2A;NRAS;PIK3CA;FGF19;AKT1;MAPK1;KRAS;FGFR4;FGFR2;FGFR1	Femur	1.84E-10	CRP;CALCA;IL6;TGFB1;VDR;ALB;TNFSF11;PTH1R;SHBG;TNF;VEGFA
CAMLG	SHC1 events in ERBB4 signaling Homo sapiens R-HSA-1250347	8.08E-15	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Circadian entrainment	8.57E-12	GRIA1;CACNA1D;CACNA1C;FOS;GRIN2C;GRIN2B;CACNA1H;CACNA1G;GRIN2D;GRIN1;CACNA1I;GRIN2A;MAPK1;KCNJ3	Peritoneal mesothelium	3.14E-10	IL6;TGFB1;IL1B;SERPINE1;CCL2;TNF;AQP1
PPP3R2	RAF/MAP kinase cascade Homo sapiens R-HSA-5673001	8.08E-15	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Prostate cancer	8.57E-12	SRD5A2;CHUK;TMPRSS2;MMP9;IKBKB;AR;NRAS;PIK3CA;AKT1;MAPK1;KRAS;TP53;FGFR2;FGFR1	B16-F10 cell	3.14E-10	CD4;CASP3;MMP2;AKT1;MMP9;TP53;IL2;VEGFA
PP	DAP12 signaling	8.	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FG	Herpe	9.	IFNA1;ITGB3;TNF;IKBKB;CASP3;CCL5;	Dopa	7.	HTR1A;HTR2C;REN;FOS;DRD2;DRD3;

IA	Homo sapiens R-HSA-2424491	20E-15	F4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	s simplex virus 1 infection	19E-12	AKT1;CCL2;JAK2;JAK1;IFNAR2;CHUK;STAT1;IFNB1;DDX58;PTPN11;HLA-A;IL6;IFNG;PIK3CA;IL1B;TLR9;TP53;HLA-DRB1;TLR3;HLA-DQB1;TLR2;IFNAR1	mine rgic syste m	86E-10	SLC6A3;DRD4;SLC6A4
PIF	FCERI mediated MAPK activation Homo sapiens R-HSA-2871796	9.25E-15	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;MAPK1;JAK2;JAK3;JAK1;JUN;FOS;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Chemokine signaling pathway	1.54E-11	CXCL8;CHUK;STAT1;STAT3;IKBKB;NRAS;PIK3CA;CCL5;CCL3;AKT1;CCL2;MAPK1;PTK2B;KRAS;CCR5;JAK2;JAK3;PF4	BTO:0000964	9.76E-10	KCNH2;GRIA1;SLC12A3;KCNJ11;SLC12A1;HTR2C;GRIN2C;GRIN2B;AQP1;GRIN2D;GRIN1;GRIN2A;KCNMA1;ALB;SCN4A;SCN2A;CACNG2;KCNJ3
ADRA2A	ARMS-mediated activation Homo sapiens R-HSA-170984	1.17E-14	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Breast cancer	2.24E-11	JUN;FOS;FGF1;FGF2;FGF4;NRAS;PIK3CA;MYC;FGF19;AKT1;TNFSF11;MAPK1;PGR;KRAS;TP53;FGFR1	BTO:0002979	1.96E-09	IL10;IL4;IL6;CD4;CD40LG;IL1B;ALB;TNF;ELANE
SERPINC1	Signalling to p38 via RIT and RIN Homo sapiens R-HSA-187706	1.17E-14	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Melanoma	4.76E-11	NRAS;PIK3CA;HGF;FGF19;AKT1;MAPK1;KRAS;FGF1;FGF2;TP53;FGF4;FGFR1	Granulation tissue	2.04E-09	TGFB1;MMP2;IL1B;TNF;MMP9;FGF2;VEGFA
HTR2C	Frs2-mediated activation Homo sapiens	1.28E-	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK	NOD-like receptor	5.60E-	IFNAR2;JUN;CXCL8;IFNA1;CHUK;IFNB1;STAT1;TNF;IKBKB;IL6;IL1B;CCL5;CCL2;MAPK1;TLR4;IFNAR1;JAK1	BMMC cell	2.84E-	IL4;IL6;IL13;AKT1;PTPN11;PTGS2;TNF;VEGFA

	R-HSA-170968	14	1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	signaling pathway	11			09	
CHRNA2	Class A/1 (Rhodopsin-like receptors) Homo sapiens R-HSA-373076	1.46E-14	CXCL8;HTR2C;ADRA1D;ADRA1B;ADRA1A;MC2R;CCL5;ADORA1;CCL3;BDKRB1;CCL2;CCR5;DRD2;DRD3;DRD4;P2RY12;ANXA1;HTR1A;OPRK1;CCK;F2;ADRA2B;ADRA2A;ADORA2A;AGTR1;PF4	Necroptosis	7.41E-11	IFNAR2;IFNA1;IFNB1;STAT1;STAT3;TNF;IL1A;IFNG;IL1B;JAK2;PPIA;JAK3;TLR4;TLR3;IFNAR1;JAK1	Human aortic endothelial cell	1.19E-08	AKT1;CCL2;APOE;TNF;F3;ICAM1
CHRNA3	Prolonged ERK activation events Homo sapiens R-HSA-169893	1.53E-14	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1	Glutamatergic synapse	8.02E-11	GRIA1;CACNA1A;CACNA1D;CACNA1C;GRIN2C;GRIN2B;GRIN2D;GRIN1;GRIN2A;GRIN3B;PPP3R2;GRIN3A;MAPK1;KCNJ3	Wound fluid	1.22E-08	MMP2;MMP9;FGF2;ELANE;VEGFA
CHRNB4	Signaling by EGFR Homo sapiens R-HSA-177929	1.77E-14	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Pancreatic cancer	9.22E-11	IKBKB;TGFB1;CHUK;PIK3CA;STAT1;STAT3;AKT1;MAPK1;KRAS;TP53;JAK1;VEGFA	Cancellous bone	2.88E-08	CALCA;IL6;TGFB1;TNFSF11;PPARG;PTH1R;SLC7A11;FGF2
CKS1B	Signalling to RAS Homo sapiens R-HSA-	2.17E	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;F	Pertussis	9.22E	IL10;IL1A;JUN;IL6;CXCL8;NOS2;CASP3;IL1B;MAPK1;FOS;TNF;TLR4	Fhm	2.88E	CACNB1;GABRB2;GABRB1;SRD5A3;CACNA1A;GABRG1

	167044	-14	GF19;IL3RA;MAPK1;KRAS;JAK2;FGFR4;JAK3;FGFR2;JAK1;FGFR1		-11			-08	
KCNH2	DAP12 interactions Homo sapiens R-HSA-2172127	2.33E-14	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Pathways of neurodegeneration	9.61E-11	GRIA1;CACNA1B;CACNA1D;CACNA1C;PTGS2;CACNA1F;TNF;SLC6A3;GRIN2A;NRAS;PPP3R2;CASP3;MAPK1;CACNA1S;PRNP;NOS2;SIGMAR1;GRIN2C;GRIN2B;GRIN2D;GRIN1;IL1A;IL6;IL1B;PPIF;KRAS	Latex	3.75E-08	CRP;IL6;CD4;CD40LG;IL1B;ALB;TNF
CALCA	Signaling by FGFR2 Homo sapiens R-HSA-5654738	2.66E-14	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	cGMP-PKG signaling pathway	1.55E-10	CACNA1D;ADRA1D;CACNA1C;CACNA1F;ADRA1B;ADRA1A;ADRA2B;ADRA2A;PPP3R2;KCNMA1;ADORA1;AGTR1;PPIF;AKT1;MAPK1;CACNA1S	Alveolar bone	1.37E-07	IL1A;IL6;TGFB1;MMP2;IL1B;TNFSF11;TNF;MMP9;FGF4
CALCB	Signaling by FGFR Homo sapiens R-HSA-190236	3.72E-14	ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;AKT1;MAPK1;JAK2;JAK3;JAK1;CHUK;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;IL3RA;KRAS;FGFR4;FGFR2;FGFR1	Cocaine addiction	2.48E-10	GRIN2A;JUN;GRIN3B;GRIN3A;DRD2;GRIN2C;GRIN2B;SLC6A3;GRIN1;GRIN2D	HEK-293 cell	1.65E-07	CACNA1I;GRIN2A;SCN4A;GRIN2B;CACNA1G;KCNJ3
ADRA2B	Signalling to ERKs Homo sapiens R-HSA-187687	3.97E-1	ITGB3;CSF2RB;GRIN2C;FGF1;GRIN2B;FGF2;CSF2RA;IL2;GRIN2D;GRIN1;FGF4;GRIN2A;NRAS;FGF19;IL3RA;MAPK1;KRAS;JAK2;FGFR	Gastric cancer	2.93E-1	ABCB1;TGFB1;HGF;FGF1;FGF2;FGF4;NRAS;PIK3CA;MYC;FGF19;AKT1;MAPK1;KRAS;TP53;FGFR2	Amniotic fluid	1.66E-0	CRP;NT5E;CD40LG;IL1B;ALB;REN;TNF;F3

		4	4;JAK3;FGFR2;JAK1;FGFR1		0			7	
SELP	GABA receptor activation Homo sapiens R-HSA-977443	6.10E-14	GABRB3;GABRA2;GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;GABRG3;GABRG2;KCNJ3	Long-term potentiation	3.68E-10	GRIA1;GRIN2A;NRAS;PPP3R2;MAPK1;KRAS;CACNA1C;GRIN2C;GRIN2B;GRIN1;GRIN2D	Blood plasma	1.88E-07	F10;SERPINC1;SERPINE1;F11;HTR2C;CCK;F2;F3;F7;MC2R;F8;CRH;REN
FGFR4	NCAM1 interactions Homo sapiens R-HSA-419037	3.34E-13	CACNB1;CACNA1I;PRNP;CACNB2;CACNB3;CACNB4;CACNA1D;CACNA1C;CACNA1S;CACNA1H;CACNA1G	Allograft rejection	4.78E-10	IL10;IL4;CD40LG;IFNG;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Phagocyte	2.22E-07	SELP;SERPINC1;ITGB3;SERPINE1;CTLA4;F2
FGF4	Reversible hydration of carbon dioxide Homo sapiens R-HSA-1475029	2.26E-11	CA12;CA1;CA3;CA2;CA4;CA7;CA14	Human papillomavirus infection	4.80E-10	IFNAR2;IFNA1;CHUK;STAT1;IFNB1;ITGB3;HLA-A;PTGS2;TNF;VEGFA;IKBKB;NRAS;PIK3CA;CASP3;AKT1;MAPK1;KRAS;TP53;TLR3;JAK1;IFNAR1	L-929 cell	2.77E-07	DPP4;FCGR2A;IFNA1;IFNB1;TNF;IL2;ICAM1
FGF19	Amine ligand-binding receptors Homo sapiens R-HSA-375280	6.15E-11	HTR1A;HTR2C;ADRA1D;ADRA1B;DRD2;ADRA1A;DRD3;ADRA2B;DRD4;ADRA2A	Renin secretion	5.11E-10	PPP3R2;ACE;KCNMA1;ADORA1;AGTR1;CACNA1D;REN;CACNA1C;CACNA1S;CACNA1F;AQP1	Myoblast	2.80E-07	JUN;TGFB1;MYC;CASP3;AKT1;PPARG;FGFR4;TNF;FGF2;FGFR1
FGFR1	GPCR downstream signaling Homo sapiens R-HSA-	1.13E-1	CALCA;CALCB;CXCL8;HTR2C;CSF2RB;ADRA1D;PTH1R;ADRA1B;CSF2RA;ADRA1A;MC2R;CCL5;ADORA1;AKT1;BDKRB1;JAK2;CCR5;D	Nitrogen metabolism	5.28E-1	CA12;CA1;CA3;CA2;CA4;CA7;CA14	Renal vein	2.83E-0	SERPINC1;ALB;REN;F2

	388396	0	RD2;JAK3;DRD3;DRD4;JAK1;P2RY12;ANXA1;HTR1A;OPRK1;PTH2R;CCK;F2;ADRA2B;IL2;ADRA2A;ADORA2A;PIK3CA;IL3RA;AGTR1;CRH;PF4		0			7	
FGF1	SHC-mediated cascade: FGFR4 Homo sapiens R-HSA-5654719	1.45E-10	NRAS;FGF19;PTPN11;KRAS;FGF1;FGFR4;FGF2;FGF4	Cellular senescence	5.61E-10	TGFB1;CXCL8;SERPINE1;CACNA1D;HLA-A;IL1A;IL6;NRAS;PPP3R2;PIK3CA;MYC;AKT1;MAPK1;KRAS;TP53	Plasma cell	3.35E-07	IL1RN;ACE;TGFB1;LRP1;SERPINC1;CACNA2D1;ITGB3;F11;F2;ICAM1;DPP4;CDH5;F8;SHBG;FGFR1;MBL2
FGFR2	PI3K Cascade Homo sapiens R-HSA-109704	1.47E-10	PIK3CA;FGF19;TLR9;AKT1;PTPN11;FGF1;FGFR4;FGF2;PRKAB1;FGFR2;FGF4;FGFR1	Dopaminergic synapse	5.82E-10	GRIA1;CACNA1B;CACNA1A;CACNA1D;CACNA1C;FOS;GRIN2B;SLC6A3;GRIN2A;AKT1;DRD2;DRD3;DRD4;KCNJ3	Acute myeloid leukemia cell	3.46E-07	NRAS;MYC;CASP3;IL3RA;STAT3;AKT1;TNF;TP53
FGF2	Signaling by FGFR in disease Homo sapiens R-HSA-1226099	1.84E-10	NRAS;PIK3CA;STAT1;STAT3;KRAS;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Prolactin signaling pathway	6.00E-10	NRAS;PIK3CA;STAT1;STAT3;AKT1;TNFSF11;MAPK1;KRAS;FOS;JAK2;CYP17A1	Cancer stem cell	3.55E-07	ABCB1;TGFB1;MYC;IL3RA;STAT3;AKT1;KRAS;TP53;VEGFA
PF4	Signaling by FGFR1 in disease Homo sapiens	4.78E-	NRAS;PIK3CA;STAT1;STAT3;KRAS;FGF1;FGF2;FGF4;FGFR1	Bladder cancer	9.97E-	NRAS;CXCL8;MYC;MMP2;MAPK1;KRAS;MMP9;TP53;VEGFA	Sympathetic	4.11E-	ACE;AGTR1;REN;ADRA1B;SLC6A2

	R-HSA-5655302	10			10		nervous system	07	
HGF	GPVI-mediated activation cascade Homo sapiens R-HSA-114604	5.63E-10	PIK3CA;IL3RA;AKT1;CSF2RB;PTPN11;JAK2;JAK3;CSF2RA;IL2;JAK1	Graft-versus-host disease	1.26E-09	IL1A;IL6;IFNG;IL1B;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Talus	5.69E-07	CRP;IL6;ACE;IL1B;ALB;F2;TNF
TLR7	Disease Homo sapiens R-HSA-1643685	6.46E-10	SDC2;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;IKBKB;MC2R;NRAS;MYC;AKT1;CCR5;TGFB1;CHUK;KCNJ11;STAT1;STAT3;PTPN11;HLA-A;CD4;PIK3CA;FGF19;ALB;KRAS;FGFR4;TLR4;PPIA;TLR3;FGFR2;TLR2;FGFR1	Chronic myeloid leukemia	1.49E-09	IKBKB;NRAS;TGFB1;CHUK;PIK3CA;MYC;AKT1;MAPK1;PTPN11;KRAS;TP53	Gastric ulcer	6.11E-07	IL1B;PTGS2;TNF;FGF2;VEGFA
TLR9	Interleukin-6 signaling Homo sapiens R-HSA-1059683	1.14E-09	IL6;STAT1;STAT3;PTPN11;JAK2;JAK1	Apoptosis	1.54E-09	JUN;CHUK;CSF2RB;FOS;TNF;IKBKB;NRAS;PIK3CA;CASP3;IL3RA;AKT1;MAPK1;KRAS;TP53	Gbm cell	6.11E-07	CASP3;STAT3;AKT1;TP53;VEGFA
ACE2	PI5P, PP2A and IER3 Regulate PI3K/AKT Signaling Homo	3.91E-0	PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Growth hormone syn	1.68E-0	STAT1;STAT3;CACNA1D;CACNA1C;FOS;CACNA1F;NRAS;PIK3CA;AKT1;MAPK1;KRAS;CACNA1S;JAK2	Osteocyte	6.73E-0	CALCA;NT5E;TGFB1;VDR;TNFSF11;PTH1R;CCDC51

	sapiens R-HSA-6811558	9		thesis, secretion and action	9			7	
IFNAR1	G beta:gamma signalling through PI3Kgamma Homo sapiens R-HSA-392451	4.44E-09	PIK3CA;IL3RA;AKT1;CSF2RB;JAK2;CSF2RA;JAK3;IL2;JAK1	Signaling pathways regulating pluripotency of stem cells	1.68E-09	STAT3;FGF2;NRAS;PIK3CA;MYC;AKT1;MAPK1;KRAS;FGFR4;JAK2;JAK3;FGFR2;FGFR1;JAK1	Esophageal cancer cell	8.80E-07	CASP3;STAT3;AKT1;PTGS2;TP53
IFNAR2	PI3K/AKT Signaling in Cancer Homo sapiens R-HSA-2219528	5.74E-09	CHUK;PIK3CA;FGF19;AKT1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Asthma	2.15E-09	IL10;IL4;CD40LG;IL13;PRG2;TNF;HLA-DRB1;HLA-DQB1	Marrow cell	8.80E-07	SELP;SERPINC1;SERPINE1;CTLA4;F2
JUN	G-protein beta:gamma signalling Homo sapiens R-HSA-	7.81E-09	PIK3CA;IL3RA;AKT1;CSF2RB;JAK2;JAK3;CSF2RA;IL2;JAK1	Hematopoietic cell linea	2.16E-09	IL4;IL1A;IL6;CD4;IL7;ITGB3;IL1B;IL3RA;TNF;CSF2RA;HLA-DRB1;HLA-DQB1	Promastigote	9.83E-07	IL10;IL4;CD4;IFNG;APOE;TNF

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GLRA3	Negative regulation of the PI3K/AKT network Homo sapiens R-HSA-199418	9.37E-09	PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Amoebiasis	3.06E-09	IL10;IL6;TGFB1;CXCL8;IFNG;PIK3CA;NOS2;CASP3;IL1B;TNF;TLR4;TLR2	Multiple myeloma cell	1.22E-06	IL6;CRBN;MYC;CASP3;STAT3;VEGFA
GABRB3	Downstream signaling events of B Cell Receptor (BCR) Homo sapiens R-HSA-1168372	9.91E-09	CHUK;PTPN11;FGF1;FGF2;FGF4;IKBKB;NRAS;PIK3CA;FGF19;AKT1;MAPK1;KRAS;FGFR4;FGFR2;FGFR1	Cortisol synthesis and secretion	4.57E-09	CACNA1I;MC2R;AGTR1;CACNA1D;CACNA1C;CACNA1S;CACNA1F;CACNA1H;CACNA1G;CYP17A1	Bronchial epithelial cell line	1.23E-06	IL6;IL1B;CCL5;TNF;ICAM1
CRBN	Regulation of IFNA signaling Homo sapiens R-HSA-912694	1.20E-08	IFNAR2;IFNA1;STAT1;IFNB1;PTPN11;JAK1;IFNAR1	Non-alcoholic fatty liver disease	4.84E-09	JUN;TGFB1;CXCL8;FOS;TNF;PRKAB1;IKBKB;IL1A;IL6;PIK3CA;CASP3;IL1B;AKT1;PPARG	Inferior vena cava	1.69E-06	SERPINC1;SERPINE1;ALB;REN;F2
TNFSF11	Formation of Fibrin Clot (Clotting Cascade) Homo sapiens R-HSA-140877	1.55E-08	F7;F8;F10;SERPINC1;F11;F2;F3;PF4	Colorectal cancer	5.74E-09	NRAS;JUN;TGFB1;PIK3CA;CASP3;MYC;AKT1;MAPK1;KRAS;FOS;TP53	Germ	1.76E-06	CD4;TGFB1;CD40LG;MYC;ALB;KRAS;FGF2;TP53;FGF4

CDH5	SHC-mediated cascade: FGFR2 Homo sapiens R-HSA-5654699	1.63E-08	NRAS;PTPN11;KRAS;FGF1;FGF2;FGFR2;FGF4	Vascular smooth muscle contraction	6.64E-09	CALCA;CALCB;CACNA1D;ADRA1D;CACNA1C;CACNA1F;ADRA1B;ADRA1A;ADORA2A;KCNMA1;AGTR1;MAPK1;CACNA1S	adipose-derived stem cell	2.20E-06	NT5E;TGFB1;HGF;PPARG;FGF2;VEGFA
PTGS2	Ion channel transport Homo sapiens R-HSA-983712	2.10E-08	GABRB3;GABRA2;GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;ATP2C1;GABRG3;GABRG2;GLRA1;GLRA3	Renal cell carcinoma	8.33E-09	NRAS;JUN;TGFB1;PIK3CA;HGF;AKT1;MAPK1;PTPN11;KRAS;VEGFA	Lymphoid cell line	3.82E-06	CD4;CD40LG;MYC;IL2
DPP4	PI-3K cascade: FGFR1 Homo sapiens R-HSA-5654689	2.39E-08	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Autoimmune thyroid disease	1.11E-08	IL10;IL4;CD40LG;IFNA1;CTLA4;HLA-A;IL2;HLA-DRB1;HLA-DQB1	Needle	4.37E-06	CRP;CALCA;CD4;TMPRSS2;PGR;KRAS;F2;TP53
REN	PI-3K cascade: FGFR3 Homo sapiens R-HSA-5654710	2.39E-08	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Type I diabetes mellitus	3.50E-08	IL1A;IFNG;IL1B;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Lumbar spine	4.80E-06	CRP;CALCA;IL6;VDR;ALB;TNFSF11;SHBG
PRK	PI3K events in ERBB4	2.3	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR	B cell rec	4.0	IKBKB;NRAS;JUN;PPP3R2;CHUK;PIK3CA;AKT1;MAPK1;K	Oralca	5.0	MMP2;CASP3;AKT1;MMP9;TP53

AB1	signaling Homo sapiens R-HSA-1250342	9E-08	4;FGF2;FGFR2;FGF4;FGFR1	eptor signaling pathway	6E-08	RAS;FOS	ncer cell	0E-06	
ETFDH	PIP3 activates AKT signaling Homo sapiens R-HSA-1257604	2.39E-08	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	NF-kappa B signaling pathway	4.34E-08	IKBKB;CXCL8;CD40LG;CHUK;DDX58;IL1B;TNFSF11;PTGS2;TNF;TLR4;ICAM1	Middle ear	5.22E-06	PGRMC1;CD40LG;IL1B;ALB;TNF;TLR2
GPD1	PI-3K cascade: FGFR4 Homo sapiens R-HSA-5654720	2.39E-08	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Relaxin signaling pathway	4.47E-08	JUN;NRAS;TGFB1;PIK3CA;NOS2;MMP2;AKT1;MAPK1;KRAS;FOS;MMP9;VEGFA	g/g	5.22E-06	IL10;IL6;CTLA4;TNF;SLC6A2;TP53
FOS	PI-3K cascade: FGFR2 Homo sapiens R-HSA-5654695	2.39E-08	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Alcoholism	4.98E-08	GRIN2C;GRIN2B;SLC6A3;GRIN2D;GRIN1;GRIN2A;GRIN3B;NRAS;GRIN3A;ADORA2A;CRH;MAPK1;KRAS;DRD2	Flower	9.81E-06	IL6;ALB;APOE;F2;TNF
MYC	Adrenoceptors Homo sapiens R-HSA-390696	2.72E-08	ADRA1D;ADRA1B;ADRA2B;ADRA1A;ADRA2A	Salmonella infection	5.04E-08	JUN;CXCL8;CHUK;FOS;TNF;IKBKB;IL6;PIK3CA;MYC;IL1B;CASP3;TLR9;AKT1;MAPK1;TLR4;TLR2	3T3-L1 cell	9.82E-06	IL6;MYC;SERPINE1;STAT3;AKT1;CCL2;PPARG;TNF
N	MAPK1	2	IL6;MAPK1;PTPN1	Fox	5	IKBKB;IL10;IL6;NR	Fet	1	NT5E;MMP2;IL1B;

EU1	(ERK2) activation Homo sapiens R-HSA-112411	.72E-08	1;JAK2;JAK1	O signaling pathway	.31E-08	AS;TGFB1;CHUK;PIK3CA;STAT3;AKT1;MAPK1;KRAS;PRKAB1	almembrane	.20E-05	TNF;MMP9
NEU2	Unblocking of NMDA receptor, glutamate binding and activation Homo sapiens R-HSA-438066	2.88E-08	GRIA1;GRIN2A;GRIN2C;GRIN2B;GRIN2D;GRIN1	Complement and coagulation cascades	6.49E-08	F7;F8;F10;SERPINC1;SERPINE1;F11;BDKRB1;F2;F3;MBL2	SK-N-SH cell	1.26E-05	CASP3;AKT1;SLC6A2;TP53
PTH1R	GAB1 signalosome Homo sapiens R-HSA-180292	3.14E-08	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Taste transduction	7.27E-08	GABRA2;GABRA1;GABRA6;GABRA5;GABRA4;GABRA3;HTR1A;CACNA1A;CACNA1C;SCN2A	HT-1080 cell	1.46E-05	MMP2;SERPINE1;AKT1;MMP9;TP53
PTH2R	PI3K/AKT activation Homo sapiens R-HSA-198203	3.14E-08	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Intestinal immune network for IgA production	8.66E-08	IL10;IL4;IL6;TGFB1;CD40LG;IL2;HLA-DRB1;HLA-DQB1	Hybridoma cell line	1.61E-05	IL6;CD40LG;ALB

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ADORA1	Constitutive Signaling by Aberrant PI3K in Cancer Homo sapiens R-HSA-2219530	4.02E-08	PIK3CA;FGF19;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Acute myeloid leukemia	9.31E-08	IKBKB;NRAS;CHUK;PIK3CA;MYC;STAT3;AKT1;MAPK1;KRAS	T-98G cell	1.75E-05	MMP2;CASP3;AKT1;TP53
ADORA2A	Transmembrane transport of small molecules Homo sapiens R-HSA-382551	4.51E-08	GABRB3;GABRB2;GABRB1;ABCB1;SLC7A11;ATP2C1;SLC6A2;SLC6A3;AQP1;GLRA1;GLRA3;GABRA2;GABRQ;GABRA1;SLC12A3;GABRA6;KCNJ11;GABRA5;GABRA4;GABRA3;SLC12A1;GABRG3;GABRG2;ALB;SLC29A4	Pathogenic Escherichia coli infection	1.02E-07	JUN;CXCL8;CHUK;PTPN11;FOS;F2;TNF;IKBKB;IL6;FCGR2A;IL1B;CASP3;MAPK1;TLR4	Gut mucosa	1.75E-05	IL10;CD4;CD40LG;TNF
NT5E	Negative regulation of FGFR4 signaling Homo sapiens R-HSA-5654733	6.20E-08	FGF19;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGF4	Central carbon metabolism in cancer	1.37E-07	NRAS;PIK3CA;MYC;AKT1;MAPK1;KRAS;TP53;FGFR2;FGFR1	Autonomic nervous system	1.91E-05	IL6;ACE;IL1B;CRH;CCK;FOS;TNF
SFRP4	FGFR1 mutant receptor activation Homo sapiens R-HSA-	6.20E-0	PIK3CA;STAT1;STAT3;FGF1;FGF2;FGF4;FGFR1	Small cell lung cancer	1.39E-0	IKBKB;CHUK;PIK3CA;NOS2;CASP3;MYC;AKT1;PTGS2;TP53;CKS1B	Tachyzoite	2.37E-0	IL10;IL4;CD4;IFNG

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GABRB2	Diseases of signal transduction Homo sapiens R-HSA-5663202	6.58E-08	TGFB1;CHUK;STAT1;STAT3;PTPN11;FGF1;FGF2;FGF4;NRAS;PIK3CA;MYC;FGF19;AKT1;KRAS;FGFR4;FGFR2;FGFR1	Spinocerebellar ataxia	1.40E-07	GRIA1;GRIN2A;GRIN3B;GRIN3A;PIK3CA;PPIF;AKT1;CACNA1A;GRIN2C;GRIN2B;GRIN2D;GRIN1	Vitreous humor	2.37E-05	IL6;ALB;CCL2;VEGFA
SCN4A	Interferon Signaling Homo sapiens R-HSA-913531	9.58E-08	IFNAR2;IFNA1;STAT1;IFNB1;DDX58;PTPN11;HLA-A;ICAM1;IFNG;JAK2;HLA-DRB1;JAK1;HLA-DQB1;IFNAR1	GnRH signaling pathway	1.54E-07	NRAS;JUN;MMP2;MAPK1;PTK2B;CACNA1D;KRAS;CACNA1C;CACNA1S;CACNA1F	Periodontal ligament	2.37E-05	IL6;TGFB1;IL1B;TNFSF11;TNF;FGF2
SCN2A	SHC-mediated cascade: FGFR1 Homo sapiens R-HSA-5654688	1.22E-07	NRAS;KRAS;FGF1;FGF2;FGF4;FGFR1	Non-small cell lung cancer	1.76E-07	NRAS;PIK3CA;HGF;STAT3;AKT1;MAPK1;KRAS;JAK3;TP53	2t	3.20E-05	IL4;IFNG;IL2
GABRA1	Signaling by the B Cell Receptor (BCR) Homo sapiens R-HSA-983705	1.30E-07	CHUK;PTPN11;FGF1;FGF2;FGF4;IKBKB;NRAS;PIK3CA;FGF19;AKT1;MAPK1;KRAS;FGFR4;FGFR2;FGFR1	African trypanosomiasis	2.28E-07	IL10;IL6;IFNG;IL1B;TLR9;TNF;ICAM1	Anaplastic large cell lymphoma cell line	3.20E-05	FGF19;STAT3;JAK3

GABRA2	SALM protein interactions at the synapse Homo sapiens R-HSA-8849932	1.65E-07	GRIA1;GRIN2A;GRIN2C;GRIN2B;GRIN2D;GRIN1	Aldosterone synthesis and secretion	2.54E-07	CACNA1I;MC2R;CYP11B2;AGTR1;CACNA1D;CACNA1C;CACNA1S;CACNA1F;CACNA1H;CACNA1G	RAJI cell	4.05E-05	CD40LG;CD209;MYC;IL2
GABRA3	Signaling by FGFR3 point mutants in cancer Homo sapiens R-HSA-8853338	1.65E-07	NRAS;PIK3CA;KRAS;FGF1;FGF2;FGF4	Viral protein interaction with cytokine and cytokine receptor	3.08E-07	IL10;IL6;CXCL8;CCL5;CCL3;CCL2;CCR5;TNF;IL2;PF4	UMR-106 cell	4.05E-05	CALCA;VDR;TNFSF11;PTH1R
GABRA4	Signaling by FGFR3 in disease Homo sapiens R-HSA-5655332	1.65E-07	NRAS;PIK3CA;KRAS;FGF1;FGF2;FGF4	Cushing syndrome	3.38E-07	CACNA1I;MC2R;AGTR1;CRH;MAPK1;CACNA1D;CACNA1C;CACNA1S;CACNA1F;CACNA1H;CACNA1G;CYP17A1	Interstitial cell	4.05E-05	TGFB1;CASP3;REN;PTGS2
GA	G alpha (i)	1.	P2RY12;ANXA1;CXCL8;HTR1A;OPRK1	Regul	3.	ITGB3;F2;FGF1;FGF2;FGF4;NRAS;PIK	Jugula	4.	SERPINC1;ALB;CCK;F2

BRA5	signalling events Homo sapiens R-HSA-418594	91E-07	;ADRA2B;ADRA2A;CCL5;ADORA1;BDKRB1;CCR5;DRD2;DRD3;DRD4;PF4	ation of actin cytoskeleton	55E-07	3CA;FGF19;BDKRB1;MAPK1;KRAS;FGFR4;FGFR2;FGFR1	rvein	05E-05	
GABRA6	Activation of NMDA receptor upon glutamate binding and postsynaptic events Homo sapiens R-HSA-442755	3.34E-07	GRIA1;GRIN2A;MAPK1;GRIN2C;GRIN2B;GRIN2D;GRIN1	VEGF signaling pathway	4.55E-07	NRAS;PPP3R2;PIK3CA;AKT1;MAPK1;KRAS;PTGS2;VEGFA	U2-OS cell	4.71E-05	CASP3;MMP2;AKT1;MMP9;TP53
GABRB1	Cell surface interactions at the vascular wall Homo sapiens R-HSA-202733	3.38E-07	SELP;NRAS;PIK3CA;ITGB3;PTPN11;KRAS;SLC7A11;F2;PPIA;PF4	HIF-1 signaling pathway	6.90E-07	IL6;IFNG;PIK3CA;NOS2;SERPINE1;STAT3;AKT1;MAPK1;TLR4;VEGFA	A-431 cell	6.48E-05	JUN;STAT1;CASP3;AKT1
GABRD	Regulation of IFNG signaling Homo sapiens R-HSA-877312	4.11E-07	IFNG;STAT1;PTPN11;JAK2;JAK1	Estrogen signaling pathway	7.32E-07	JUN;NRAS;PIK3CA;MMP2;AKT1;MAPK1;PGR;KRAS;FOS;MMP9;KCNJ3	Germ cell	7.80E-05	AR;TGFB1;CA2;MYC;CASP3;AKT1;PGR;SHBG;TP53;FGF2;CYP17A1;FGF4

GABRE	FGFR4 ligand binding and activation Homo sapiens R-HSA-190322	4.11E-07	FGF19;FGF1;FGFR4;FGF2;FGF4	Cytosolic DNA-sensing pathway	7.63E-07	IKBKB;IL6;IFNA1;CHUK;DDX58;IFNB1;IL1B;CCL5	Chronic lymphocytic leukemia cell	8.17E-05	IL4;CD40LG;AKT1;TP53;IL2
GABRG1	Regulation of insulin secretion Homo sapiens R-HSA-422356	4.42E-07	CACNB2;CACNB3;KCNJ11;CACNA2D2;CACNA1A;CACNA1D;CACNA1C;CACNA1E;ADRA2A	Fc epsilon RI signaling pathway	1.38E-06	IL4;NRAS;PIK3CA;IL13;AKT1;MAPK1;KRAS;TNF	Cyst	9.18E-05	CALCA;CD40LG;PGR;KRAS;TP53;MT-ND1
GABRG2	Platelet degranulation Homo sapiens R-HSA-114608	4.87E-07	SELP;F8;TGFB1;HGF;ITGB3;SERPINE1;ALB;PPIA;VEGFA;PF4	Adipocytokine signaling pathway	1.55E-06	IKBKB;CHUK;STAT3;AKT1;PTPN11;JAK2;TNF;PRKAB1	Penis	9.82E-05	AR;TGFB1;FGF2;TP53
GABRG3	Peptide ligand-binding receptors Homo sapiens R-HSA-	5.45E-0	ANXA1;CXCL8;OPRK1;CCK;F2;MC2R;CCL5;AGTR1;CCL3;BDKRB1;CCL2;CCR5;PF4	Thyroid cancer	4.44E-0	NRAS;MYC;MAPK1;KRAS;PPARG;TP53	Glandular epitheli	9.82E-0	AR;PGR;PTGS2;VEGFA

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GABRP	Role of LAT2/NTAL/LAB on calcium mobilization Homo sapiens R-HSA-2730905	5.45E-07	CHUK;PIK3CA;FGF19;AKT1;MAPK1;PTPN11;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	MicroRNAs in cancer	4.73E-06	ST14;ABCB1;ITGB3;STAT3;PTGS2;MMP9;VEGFA;IKBKB;NRAS;PIK3CA;MYC;CASP3;MAPK1;KRAS;TP53	Peripheral nerve	1.10E-04	GRIA1;JUN;CD40LG;CACNA1B;CCK;FOS;FGF1;FGF2;CACNA1H
GABRQ	CREB phosphorylation through the activation of CaMKII Homo sapiens R-HSA-442729	6.11E-07	GRIN2A;GRIN2C;GRIN2B;GRIN2D;GRIN1	Legionellosis	4.80E-06	IL6;CXCL8;CASP3;IL1B;TNF;TLR4;TLR2	Nasal lavage fluid	1.19E-04	IL4;IL13;ALB;TNF
CSF2RA	CREB phosphorylation through the activation of Ras Homo sapiens R-HSA-442742	6.25E-07	GRIN2A;MAPK1;GRIN2C;GRIN2B;GRIN2D;GRIN1	Systemic lupus erythematosus	4.88E-06	IL10;GRIN2A;CD40LG;FCGR2A;IFNG;TNF;GRIN2B;ELANE;HLA-DRB1;HLA-DQB1	Pollen	1.30E-04	IL10;IL4;CD4;CD40LG;IL13;ALB
IL3RA	Interleukin-6 family signaling Homo sapiens R-HSA-6783589	6.25E-07	IL6;STAT1;STAT3;PTPN11;JAK2;JAK1	Endometrial cancer	5.40E-06	NRAS;PIK3CA;MYC;AKT1;MAPK1;KRAS;TP53	Adrenocortical carcin	1.31E-04	MC2R;CYP11B2;CYP17A1

							oma cell line		
CSF2RB	Signaling by FGFR2 in disease Homo sapiens R-HSA-5655253	6.73E-07	NRAS;PIK3CA;KRAS;FGF1;FGF2;FGFR2;FGF4	Viral carcinogenesis	5.81E-06	JUN;NRAS;PIK3CA;CASP3;STAT3;MAPK1;KRAS;HLA-A;CCR5;TP53;JAK3;JAK1	U-251 MG cell	1.31E-04	MMP2;AKT1;TP53
SDC2	Response to elevated platelet cytosolic Ca2+ Homo sapiens R-HSA-76005	7.52E-07	SELP;F8;TGFB1;HGF;ITGB3;SERPINE1;ALB;PPIA;VEGFA;PF4	Shigellosis	8.04E-06	JUN;CXCL8;CHUK;IFNB1;TNF;IKBKB;PIK3CA;IL1B;CCL5;AKT1;MAPK1;TP53;TLR4	Monocuclear cell	1.33E-04	SERPINC1;ITGB3;SERPINE1;CTLA4;F2
PRG2	Adrenaline,noradrenaline inhibits insulin secretion Homo sapiens R-HSA-400042	7.87E-07	CACNB2;CACNB3;CACNA2D2;CACNA1D;CACNA1C;ADRA2A	Cell adhesion molecules	1.10E-05	SELP;CDH5;CD4;CD40LG;SDC2;CTLA4;HLA-A;HLA-DRB1;ICAM1;HLA-DQB1	Dental pulp	1.33E-04	NT5E;TGFB1;MMP2;FGF2;VEGFA
SLC6A3	Toll-Like Receptors Cascades Homo sapiens R-HSA-168898	9.09E-07	IKBKB;JUN;CHUK;TLR9;MAPK1;TLR7;PTPN11;FOS;TLR4;TLR3;TLR2	Phospholipase D signaling pat	1.10E-05	NRAS;CXCL8;PIK3CA;AGTR1;AKT1;MAPK1;PTK2B;PTPN11;KRAS;F2	Blastocyst	1.54E-04	TGFB1;MYC;CASP3;ALB;STAT3;FGF2;FGFR2;FGF4

				hway					
PGRMC1	Ras activation uopn Ca2+ infux through NMDA receptor Homo sapiens R-HSA-442982	1.23E-06	GRIN2A;GRIN2C;GRIN2B;GRIN2D;GRIN1	Neurotrophin signaling pathway	1.24E-05	IKBKB;JUN;NRAS;PIK3CA;AKT1;MAPK1;PTPN11;KRAS;TP53	Uroepithelium	1.54E-04	AR;PIK3CA;AKT1;PTGS2;TP53;VEGFA
SIGMAR1	Erythrocytes take up oxygen and release carbon dioxide Homo sapiens R-HSA-1247673	1.30E-06	CA1;CA2;CA4;AQP1	Thyroid hormone signaling pathway	1.41E-05	NRAS;PIK3CA;STAT1;MYC;ITGB3;AKT1;MAPK1;KRAS;TP53	Leukocyte	1.61E-04	NT5E;IFNA1;IL1B;HGF;CCL5;CCL3;HLA-DRB1;TLR2;PF4;NR3C2
SLC29A4	Interferon alpha/beta signaling Homo sapiens R-HSA-909733	1.38E-06	IFNAR2;IFNA1;STAT1;IFNB1;PTPN11;HLA-A;JAK1;IFNAR1	Neutrophil extracellular trap formation	1.65E-05	SELP;FCGR2A;PIK3CA;ITGB3;PPIF;AKT1;MAPK1;TLR7;TLR4;ELANE;TLR2	Whole plant	1.67E-04	IL10;IL4;ACE;IFNG;CA2
GLR	Interferon gamma signaling	1.6	IFNG;STAT1;PTPN11;HLA-A;JAK2;HLA-	Epithelial	1.9	IKBKB;JUN;CXCL8;CHUK;CASP3;CCL5;PTPN11	Portal	1.7	IL6;SERPINC1;ALB;F2

A1	Homo sapiens R-HSA-877300	0E-06	DRB1;ICAM1;JAK1;HLA-DQB1	cell signaling in Helicobacter pylori infection	1E-05		vein	0E-04	
GRIA1	SHC-mediated cascade: FGFR3 Homo sapiens R-HSA-5654704	1.69E-06	NRAS;KRAS;FGF1;FGF2;FGF4	RIG-I-like receptor signaling pathway	1.91E-05	IKBKB;CXCL8;IFNA1;CHUK;DDX58;IFNB1;TNF	Kidney cancer cell	1.70E-04	CASP3;AKT1;TP53;VEGFA
ATP2C1	Negative regulation of FGFR1 signaling Homo sapiens R-HSA-5654726	1.82E-06	MAPK1;PTPN11;FGF1;FGF2;FGF4;FGFR1	Insulin resistance	4.39E-05	IKBKB;IL6;PIK3CA;STAT3;AKT1;PTPN11;TNF;PRKAB1	okt8	1.85E-04	CD40LG;HLA-A;IL2
MT-ND1	Nuclear Receptor transcription pathway Homo sapiens R-HSA-383280	2.23E-06	AR;VDR;NR1I2;PPARG;PGR;NR3C1;NR3C2	ErbB signaling pathway	6.76E-05	NRAS;JUN;PIK3CA;MYC;AKT1;MAPK1;KRAS	SH-SY5Y cell	2.11E-04	PRNP;JUN;CASP3;AKT1;TP53;SLC6A3

CDC51	Negative regulation of FGFR2 signaling Homo sapiens R-HSA-5654727	2.65E-06	MAPK1;PTPN11;FGF1;FGF2;FGFR2;FGF4	Insulin secretion	7.29E-05	KCNJ11;KCNMA1;CACNA1D;CCK;CACNA1C;CACNA1S;CACNA1F	Myotube	2.27E-04	IL6;MYC;AKT1;PPARG;CACNA1S;TNF;FGF2
NR3C2	Post NMDA receptor activation events Homo sapiens R-HSA-438064	3.16E-06	GRIN2A;MAPK1;GRIN2C;GRIN2B;GRIN2D;GRIN1	Long-term depression	7.62E-05	GRIA1;NRAS;CRH;CACNA1A;MAPK1;KRAS	Rheumatoid arthritis disease specific synovial fibroblast	2.53E-04	IL6;IL1B;TNF
AR	Gamma-carboxylation of protein precursors Homo sapiens R-HSA-159740	3.82E-06	F7;GGCX;F10;F2	Viral myocarditis	7.62E-05	CD40LG;CASP3;HLA-A;HLA-DRB1;ICAM1;HLA-DQB1	HMEpC cell	2.72E-04	ST14;MYC;AKT1;TP53
PGR	MAPK3 (ERK1) activation Homo	3.82	IL6;PTPN11;JAK2;JAK1	Phagosom	8.55	FCGR2A;CD209;ITGB3;HLA-A;TLR4;HLA-DRB1;MBL2;HLA-	SAOS-2 cel	3.15	CASP3;MMP2;TNFSF11;TP53

	sapiens R-HSA-110056	E-06		e	E-05	DQB1;TLR2	l	E-04	
CYP11B2	Common Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140875	5.00E-06	F8;F10;SERPINC1;F2;PF4	Sphingolipid signaling pathway	8.75E-05	NRAS;PIK3CA;ADORA1;AKT1;MAPK1;KRAS;TNF;TP53	Stellate cell	3.34E-04	IL6;TGFB1;MMP2
CYP17A1	Intrinsic Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140837	5.00E-06	F8;F10;SERPINC1;F11;F2	Staphylococcus aureus infection	1.37E-04	IL10;SELP;FCGR2A;HLA-DRB1;ICAM1;MBL2;HLA-DQB1	Venule	3.34E-04	IL1B;ALB;AQP1
SRD5A1	Interleukin-7 signaling Homo sapiens R-HSA-1266695	5.94E-06	IL7;HGF;JAK3;JAK1	Renin-angiotensin system	1.43E-04	ACE2;ACE;AGTR1;REN	Intervertebral disc	4.04E-04	IL6;TGFB1;CASP3;MMP2;TNF
SRD5A2	Gamma-carboxylation, transport, and amino-terminal cleavage of	5.94E-06	F7;GGCX;F10;F2	Choline metabolism in can	1.66E-04	JUN;NRAS;PIK3CA;AKT1;MAPK1;KRAS;FOS	Leydig cell	4.04E-04	IL1A;AR;SRD5A1;SHBG;CYP17A1

	proteins Homo sapiens R-HSA-159854			cer					
SRD5A3	Androgen biosynthesis Homo sapiens R-HSA-193048	5.94E-06	SRD5A2;SRD5A1;SRD5A3;CYP17A1	Hepatocellular carcinoma	1.83E-04	NRAS;TGFB1;PIK3CA;MYC;HGF;AKT1;MAPK1;KRAS;TP53	Neural stem cell	4.68E-04	MYC;CASP3;STAT3;AKT1;FGF2;TP53;VEGFA
SHBG	FGFR1c ligand binding and activation Homo sapiens R-HSA-190373	5.94E-06	FGF1;FGF2;FGFR1;FGF4	Longevity regulating pathway	2.13E-04	NRAS;PIK3CA;AKT1;PPARG;KRAS;PRKAB1;TP53	Preosteoblast	4.70E-04	TGFB1;TNFSF11;FGF2;FGFR2
CACNG1	Signaling by activated point mutants of FGFR1 Homo sapiens R-HSA-1839122	5.94E-06	FGF1;FGF2;FGFR1;FGF4	Apelin signaling pathway	2.33E-04	NRAS;NOS2;SERPINE1;AGTR1;AKT1;MAPK1;KRAS;PRKAB1	Amastigote	6.01E-04	IL10;CD4;APOE;TNF
CACNG2	Signaling by FGFR4 in disease Homo sapiens R-HSA-5655291	5.94E-06	NRAS;PIK3CA;KRAS;FGFR4	Glioma	2.65E-04	NRAS;PIK3CA;AKT1;MAPK1;KRAS;TP53	Abdominal adiposetis	6.15E-04	CRP;SERPINE1;AKT1;PPARG;SHBG

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CACNG3	RAF-independent MAPK1/3 activation Homo sapiens R-HSA-112409	6.33E-06	IL6;MAPK1;PTPN11;JAK2;JAK1	Antigen processing and presentation	3.28E-04	CD4;IFNG;HLA-A;TNF;HLA-DRB1;HLA-DQB1	T-24 cell	6.73E-04	CASP3;AKT1;TP53
CACNG4	Integration of energy metabolism Homo sapiens R-HSA-163685	6.50E-06	CACNB2;CACNB3;KCNJ11;CACNA2D2;CACNA1A;CACNA1D;CACNA1C;CACNA1E;ADRA2A	Leukocyte transendothelial migration	4.22E-04	CDH5;PIK3CA;MMP2;PTK2B;PTPN11;MMP9;ICAM1	Human brain microvascular endothelial cell	6.73E-04	CDH5;TNF;ICAM1
CACNG5	Activated TLR4 signalling Homo sapiens R-HSA-166054	7.54E-06	IKBKB;JUN;CHUK;MAPK1;PTPN11;FOS;TLR4;TLR3;TLR2	mTOR signaling pathway	5.11E-04	IKBKB;NRAS;CHUK;PIK3CA;AKT1;MAPK1;KRAS;TNF	NCI-H1299 cell	8.21E-04	ATP2C1;GABRE;TP53
CAC	Diseases associated with	7.9	IKBKB;CHUK;TLR4;TLR3;TLR2	Platelet	6.9	P2RY12;FCGR2A;PIK3CA;ITGB3;AKT1;MAPK1;F2	Saphen	9.8	MMP2;SERPINE1;MMP9

NG6	the TLR signaling cascade Homo sapiens R-HSA-5602358	2E-06		activation	8E-04		ous vein	8E-04	
CACNG7	Diseases of Immune System Homo sapiens R-HSA-5260271	7.92E-06	IKBKB;CHUK;TLR4;TLR3;TLR2	Diabetic cardiomyopathy	7.31E-04	ACE;TGFB1;PIK3CA;MMP2;AGTR1;PPIF;AKT1;REN;MMP9	Ectoderm	0.001202	TGFB1;FGF1;FGF2;TP53;FGFR2;FGF4;FGFR1
CACNG8	Erythrocytes take up carbon dioxide and release oxygen Homo sapiens R-HSA-1237044	8.83E-06	CA1;CA2;CA4;AQP1	Steroid hormone biosynthesis	7.76E-04	SRD5A2;SRD5A1;CYP11B2;SRD5A3;CYP17A1	Peritubular cell	0.001366	AR;SHBG
CACNA2D1	O2/CO2 exchange in erythrocytes Homo sapiens R-HSA-1480926	8.83E-06	CA1;CA2;CA4;AQP1	Aldosterone-regulated sodium reabsorption	9.34E-04	PIK3CA;MAPK1;KRAS;NR3C2	22Rv-1 cell	0.001366	AR;GABRE
C	FGFR2c	1	FGF1;FGF2;FGFR2;	Ins	0	IKBKB;NRAS;PIK3C	En	0	CA1;CA4

ACNA2D2	ligand binding and activation Homo sapiens R-HSA-190375	.26E-05	FGF4	ulin signaling pathway	.0012540	A;AKT1;MAPK1;KRAS;PRKAB1	torhinal cortex	.0013666	
CACNA2D3	Toll Like Receptor 4 (TLR4) Cascade Homo sapiens R-HSA-166016	1.51E-05	IKBKB;JUN;CHUK;MAPK1;PTPN11;FOS;TLR4;TLR3;TLR2	Ferroptosis	0.0013868	PRNP;GSS;SLC7A11;TP53	tsA-201 cell	0.0013666	CACNA1B;SCN4A
CACNA2D4	Extrinsic Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140834	1.61E-05	F7;F10;F3	Amyotrophic lateral sclerosis	0.0014005	GRIA1;GRIN2A;PPP3R2;NOS2;CASP3;SIGMAR1;GRIN2C;TP53;GRIN2B;TNF;GRIN2D;GRIN1	NG-108-15 cell	0.0013844	CACNA1I;ADRA2B;CACNA1H
CACNA1C	Dopamine receptors Homo sapiens R-HSA-390651	1.61E-05	DRD2;DRD3;DRD4	Parathyroid hormone synthesis, secretion and action	0.0016540	VDR;TNFSF11;MAPK1;PTH1R;FOS;FGFR1	Oocyst	0.0013844	CD4;CD40LG;IFNG
C	LGI-	1	CACNG8;CACNG2;	Tra	0	IL6;CXCL8;MYC;T	Bio	0	IL6;IL1B;TNF;TLR2

ACNA1D	ADAM interactions Homo sapiens R-HSA-5682910	.75E-05	CACNG3;CACNG4	nscriptional misregulation in cancer	.002113	MPRSS2;PPARG;TP53;MMP9;ELANE	film	.001511	
CACNA1F	MyD88-independent TLR3/TLR4 cascade Homo sapiens R-HSA-166166	2.02E-05	IKBKB;JUN;CHUK;MAPK1;PTPN11;FOS;TLR4;TLR3	Synaptic vesicle cycle	0.002342	CACNA1B;CACNA1A;SLC6A2;SLC6A3;SLC6A4	Callus	0.001511	TGFB1;TNFSF11;FGF2;VEGFA
CACNA1S	Toll Like Receptor 3 (TLR3) Cascade Homo sapiens R-HSA-168164	2.02E-05	IKBKB;JUN;CHUK;MAPK1;PTPN11;FOS;TLR4;TLR3	Proximal tubule bicarbonate reclamation	0.002442	CA2;CA4;AQP1	Rosette	0.001799	CD4;CD40LG;ALB;IL2
CACNB1	TRIF-mediated TLR3/TLR4 signaling Homo	2.02E-0	IKBKB;JUN;CHUK;MAPK1;PTPN11;FOS;TLR4;TLR3	Gap junction	0.00395	NRAS;HTR2C;MAPK1;KRAS;DRD2	Bone matrix	0.00179	CALCA;TGFB1;FGF2;MMP9

	sapiens R-HSA-937061	5			2			9	
CACNB2	Negative regulation of FGFR3 signaling Homo sapiens R-HSA-5654732	2.11E-05	MAPK1;PTPN11;FGF1;FGF2;FGF4	Regulation of lipolysis in adipocytes	0.004085	PIK3CA;ADORA1;AKT1;PTGS2	Chorioallantois	0.001866	AKT1;FGF1;FGF2
CACNB3	Costimulation by the CD28 family Homo sapiens R-HSA-388841	2.30E-05	CD4;PIK3CA;AKT1;CTLA4;PTPN11;HLA-DRB1;HLA-DQB1	TGF-beta signaling pathway	0.005233	TGFB1;IFNG;MYC;MAPK1;TNF	Lung fibroblast	0.001957	SDC2;HGF;CACNA1B;CACNA1C
CACNB4	FGFR1 ligand binding and activation Homo sapiens R-HSA-190242	2.37E-05	FGF1;FGF2;FGF4;FGFR1	Progesterone-mediated oocyte maturation	0.006777	PIK3CA;AKT1;MAPK1;PGR;KRAS	Tongue cancer cell line	0.002033	MMP2;MMP9
CAC	Metabolism of steroid	2.5	SRD5A2;SRD5A1;CYP11B2;SRD5A3;CYP17A1	Mitopha	0.0	NRAS;JUN;KRAS;TP53	U-373	0.0	IL1B;TP53

NA1B	hormones Homo sapiens R-HSA-196071	1E-05		gy	0866		MG cell	02033	
CACNA1A	Trafficking of AMPA receptors Homo sapiens R-HSA-399719	2.96E-05	GRIA1;CACNG8;CACNG2;CACNG3;CACNG4	Primary immunodeficiency	0.010213	CD4;CD40LG;JAK3	Genital mucosa	0.002033	CD4;CCR5
CACNA1E	Glutamate Binding, Activation of AMPA Receptors and Synaptic Plasticity Homo sapiens R-HSA-399721	2.96E-05	GRIA1;CACNG8;CACNG2;CACNG3;CACNG4	Focal adhesion	0.010253	JUN;PIK3CA;HGF;ITGB3;AKT1;MAPK1;VEGFA	Sporozoite	0.002142	CD4;IFNG;IL2
CACNA1G	FGFR1b ligand binding and activation Homo sapiens R-HSA-190370	3.20E-05	FGF1;FGF2;FGFR1	AMPK signaling pathway	0.014204	PIK3CA;AKT1;PPARG;PRKAB1;ADRA1A	F-9 cell	0.002442	JUN;FOS;FGF4
CACNA1H	Senescence-Associated Secretory Phenoty	3.57E-0	IL1A;JUN;IL6;CXCL8;STAT3;MAPK1;FOS	Carbohydrate digest	0.018166	PIK3CA;AKT1;CACNA1D	Amnion	0.002766	IFNA1;IFNB1;PTGS2

	pe (SASP) Homo sapiens R-HSA-2559582	5		ion and absorption	5			7	
CACNA1I	Activated point mutants of FGFR2 Homo sapiens R-HSA-2033519	4.05E-05	FGF1;FGF2;FGFR2;FGF4	Other glycan degradation	0.018882	NEU2;NEU1	Prostate gland epithelium	0.002881	P2RY12;PRNP;PRSS1;ST14;VDR;TMPRSS2;ADRA1D;F3;ADRA1A;CKS1B;DPP4;AR;TLR2
NR1I2	Chemokine receptors bind chemokines Homo sapiens R-HSA-380108	5.14E-05	CXCL8;CCL5;CCL3;CCL2;CCR5;PF4	Axon guidance	0.021577	NRAS;PPP3R2;PIK3CA;MAPK1;PTPN11;KRAS	MDCK-2 cell	0.003117	ABCB1;ADRA2B;ADRA2A
PPARG	Tie2 Signaling Homo sapiens R-HSA-210993	5.16E-05	NRAS;PIK3CA;PTPN11;KRAS	Autophagy	0.023736	NRAS;PIK3CA;AKT1;MAPK1;KRAS	Mesenchymal epithelium	0.003735	TGFB1;HGF
ABCB1	TRAF6 mediated induction of NFkB and MAP	5.80E-	IKBKB;JUN;CHUK;TLR9;MAPK1;TLR7;FOS	Salivary secretion	0.02447	KCNMA1;ADRA1D;ADRA1B;ADRA1A	Rhizome	0.0037	CASP3;TNF

	kinases upon TLR7/8 or 9 activation Homo sapiens R-HSA-975138	05			35			35	
KCNJ11	MyD88 dependent cascade initiated on endosome Homo sapiens R-HSA-975155	6.76E-05	IKBKB;JUN;CHUK;TLR9;MAPK1;TLR7;FOS	Arginine biosynthesis	0.02764	ACY1;NOS2	C6 glioma cell	0.003735	AKT1;TP53
IL6	Toll Like Receptor 7/8 (TLR7/8) Cascade Homo sapiens R-HSA-168181	6.76E-05	IKBKB;JUN;CHUK;TLR9;MAPK1;TLR7;FOS	Fcgamma R-mediated phagocytosis	0.028312	FCGR2A;PIK3CA;AKT1;MAPK1	Thymoma cell	0.003735	IL1A;CD4
TNF	Platelet Aggregation (Plug Formation) Homo sapiens R-HSA-76009	7.16E-05	ITGB3;AKT1;F2;ADRA2B;ADRA2A	Inflammatory mediator regulatio	0.029251	PIK3CA;IL1B;HTR2C;BDKRB1	Venom duct	0.003735	GGCX;CACNA1B

				n of TRP channels					
TP53	Steroid hormones Homo sapiens R-HSA-209943	7.16E-05	SRD5A2;SRD5A1;CYP11B2;SRD5A3;CYP17A1	Huntington disease	0.029931	GRIA1;CASP3;PPIF;CACNA1B;PPARG;TP53;GRIN2B;GRIN1	Leiomyosarcoma cell line	0.003735	ADORA1;ADRA1B
IL10	Syndecan interactions Homo sapiens R-HSA-3000170	8.02E-05	TGFB1;ITGB3;SDC2;FGF2	Pancreatic secretion	0.033193	PRSS1;CA2;KCNMA1;CCK	Osteoclast	0.003823	CALCA;CA2;TNFSF11;PTH1R
IFNG	FGFR2 ligand binding and activation Homo sapiens R-HSA-190241	8.02E-05	FGF1;FGF2;FGFR2;FGF4	Wnt signaling pathway	0.047943	SFRP4;JUN;PPP3R2;MYC;TP53	Neurofibrillary tangle	0.003895	PRNP;CA4;APOE
CD209	Toll Like Receptor 9 (TLR9) Cascade Homo sapiens R-HSA-168138	8.44E-05	IKBKB;JUN;CHUK;TLR9;MAPK1;TLR7;FOS	p53 signaling pathway	0.055829	CASP3;SERPINE1;TP53	Neuron	0.003895	CACNA1A;ATP2C1;TLR3
I	G alpha	9	ANXA1;PIK3CA;AG	Oo	0	AR;PPP3R2;MAPK	Sw	0	MYC;FOS;FGF2

L1B	(q) signalling events Homo sapiens R-HSA-416476	.75E-05	TR1;HTR2C;BDKRB1;ADRA1D;CCK;ADRA1B;F2;ADRA1A	cyte meiosis	.067754	1;PGR	iss-3T3 cell	.004325	
HLA-DRB1	MyD88: Mal cascade initiated on plasma membrane Homo sapiens R-HSA-166058	1.12E-04	IKBKB;JUN;CHUK;MAPK1;FOS;TLR4;TLR2	Parkinson disease	0.076581	ADORA2A;CASP3;PPIF;DRD2;TP53;SLC6A3	Syncytium	0.004325	CD4;CCL5;CCR5
ALB	Toll Like Receptor TLR1:TLR2 Cascade Homo sapiens R-HSA-168179	1.12E-04	IKBKB;JUN;CHUK;MAPK1;FOS;TLR4;TLR2	Bile secretion	0.091419	ABCB1;CA2;AQP1	Long bone	0.004646	TGFB1;TNFSF11;PTH1R;FGFR2
KRAS	Toll Like Receptor TLR6:TLR2 Cascade Homo sapiens R-HSA-168188	1.12E-04	IKBKB;JUN;CHUK;MAPK1;FOS;TLR4;TLR2	Sphingolipid metabolism	0.114578	NEU2;NEU1	Mesenteric vein	0.004765	SERPINC1;ALB
TGFB1	Toll Like Receptor 2 (TLR2) Cascade Homo sapiens R-HSA-181438	1.12E-04	IKBKB;JUN;CHUK;MAPK1;FOS;TLR4;TLR2	Melanogenesis	0.118341	NRAS;MAPK1;KRAS	Mesothelioma cell	0.004765	CASP3;AKT1

							line		
CXCL8	Adaptive Immune System Homo sapiens R-HSA-1280218	1.14E-04	CHUK;PTPN11;HLA-A;FGF1;FGF2;ICAM1;FGF4;IKBKB;NRAS;CD4;CD40LG;PIK3CA;FGF19;AKT1;CTLA4;MAPK1;KRAS;FGFR4;HLA-DRB1;FGFR2;HLA-DQB1;FGFR1	Cholesterol metabolism	0.118461	LRP1;APOE	Bone marrow stromal cell line	0.00476	IL7;TNFSF11
VEGFA	Transport of gamma-carboxylated protein precursors from the endoplasmic reticulum to the Golgi apparatus Homo sapiens R-HSA-159763	1.31E-04	F7;F10;F2	Ovarian steroidogenesis	0.122376	PTGS2;CYP17A1	Bone marrow-derived macrophage	0.00476	TLR9;TNFSF11
1HLA-B	Highly calcium permeable nicotinic acetylcholine receptors Homo sapiens	1.31E-04	CHRNA3;CHRNB4;CHRNA2	Ubiquinone and other terpe	0.122924	GGCX	Eht	0.00476	ACE;REN

	R-HSA-629597			noid-quinone biosynthesis					
ICAM1	Cellular Senescence Homo sapiens R-HSA-2559583	1.33E-04	IL1A;JUN;IL6;CXCL8;IFNB1;STAT3;MAPK1;FOS;TP53	Protein digestion and absorption	0.123522	DPP4;ACE2;PRSS1	vx2	0.004765	F2;VEGFA
PIK3CA	Interleukin-1 signaling Homo sapiens R-HSA-446652	1.67E-04	IKBKB;IL1A;IL1RN;CHUK;IL1B	Hippo signaling pathway	0.128856	TGFB1;MYC;SERPINE1;FGF1	Laryngeal cell line	0.004765	CD40LG;TP53
APOE	Growth hormone receptor signaling Homo sapiens R-HSA-982772	1.70E-04	STAT1;STAT3;MAPK1;JAK2	Endocrine and other factor-regulated cal	0.130298	VDR;PTH1R	Vagus nerve	0.004782	HTR1A;CRH;FOS

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AKT1	IKK complex recruitment mediated by RIP1 Homo sapiens R-HSA-937041	1.70E-04	IKBKB;CHUK;TLR4;TLR3	Glucagon signaling pathway	0.134125	PPP3R2;AKT1;PRKAB1	Vascular tissue	0.005268	REN;APOE;VEGFA
CCL2	Removal of aminoterminal propeptides from gamma-carboxylated proteins Homo sapiens R-HSA-159782	1.85E-04	F7;F10;F2	Thermogenesis	0.142233	NRAS;PPARG;KRAS;PRKAB1;FGFR1	Peripheral blood	0.005715	DPP4;VDR;TNFSF11;PTGS2;HLA-DRB1
TLR4	FGFR2b ligand binding and activation Homo sapiens R-HSA-190377	1.85E-04	FGF1;FGF2;FGFR2	Arachidonic acid metabolism	0.163042	LTA4H;PTGS2	Neuro-2a cell	0.005782	PRNP;CASP3;AKT1
CRP	Signaling by FGFR3 fusions in	1.8	NRAS;PIK3CA;KRAS	Cell cyc	0.1	TGFB1;MYC;TP53	Ring sta	0.0	KRAS;TP53;CACNA1G

	cancer Homo sapiens R-HSA-8853334	5E-04		le	822988		ge	057820	
CCL5	Activation of the AP-1 family of transcription factors Homo sapiens R-HSA-450341	1.85E-04	JUN;MAPK1;FOS	Adherens junction	0.205681	MAPK1;FGFR1	Endochondral bone	0.005782	TGFB1;PTH1R;VEGFA
IFNA1	Phospholipase C-mediated cascade; FGFR4 Homo sapiens R-HSA-5654228	2.07E-04	FGF19;FGF1;FGFR4;FGF2;FGF4	Collecting duct acid secretion	0.275353	CA2	SK-N-MC cell	0.005911	CASP3;ADRA1A
CD4	PD-1 signaling Homo sapiens R-HSA-389948	2.34E-04	CD4;PTPN11;HLA-DRB1;HLA-DQB1	Circadian rhythm	0.309143	PRKAB1	Sciatic nerve	0.006325	JUN;FGF2;GRIN2B
TLR3	Highly calcium permeable postsynaptic nicotinic acetylcholine	2.53E-04	CHRNA3;CHRNB4;CHRNA2	Tight junction	0.324029	JUN;CACNA1D;PRKAB1	High endothelial venul	0.006325	SELP;CD4;ICAM1

	receptors Homo sapiens R-HSA-629594						e		
CCR5	Metabolism Homo sapiens R-HSA-1430728	2.65E-04	PRSS1;ABCB1;ACY1;LRP1;SDC2;ETFDH;CACNA1A;CACNA1D;CACNA1C;PTGS2;CACNA1E;AQP1;CYP17A1;NEU2;NT5E;CA1;CA3;CA2;NEU1;CA4;CA7;AKT1;LTA4H;APOE;CA14;CA12;SRD5A2;KCNJ11;SRD5A1;GSS;SRD5A3;CACNA2D2;ADRA2A;CACNB2;CACNB3;PIK3CA;CYP11B2;GPD1;ALB;PPARG	Nicotinate and nicotinamide metabolism	0.341363	NT5E	Fibroblast	0.006759	GABRB3;AR;IL6;NEU1;CACNA1C;NR3C1
SERPINE1	Presynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-622323	3.34E-04	CHRNA3;CHRNB4;CHRNA2	Endocytosis	0.349614	HLA-A;CCR5;FGFR4;FGFR2	NCI-H226 Brcell	0.006897	DPP4;FCGR2A;ICAM1
IL2	FGFR3 mutant receptor activation Homo sapiens R-HSA-2033514	3.34E-04	FGF1;FGF2;FGF4	ABC transporters	0.415517	ABCB1	Thyroid nodule	0.006897	CALCA;NRAS;PPARG
IL4	Signaling by activated point mutants	3.34E	FGF1;FGF2;FGF4	Proteasome	0.4222	IFNG	Epiphysealgr	0.006	PTH1R;FGF2;VEGFA

	of FGFR3 Homo sapiens R-HSA-1839130	-04			459		owthplate	897	
HLA-A	NF-kB activation through FADD/RIP-1 pathway mediated by caspase-8 and -10 Homo sapiens R-HSA-933543	3.34E-04	IKBKB;CHUK;DDX58	Arginine and proline metabolism	0.449415	NOS2	NCI-H295R cell	0.007167	CYP11B2;CYP17A1
STAT3	Surfactant metabolism Homo sapiens R-HSA-5683826	3.62E-04	ADORA2A;CSF2RB;CSF2RA;ADRA2A	Cysteine and methionine metabolism	0.449415	GSS	Myeloma cell	0.007167	IFNAR2;IFNAR1
STAT1	FGFR3c ligand binding and activation Homo sapiens R-HSA-190372	4.30E-04	FGF1;FGF2;FGF4	N-Glycan biosynthesis	0.449415	SRD5A3	Pheochromocytoma cell	0.007167	FOS;SLC6A2
F	FGFR3	4	FGF1;FGF2;FGF4	Pyr	0	NT5E	Th	0	CALCA;CACNA1H

3	ligand binding and activation Homo sapiens R-HSA-190239	.30E-04		imidine metabolism	.487517		yroid cancer cell	.007167	
CCL3	Trafficking and processing of endosomal TLR Homo sapiens R-HSA-1679131	4.30E-04	TLR9;TLR7;TLR3	Glutathione metabolism	0.493607	GSS	BTO:0000491	0.007167	ALB;REN
CTLA4	Activation of Matrix Metalloproteinases Homo sapiens R-HSA-1592389	5.33E-04	PRSS1;MMP2;MMP9;ELANE	Mineral absorption	0.511447	VDR	Tropho blast cell line	0.007167	MMP2;MMP9
CASP3	Early Phase of HIV Life Cycle Homo sapiens R-HSA-162594	5.43E-04	CD4;CCR5;PPIA	Basal cell carcinoma	0.528662	TP53	Venous system	0.007167	PGRMC1;SERPINC1
MAPK1	Activation of Nicotinic Acetylcholine Receptors Homo sapiens R-HSA-	5.43E-04	CHRNA3;CHRNB4;CHRNA2	Inositol phosphate metab	0.581799	PIK3CA	Fetal serum	0.007167	CD40LG;ALB

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ELANE	Postsynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-622327	5.43E-04	CHRNA3;CHRNB4;CHRNA2	PPAR signaling pathway	0.586773	PPARG	Conceptus	0.007499	IFNA1;PGR;PTGS2
FCGR2A	Acetylcholine Binding And Downstream Events Homo sapiens R-HSA-181431	5.43E-04	CHRNA3;CHRNB4;CHRNA2	Thyroid hormone synthesis	0.591688	ALB	Lung cancer cell	0.007666	NRAS;CACNA1A;CACNA1D;KRAS;TP53
IL13	Extracellular matrix organization Homo sapiens R-HSA-1474244	5.87E-04	PRSS1;TGFB1;SDC2;ITGB3;CASP3;MMP2;SERPINE1;FGF2;MMP9;ELANE;ICAM1	Gastric acid secretion	0.596545	CA2	Bud	0.007666	TGFB1;FGF2;FGFR2;FGF4;FGFR1
HLA-DQB1	FGFR2 mutant receptor activation Homo sapiens R-HSA-1839126	6.01E-04	FGF1;FGF2;FGFR2;FGF4	Bacterial invasion of epithelial cells	0.601344	PIK3CA	Amyloid plaque	0.008132	PRNP;IL1B;APOE

IFNB1	Signaling by EGFRvIII in Cancer Homo sapiens R-HSA-5637812	6.73E-04	NRAS;PIK3CA;KRAS	Peroxisome	0.62455	NOS2	Medulloblastoma cell line	0.008534	MYC;TP53
PRNP	Constitutive Signaling by EGFRvIII Homo sapiens R-HSA-5637810	6.73E-04	NRAS;PIK3CA;KRAS	ECM-receptor interaction	0.650526	ITGB3	Monocytic leukemia cell	0.008534	TLR9;MMP9
TLR2	MAP kinase activation in TLR cascade Homo sapiens R-HSA-450294	7.20E-04	IKBKB;JUN;CHUK;MAPK1;FOS	Phosphatidylinositol signaling system	0.686236	PIK3CA	Preadipocyte cell line	0.008534	GPD1;PPARG
IL1RN	Metabolism of Angiotensinogen to Angiotensins Homo	8.21E-04	ACE2;ACE;REN	Glycerophospholipid	0.689972	GPD1	Ampulla	0.008534	KRAS;TP53

	sapiens R-HSA-2022377			metabolism					
PTPN11	Nucleotide-like (purinergic) receptors Homo sapiens R-HSA-418038	8.21E-04	P2RY12;ADORA2A;ADORA1	Lysosome	0.783626	NEU1	ECV-304 cell	0.008534	TNF;VEGFA
ITGB3	EPH-Ephrin signaling Homo sapiens R-HSA-2682334	9.38E-04	MMP2;SDC2;MMP9;GRIN2B;GRIN1;VEGFA	Purine metabolism	0.786207	NT5E	b12	0.008534	CD4;CCR5
NOS2	MAP2K and MAPK activation Homo sapiens R-HSA-5674135	0.001034	NRAS;ITGB3;MAPK1;KRAS				bl20	0.008534	CA1;CACNB4
DDX58	Gamma carboxylation, hypusine formation and arylsulfatase activation Homo sapiens R-HSA-163841	0.001142	F7;F10;GGCX;F2				Nasopharyngeal carcinoma cell line	0.010007	CASP3;TP53
C	Downstr	0	IKBKB;CD4;CHUK;				Ad	0	CD4;IL2

D40LG	eam TCR signaling Homo sapiens R-HSA-202424	.0011163	PIK3CA;HLA-DRB1;HLA-DQB1				ult T-cell lymphomacell	.0100007	
MBL2	Signaling by cytosolic FGFR1 fusion mutants Homo sapiens R-HSA-1839117	0.0011175	PIK3CA;STAT1;STAT3				Ankle joint	0.0100007	IL1B;TNF
IL1A	Activation of IRF3/IRF7 mediated by TBK1/IKK epsilon Homo sapiens R-HSA-936964	0.0011175	PTPN11;TLR4;TLR3				Sertoli cell	0.0105047	IL1A;AR;TGFB1;SHBG
NRAS	Signaling by PTK6 Homo sapiens R-HSA-8848021	0.001119	NRAS;STAT3;AKT1;KRAS;NR3C1				Dentin	0.0105047	TGFB1;MMP2;TNFSF11;MMP9
IL7	Activation of RAS in B cells	0.0	NRAS;KRAS				Satellite	0.0	TGFB1;HGF;FGF2

	Homo sapiens R-HSA-1169092	0.01366					cell	1.09688	
	Signaling by FGFR2 IIIa TM Homo sapiens R-HSA-8851708	0.00138	FGF1;FGF2;FGFR2				Preosteoclast	0.01585	TNFSF11;MMP9
	Constitutive Signaling by Ligand-Responsive EGFR Cancer Variants Homo sapiens R-HSA-1236382	0.00138	NRAS;PIK3CA;KRAS				Adrenocortical carcinoma cell	0.01585	MC2R;CYP11B2
	Signaling by Ligand-Responsive EGFR Variants in Cancer Homo sapiens R-HSA-5637815	0.00138	NRAS;PIK3CA;KRAS				Resting cell	0.01585	CD4;IL2
	Signaling by EGFR in Cancer Homo sapiens R-HSA-1643713	0.00138	NRAS;PIK3CA;KRAS				Gastrointestinal m	0.01158	CCK;PTGS2

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	Non-integrin membrane-ECM interactions Homo sapiens R-HSA-3000171	0.001511	TGFB1;SDC2;ITGB3;FGF2				Superior vena cava	0.013264	SERPINC1;ALB
	G alpha (s) signalling events Homo sapiens R-HSA-418555	0.001542	CALCA;MC2R;CALCB;ADORA2A;CRH;PTH2R;PTH1R				Esophageal cancer cell line	0.013264	CASP3;TP53
	TRAF6 Mediated Induction of proinflammatory cytokines Homo sapiens R-HSA-168180	0.001644	IKBKB;JUN;CHUK;MAPK1;FOS				nd 7/23	0.013264	SCN4A;SCN2A
	CD209 (DC-SIGN) signaling Homo sapiens R-HSA-	0.001886	NRAS;CD209;KRAS				Pelvis	0.014430	CRP;PGRMC1;TP53

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	Translocation of ZAP-70 to Immunological synapse Homo sapiens R-HSA-202430	0.001866	CD4;HLA-DRB1;HLA-DQB1				Yolk sac	0.014309	CDH5;ALB;VEGFA
	Signal transduction by L1 Homo sapiens R-HSA-445144	0.001866	ITGB3;MAPK1;FGFR1				Cerebrospinal fluid	0.015225	SERPINC1;APOE;F2
	RIP-mediated NFkB activation via ZBP1 Homo sapiens R-HSA-1810476	0.001866	IKBKB;CHUK;TLR3				Megakaryocyte cell line	0.016915	ITGB3;PF4
	Signaling by ERBB2 Homo sapiens R-HSA-1227986	0.001957	NRAS;PIK3CA;AKT1;KRAS				Np	0.016915	CA12;IL1B
	CTLA4 inhibitory signaling Homo sapiens	0.0021	AKT1;CTLA4;PTPN11				Fibrosarcoma cel	0.0169	NRAS;MMP9

	R-HSA-389513	42					l	15	
	Phospholipase C-mediated cascade: FGFR1 Homo sapiens R-HSA-5654219	0.0023	FGF1;FGF2;FGF4;FGFR1				Aerial part	0.016915	NOS2;TNF
	RIG-I/MDA5 mediated induction of IFN-alpha/beta pathways Homo sapiens R-HSA-168928	0.00247	IKBKB;IFNA1;CHUK;DDX58;IFNB1				Cervical mucus	0.016915	CD40LG;SHBG
	Phospholipase C-mediated cascade; FGFR2 Homo sapiens R-HSA-5654221	0.00268	FGF1;FGF2;FGFR2;FGF4				Tear gland	0.016915	CD4;CD40LG
	Phosphorylation of CD3 and TCR zeta chains Homo sapiens R-HSA-	0.00267	CD4;HLA-DRB1;HLA-DQB1				WEHI-231 cell	0.016915	CD40LG;MYC

	202427								
	TRAF6 mediated NF-kB activation Homo sapiens R-HSA-933542	0.002767	IKBKB;CHUK;DDX58				Lymphocyte	0.017735	AGTR1;CCL3;CTLA4;ADRA1A
	Cation-coupled Chloride cotransporters Homo sapiens R-HSA-426117	0.002824	SLC12A3;SLC12A1				Lens epithelium	0.018882	VDR;KCNMA1
	Interleukin-1 processing Homo sapiens R-HSA-448706	0.002824	IL1A;IL1B				Style	0.018882	CRP;ACE
	Highly sodium permeable acetylcholine nicotinic receptors Homo sapiens R-HSA-629587	0.002824	CHRNA3;CHRNB4				Venom gland	0.018882	LTA4H;F2
	IkBA variant leads to EDA-ID Homo sapiens	0.0028	IKBKB;CHUK				Malpighian tubul	0.0188	CALCA;CRH

	R-HSA-5603029	24					e	82	
	TCR signaling Homo sapiens R-HSA-202403	0.002842	IKBKB;CD4;CHUK;PIK3CA;HLA-DRB1;HLA-DQB1				dr9	0.020941	HLA-A;HLA-DRB1
	Toll Like Receptor 10 (TLR10) Cascade Homo sapiens R-HSA-168142	0.002914	IKBKB;JUN;CHUK;MAPK1;FOS				Endoderm	0.022242	TGFB1;ALB;FGF2;FGF4
	Toll Like Receptor 5 (TLR5) Cascade Homo sapiens R-HSA-168176	0.002914	IKBKB;JUN;CHUK;MAPK1;FOS				Submucosa	0.022542	CD4;TNF;TP53
	MyD88 cascade initiated on plasma membrane Homo sapiens R-HSA-975871	0.002914	IKBKB;JUN;CHUK;MAPK1;FOS				Adult liver stem cell	0.023088	HGF;ALB
	RAF activation Homo sapiens R-HSA-5673000	0.003111	NRAS;KRAS;JAK2				Pancreatic beta cel	0.025332	KCNJ11;CASP3

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	Class B/2 (Secretin family receptors) Homo sapiens R-HSA-373080	0.003235	CALCA;CALCB;CRH;PTH2R;PTH1R				Scrotum	0.025322	AR;SHBG
	C-type lectin receptors (CLRs) Homo sapiens R-HSA-5621481	0.003491	IKBKB;NRAS;CHUK;CD209;IL1B;KRAS				Calcaneal bone	0.025322	VDR;SHBG
	ZBP1(DAI) mediated induction of type I IFNs Homo sapiens R-HSA-1606322	0.003493	IKBKB;CHUK;TLR3				LNCaP cell	0.025322	AR;VDR
	TNFR1-induced NFkappaB signaling pathway Homo sapiens R-HSA-5357956	0.003493	IKBKB;CHUK;TNF				Embryoid body	0.027442	CDH5;FGF2;VEGFA
	Defective CSF2RB causes pulmona	0.00	CSF2RB;CSF2RA				Glioblasto	0.02	NOS2;KCNMA1

	ry surfactant metabolism dysfunction 5 (SMDP5) Homo sapiens R-HSA-5688849	3735					ma cell	764		
	Defective CSF2RA causes pulmonary surfactant metabolism dysfunction 4 (SMDP4) Homo sapiens R-HSA-5688890	0.003735	CSF2RB;CSF2RA				Peripheral blood stem cell	0.02764	CD4;IL2	
	IKBKG deficiency causes anhidrotic ectodermal dysplasia with immunodeficiency (EDA-ID) (via TLR) Homo sapiens	0.003735	IKBKB;CHUK				HEp-2 cell	0.02764	IFNB1;CASP3	

	R-HSA-5603027								
	Caspase activation via extrinsic apoptotic signalig pathway Homo sapiens R-HSA-5357769	0.00389 5	CASP3;TLR4;TLR3				Bipolar cell	0.030044	GLRA3;CACNA1F
	Metabolism of proteins Homo sapiens R-HSA-392499	0.00451 5	GRIA1;CALCA;ACE;CXCL8;F10;MMP2;STAT3;SRD5A3;CSF2RB;F2;CSF2RA;ADRA2A;NEU2;DPP4;ACE2;F7;F8;GGCX;ADORA2A;NEU1;CCL2;REN;TP53				Fascia	0.030044	CA4;F2
	Cellular responses to stress Homo sapiens R-HSA-2262752	0.00452 8	IL1A;JUN;IL6;CXCL8;IFNB1;STAT3;MAPK1;FOS;PRKAB1;TP53;VEGFA				Optic nerve	0.030088	CASP3;KCNMA1;FGF2
	Oxidative Stress Induced Senescence Homo sapiens R-HSA-2559580	0.00455 9	JUN;IFNB1;MAPK1;FOS;TP53				CL-48 cell	0.030903	SERPINC1;GPD1;ALB;ETFDH;REN;TLR4
	Glucocorticoid biosynthesis Homo sapiens R-HSA-	0.00476	CYP11B2;CYP17A1				Female pudendu	0.035007	PGR;TP53

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	EGFR Transactivation by Gastrin Homo sapiens R-HSA-2179392	0.004765	NRAS;KRAS				Cuticle	0.037268	F10;F2;F3
	SHC-related events triggered by IGF1R Homo sapiens R-HSA-2428933	0.004765	NRAS;KRAS				Urine	0.037708	ALB;F2
	MAPK targets/ Nuclear events mediated by MAP kinases Homo sapiens R-HSA-450282	0.005268	JUN;MAPK1;FOS				Vocalfold	0.037708	HGF;FGF2
	L1CAM interactions Homo sapiens R-HSA-373760	0.005715	ITGB3;MAPK1;SCN4A;SCN2A;FGFR1				Bladder	0.039024	CRP;PRSS1;ANXA1;STAT1;ALB;TMPRSS2;HLA-A;FOS;PPIA;HLA-DQB1
	Regulation of TNFR1 signaling Homo sapiens	0.00557	IKBKB;CHUK;TNF				Meniscus	0.04044	PGRMC1;IL1B

	R-HSA-5357905	82						13	
	Diseases associated with surfactant metabolism Homo sapiens R-HSA-5687613	0.005591	CSF2RB;CSF2RA				Seminiferous tubule	0.040413	CASP3;TP53
	Calcitonin-like ligand receptors Homo sapiens R-HSA-419812	0.005591	CALCA;CALCB				Somatic cell	0.043146	ACY1;MYC;ALB;TP53
	IRAK1 recruits IKK complex Homo sapiens R-HSA-937039	0.005591	IKBKB;CHUK				Cementum	0.043189	TNFSF11;FGF2
	IRAK1 recruits IKK complex upon TLR7/8 or 9 stimulation Homo sapiens R-HSA-975144	0.005591	IKBKB;CHUK				Choroid	0.043189	FGF2;VEGFA
	TRIF-mediated	0.0	TLR4;TLR3				Theca	0.0	AR;CYP17A1

	programmed cell death Homo sapiens R-HSA-2562578	0.0591					cell	4.31889	
	TRAF6 mediated IRF7 activation Homo sapiens R-HSA-933541	0.006325	IFNA1;DDX58;IFNB1				Ureter	0.043189	SLC12A3;TGFB1
	MyD88 deficiency (TLR2/4) Homo sapiens R-HSA-5602498	0.007167	TLR4;TLR2				Myoepithelium	0.046034	PGR;TP53
	IRAK4 deficiency (TLR2/4) Homo sapiens R-HSA-5603041	0.007167	TLR4;TLR2				AT-20 cell	0.046034	CRH;NR3C1
	TRAF6 mediated IRF7 activation in TLR7/8 or 9 signaling Homo sapiens R-HSA-975110	0.007167	TLR9;TLR7				Keloid	0.046034	TGFB1;SERPINE1
	Generati	0	CD4;HLA-				Pa	0	DPP4;KCNJ11;HLA-

	on of second messenger molecules Homo sapiens R-HSA-202433	.008132	DRB1;HLA-DQB1				ncreatic beta cell	.046933	DQB1
	PECAM1 interactions Homo sapiens R-HSA-210990	0.008534	ITGB3;PTPN11				Palate	0.048649	GABRB3;TGFB1;FGFR1
	Serotonin receptors Homo sapiens R-HSA-390666	0.008534	HTR1A;HTR2C				Macrophage	0.051923	IL1B;GPD1
	Degradation of the extracellular matrix Homo sapiens R-HSA-1474228	0.008619	PRSS1;CASP3;MMP2;MMP9;ELANE				Neutrophil	0.051923	MMP9;ELANE
	Signal regulatory protein (SIRP) family interactions Homo sapiens	0.010007	PTK2B;PTPN11				Animal cap	0.051923	TGFB1;FGF2

	R-HSA-391160								
	AKT phosphorylates targets in the cytosol Homo sapiens R-HSA-198323	0.010007	CHUK;AKT1				Trigeminal nerve	0.051923	CACNA1A;FOS
	POU5F1 (OCT4), SOX2, NANOG activate genes related to proliferation Homo sapiens R-HSA-2892247	0.010007	STAT3;FGF2				Frontal lobe	0.053221	PRSS1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG2;GABRG1;CACNB1;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PPIA;IFNAR1;GRIA1;ABCB1;CHRNA2;SDC2;CACNA1B;CACNA1A;CACNA1D;CACNA1C;CACNA1E;CACNA1H;CACNA1G;DPP4;CACNA1I;GRIN2A;PPP3R2;LTA4H;APOE;DRD2;ELANE;PRNP;JUN;ACE;TGFB1;SRD5A1;SRD5A3;PRG2;GRIN2C;GRIN2B;GRIN2D;IL4;IL6;GRIN3A;GGCX;ALB;SCN2A;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB

									2;GABRB1;ACY1;SLC7A11;PTH1R;SLC6A2;ADRA1A;SLC6A3;CKS1B;IKBKB;CA1;CA2;CASP3;CA4;CA7;JAK2;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;FOS;F2;F3;ADRA2B;ADRA2A;ADORA2A;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;SCN4A;TLR4;CRP;LRP1;SERPINC1;NR1I2;ETFDH;ATP2C1;CACNG6;CACNG7;NT5E;PGRMC1;NRAS;CACNG8;PTK2B;MAPK1;GABRE;CACNG2;GABRD;CACNG3;KCNJ3;P2RY12;GABRA2;GABRA1;CRBN;GABRA6;KCNJ11;GABRA5;STAT1;IFNB1;GSS;GABRA4;GABRA3;STAT3;SLC12A1;CCK;PTPN11;GRIN1;VEGFA;CD4;KRAS
	FGFRL1 modulation of FGFR1 signaling Homo sapiens R-HSA-5658623	0.010007	FGF2;FGF4				Glial cell	0.057868	TP53
	p38MAPK events Homo sapiens	0.01	NRAS;KRAS				PanIN cel	0.05	KRAS

	R-HSA-171007	0.0007					l	78688	
	Collagen degradation Homo sapiens R-HSA-1442490	0.01096 8	MMP2;MMP9;ELANE				13c4	0.057868	ETFDH
	Nuclear signaling by ERBB4 Homo sapiens R-HSA-1251985	0.01096 8	PTPN11;PGR;JAK2				3t6	0.057868	FCGR2A
	Regulation of TP53 Activity through Association with Co-factors Homo sapiens R-HSA-6804759	0.011585	AKT1;TP53				Promyelocytic leukemia cell line	0.057868	MYC
	TRAF3-dependent IRF activation pathway Homo sapiens R-HSA-918233	0.011585	DDX58;IFNB1				ROS cell	0.057868	PTH1R

	Negative regulation of MAPK pathway Homo sapiens R-HSA-5675221	0.01175	NRAS;MAPK1;KRAS				SET-2 cell	0.057868	JAK2
	G alpha (12/13) signalling events Homo sapiens R-HSA-416482	0.01215	PIK3CA;ADRA1D;ADRA1B;ADRA1A				Cholangiocarcinoma cell	0.057868	STAT3
	TNF signaling Homo sapiens R-HSA-75893	0.01257	IKBKB;CHUK;TNF				Teniatecta	0.057868	CA14
	Disorders of transmembrane transporters Homo sapiens R-HSA-5619115	0.01326	KCNJ11;ALB				DU-145 cell	0.057868	AR
	Prolactin receptor signaling Homo sapiens R-HSA-1170546	0.01326	PTPN11;JAK2				a2	0.057868	ATP2C1

	EPHB-mediated forward signaling Homo sapiens R-HSA-3928662	0.013426	SDC2;GRIN2B;GRIN1				Gastroduodenal mucosa	0.057868	CCK
	Retinoid metabolism and transport Homo sapiens R-HSA-975634	0.013426	LRP1;SDC2;APOE				gk 1.5	0.057868	CD4
	Intrinsic Pathway for Apoptosis Homo sapiens R-HSA-109606	0.013426	CASP3;AKT1;TP53				H9 cell	0.057868	CACNA2D4
	BMAL1:CLOCK,NPAS2 activates circadian gene expression Homo sapiens R-HSA-1368108	0.013426	F7;SERPINE1;NR3C1				Hairy cell leukemia cell	0.057868	IFNA1
	TRAF6 mediated induction of TAK1 complex Homo	0.015004	TLR4;TLR3				Inflammatory cell	0.057886	F3

	sapiens R-HSA-937072	1						8	
	Spry regulation of FGF signaling Homo sapiens R-HSA-1295596	0.015041	MAPK1;PTPN11				Merozoite	0.058064	CD4;CD40LG
	GRB2 events in ERBB2 signaling Homo sapiens R-HSA-1963640	0.015041	NRAS;KRAS				Pancreatic juice	0.058064	PRSS1;KRAS
	MAP3K8 (TPL2)-dependent MAPK1/3 activation Homo sapiens R-HSA-5684264	0.015041	IKBKB;CHUK				Acute promyelocytic leukemia cell	0.061224	PRG2;CKS1B
	Phospholipase C-mediated cascade; FGFR3 Homo sapiens R-HSA-5654227	0.015225	FGF1;FGF2;FGF4				Pheochromocytoma cell	0.061224	CALCA;CALCB

							line		
	Peptide hormone metabolism Homo sapiens R-HSA-2980736	0.015714	DPP4;ACE2;ACE;REN				Cervical spine	0.061224	CRP;PGRMC1
	Diseases of metabolism Homo sapiens R-HSA-5668914	0.016172	MC2R;CSF2RB;CSF2RA				Enteroendocrine cell	0.064442	DPP4;CCK
	TNF receptor superfamily (TNFSF) members mediating non-canonical NF-kB pathway Homo sapiens R-HSA-5676594	0.016915	CD40LG;TNFSF11				Myometrial cell line	0.069035	PGR
	Ligand-dependent caspase activation Homo sapiens R-HSA-140534	0.016915	TLR4;TLR3				Aortic smooth muscle	0.069035	KCNMA1
	SHC1 events in	0.	NRAS;KRAS				Neoc	0.	CA4

	ERBB2 signaling Homo sapiens R-HSA-1250196	0.018882						cortex	0.069035	
	Death Receptor Signalling Homo sapiens R-HSA-73887	0.019211	IKBKB;CHUK;TNF					Neuroendocrine tumor cell line	0.069035	CCK
	Na+/Cl- dependent neurotransmitter transporters Homo sapiens R-HSA-442660	0.020941	SLC6A2;SLC6A3					Cornea	0.069035	FGFR2
	HDL-mediated lipid transport Homo sapiens R-HSA-194223	0.020941	ALB;APOE					Osteoclast stem cell	0.069035	TNFSF11
	Metabolism of fat-soluble vitamins Homo	0.022525	LRP1;SDC2;APOE					Perirhinal cortex	0.06900	CA4

	sapiens R-HSA-6806667	42						35	
	IL-6-type cytokine receptor ligand interactions Homo sapiens R-HSA-6788467	0.023088	JAK2;JAK1				Peritubular contractile cell	0.069035	AR
	Regulation of Insulin-like Growth Factor (IGF) transport and uptake by Insulin-like Growth Factor Binding Proteins (IGFBPs) Homo sapiens R-HSA-381426	0.025322	MMP2;F2				RAMOS cell	0.069035	CD40LG
	Nef-mediates down modulation of cell surface receptors by	0.025322	CD4;HLA-A				Retinal ganglion cell	0.069035	CASP3

	recruiting them to clathrin adapters Homo sapiens R-HSA-164938						line		
	Metabolism of lipids and lipoproteins Homo sapiens R-HSA-556833	0.025853	SRD5A2;SRD5A1;SRD5A3;PTGS2;CYP17A1;NEU2;PIK3CA;CYP11B2;NEU1;GPD1;ALB;PPARG;LTA4H;APOE				Cerebrovascular system	0.069035	LRP1
	TNFR2 non-canonical NF-kB pathway Homo sapiens R-HSA-5668541	0.026487	CD40LG;CHUK;TNFSF11;TNF				Chorioarcinoma cell line	0.069035	MMP2
	ECM proteoglycans Homo sapiens R-HSA-3000178	0.027442	TGFB1;ITGB3;SERPINE1				Vesicular gland	0.069035	PTGS2
	CD28 dependent PI3K/Akt signaling Homo sapiens	0.027764	PIK3CA;AKT1				Epidermal cell lin	0.069033	JUN

	R-HSA-389357						e	5	
	Regulation of TP53 Activity through Acetylation Homo sapiens R-HSA-6804758	0.030044	AKT1;TP53				at1cell	0.069035	KCNH2
	Potassium Channels Homo sapiens R-HSA-1296071	0.030209	KCNH2;KCNJ11;KCNMA1;KCNJ3				foreign-bodygiantcell	0.069035	IL4
	Metabolism of vitamins and cofactors Homo sapiens R-HSA-196854	0.031688	PRSS1;LRP1;SDC2;APOE;PTGS2				r2c	0.069035	GRIN1
	Endogenous sterols Homo sapiens R-HSA-211976	0.032519	CYP11B2;CYP17A1				rn22	0.069035	FGF4
	Basigin interactions Homo sapiens R-HSA-210991	0.035007	SLC7A11;PPIA				Humanlensepith	0.069033	ELANE

		6					elial cell line	5	
	Nitric oxide stimulates guanylate cyclase Homo sapiens R-HSA-392154	0.035076	NOS2;KCNMA1				LNCaP-C4-2 cell	0.069035	AR
	ATF4 activates genes Homo sapiens R-HSA-380994	0.035076	CXCL8;CCL2				Liposarcoma cell	0.069035	PPARG
	Constitutive Signaling by AKT1 E17K in Cancer Homo sapiens R-HSA-5674400	0.035076	CHUK;AKT1				M5 melanoma cell	0.069035	MT-ND1
	TP53 Regulates Transcription of DNA Repair Genes Homo sapiens	0.035767	JUN;FOS;TP53				Cochlear hair cell	0.071043	KCNMA1;CACNA1D

	R-HSA-6796648								
	PTK6 Regulates RHO GTPases, RAS GTPase and MAP kinases Homo sapiens R-HSA-8849471	0.037708	NRAS;KRAS				BTO:0001439	0.074422	LTA4H;F2
	TAK1 activates NFkB by phosphorylation and activation of IKKs complex Homo sapiens R-HSA-445989	0.037708	IKBKB;CHUK				Colorectum	0.077852	PIK3CA;CACNA1G
	Synthesis of substrates in N-glycan biosythesis Homo sapiens R-HSA-446219	0.038799	NEU2;NEU1;SRD5A3				Medial temporal lobe	0.080007	CA4
	Circadian Clock Homo sapiens R-HSA-400253	0.038779	F7;SERPINE1;NR3C1				Messa	0.080007	ABCB1

		9							
	Integrin alphaIIb beta3 signaling Homo sapiens R-HSA-354192	0.040413	ITGB3;AKT1				Osteoclastoma cell	0.080007	ITGB3
	VEGFR2 mediated vascular permeability Homo sapiens R-HSA-5218920	0.040413	CDH5;AKT1				Pulmonary artery	0.080007	KCNMA1
	SLC-mediated transmembrane transport Homo sapiens R-HSA-425407	0.041045	SLC12A3;ALB;SLC12A1;SLC29A4;SLC7A11;SLC6A2;SLC6A3				Thymocyte	0.080007	TNFSF11
	The role of Nef in HIV-1 replication and disease pathogenesis Homo sapiens R-HSA-164952	0.043189	CD4;HLA-A				Urinary bladder cancer cell	0.080007	TGFB1
	PERK regulates gene	0.0	CXCL8;CCL2				Posterio	0.0	NEU2

	expression Homo sapiens R-HSA-381042	43189					r pharynx	8007	
	Cytosolic sensors of pathogen-associated DNA Homo sapiens R-HSA-1834949	0.043584	IKBKB;CHUK;TLR3				Pyloric region	0.08007	CCK
	Apoptosis Homo sapiens R-HSA-109581	0.044947	CASP3;AKT1;TP53;TLR4;TLR3				RT-4 cell	0.08007	TP53
	Interaction between L1 and Ankyrins Homo sapiens R-HSA-445095	0.046034	SCN4A;SCN2A				Retinal pigment epithelium cell line	0.08007	VEGFA
	Activation of BH3-only proteins Homo	0.046	AKT1;TP53				BA/F3 cell	0.080	JAK2

	sapiens R-HSA-114452	0.034						07	
	Programmed Cell Death Homo sapiens R-HSA-5357801	0.047943	CASP3;AKT1;TP53;TLR4;TLR3				BEL-7402 cell	0.080007	CASP3
	Amine compound SLC transporters Homo sapiens R-HSA-425428	0.048946	SLC6A2;SLC6A3				Bm	0.080007	IL7
	Molecules associated with elastic fibres Homo sapiens R-HSA-2129379	0.048946	TGFB1;ITGB3				Bronchoalveolar stem cell	0.080007	KRAS
	Inwardly rectifying K+ channels Homo sapiens R-HSA-1296065	0.051923	KCNJ11;KCNJ3				Sinus node	0.080007	CACNA1D
	NOD1/2 Signaling Pathway Homo sapiens	0.051	IKBKB;CHUK				Chromaffin	0.080	CACNA1C

	R-HSA-168638	923					cell	07	
	ISG15 antiviral mechanism Homo sapiens R-HSA-1169408	0.053989	DDX58;STAT1;JAK1				Duodenal juice	0.080007	CCK
	Antiviral mechanism by IFN-stimulated genes Homo sapiens R-HSA-1169410	0.053989	DDX58;STAT1;JAK1				Uterine horn	0.080007	PGR
	Thrombin signalling through proteinase activated receptors (PARs) Homo sapiens R-HSA-456926	0.054963	MAPK1;F2				pg13	0.080007	TP53
	Oncogene Induced Senescence Homo sapiens R-HSA-2559585	0.054963	MAPK1;TP53				Leiomyomacell	0.080007	CACNG7
	SMAD2/SMAD3:S	0.	MYC;SERPINE1				Leydi	0.	CYP17A1

	MAD4 heterotrimer regulates transcription Homo sapiens R-HSA-2173796	0.054963					gcell line	0.080007	
	Signaling by TGF-beta Receptor Complex Homo sapiens R-HSA-170834	0.055829	TGFB1;MYC;SERPINE1				Neural crest	0.081912	CALCA;TGFB1;FGF2;FGFR1
	Binding and Uptake of Ligands by Scavenger Receptors Homo sapiens R-HSA-2173782	0.057698	LRP1;ALB;APOE				Vas deferens	0.084857	ADORA1;ADRA1B
	Abacavir transmembrane transport Homo sapiens R-HSA-2161517	0.057868	ABCB1				Gill	0.084857	CALCA;CA2
	APOBEC3G mediated	0.05	PPIA				Blastomere	0.08	TGFB1;ALB

	resistance to HIV-1 infection Homo sapiens R-HSA-180689	7868						8428	
	NGF-independant TRKA activation Homo sapiens R-HSA-187024	0.057868	ADORA2A				Prostate cancer cell line	0.089113	PGRMC1;TNF;CACNA1G
	SMAC binds to IAPs Homo sapiens R-HSA-111463	0.057868	CASP3				Metacyclic form	0.090975	APOE
	SMAC-mediated dissociation of IAP:caspase complexes Homo sapiens R-HSA-111464	0.057868	CASP3				Jejunum	0.090975	CACNB2
	SMAC-mediated apoptotic response	0.0578	CASP3				Peritoneal macro	0.0909	TLR9

	Homo sapiens R-HSA-111469	68					phage	75	
	Cytochrome c-mediated apoptotic response Homo sapiens R-HSA-111461	0.057868	CASP3				Umbilical cord	0.090975	PTPN11
	Activation of caspases through apoptosome-mediated cleavage Homo sapiens R-HSA-111459	0.057868	CASP3				7d4	0.090975	IL2
	PTK6 Expression Homo sapiens R-HSA-8849473	0.057868	NR3C1				A-172 cell	0.090975	TP53
	Sialic acid metabolism Homo sapiens R-HSA-4085001	0.058064	NEU2;NEU1				Rat-2 cell	0.090975	FOS

	Cargo concentration in the ER Homo sapiens R-HSA-5694530	0.058064	GRIA1;F8				Cerebral gyrus	0.090975	CA4
	CD28 co-stimulation Homo sapiens R-HSA-389356	0.058064	PIK3CA;AKT1				Empyema fluid	0.090975	CRP
	Lipoprotein metabolism Homo sapiens R-HSA-174824	0.061224	ALB;APOE				Endocardium	0.090975	PTH1R
	Regulation of TP53 Degradation Homo sapiens R-HSA-6804757	0.064442	AKT1;TP53				Epithelial lining fluid	0.090975	ELANE
	Biosynthesis of the N-glycan precursor (dolichol lipid-linked oligosaccharide, LLO) and	0.065468	NEU2;NEU1;SRD5A3				b85	0.090975	NEU2

	transfer to a nascent protein Homo sapiens R-HSA-446193								
	Transcriptional regulation of white adipocyte differentiation Homo sapiens R-HSA-381340	0.06748 2	TGFB1;PPARG;TNF				Gastrointestinal endocrine cell	0.090975	CCK
	Regulation of TP53 Expression and Degradation Homo sapiens R-HSA-6806003	0.06771 5	AKT1;TP53				gh1	0.090975	CACNG1
	Lectin pathway of complement activation Homo sapiens R-HSA-166662	0.06903 5	MBL2				Kco	0.090975	KCNJ11
	RSK activation Homo	0.0	MAPK1				MDCK-	0.0	ABCB1

	sapiens R-HSA-444257	6.90355					MDR1 cell	9.09754	
	Synthesis of Dolichyl-phosphate Homo sapiens R-HSA-446199	0.0690355	SRD5A3				Myenteric plexus	0.0920444	CCK;FOS
	Activation of TRKA receptors Homo sapiens R-HSA-187015	0.0690355	ADORA2A				Hair cell	0.0937475	CASP3;KCNMA1;CACNA1D
	NADE modulates death signalling Homo sapiens R-HSA-205025	0.0690355	CASP3				Metacestode	0.1017511	MT-ND1
	SMAD2/3 Phosphorylation Motif Mutants in Cancer Homo sapiens R-HSA-3304356	0.0690355	TGFB1				Microglia	0.1017511	P2RY12
	CLEC7A/inflammasome pathway	0.06	IL1B				Articular car	0.10	AQP1

	Homo sapiens R-HSA-5660668	9035					tilage	17511	
	Metabolic disorders of biological oxidation enzymes Homo sapiens R-HSA-5579029	0.069035	MC2R				Histiocytic lymphomacell	0.1017511	IL1B
	Mineralocorticoid biosynthesis Homo sapiens R-HSA-193993	0.069035	CYP11B2				PNT-1Acell	0.1017511	GABRE
	Synthesis of 15-eicosatetraenoic acid derivatives Homo sapiens R-HSA-2142770	0.069035	PTGS2				Myometrium	0.1017511	KCNMA1
	Negative feedback regulation of MAPK pathway Homo sapiens R-HSA-5674499	0.069035	MAPK1				RGC-5cell	0.1017511	SIGMAR1
	TNFR1-	0	TNF				SG	0	CASP3

	mediated ceramide production Homo sapiens R-HSA-5626978	.069035					C-7901 cell	.101751	
	Cell-Cell communication Homo sapiens R-HSA-1500931	0.070612	CDH5;PIK3CA;PTK2B;PTPN11				Bile duct	0.101751	AQP1
	Transport of vitamins, nucleosides, and related molecules Homo sapiens R-HSA-425397	0.074422	ALB;SLC29A4				C6/36 cell	0.101751	CD40LG
	Association of TriC/CCT with target proteins during biosynthesis Homo sapiens R-HSA-390471	0.077852	STAT3;TP53				Cerebral organ	0.101751	MT-ND1
	mTOR signalling Homo sapiens	0.07	AKT1;PRKAB1				GaMG cel	0.10	TP53

	R-HSA-165159	7852					l	17511	
	TP53 Regulates Metabolic Genes Homo sapiens R-HSA-5628897	0.0779 65	AKT1;PRKAB1;TP53				mc2	0.10175 11	MC2R
	Transport of nucleosides and free purine and pyrimidine bases across the plasma membrane Homo sapiens R-HSA-83936	0.0800 07	SLC29A4				Head kidney	0.10175 11	MC2R
	SLC transporter disorders Homo sapiens R-HSA-5619102	0.0800 07	ALB				Astrocytoma cell	0.10691 6	CCL2;TP53
	Binding of TCF/LEF:CTNNB1 to target gene	0.0800 0	MYC				Mast cell line	0.11124	CCL2

	promoters Homo sapiens R-HSA-4411364	7							
	Phase 3 - rapid repolarisation Homo sapiens R-HSA-5576890	0.080007	KCNH2				Mature cell	0.1124	CD4
	Apoptotic factor-mediated response Homo sapiens R-HSA-111471	0.080007	CASP3				Foreskin fibroblast cell line	0.1124	FGFR1
	Loss of Function of TGFBR1 in Cancer Homo sapiens R-HSA-3656534	0.080007	TGFB1				Achene	0.1124	MT-ND1
	TGFBR1 KD Mutants in Cancer Homo sapiens R-HSA-3656532	0.080007	TGFB1				Psammomabody	0.1124	CALCA
	Loss of Function of	0.0	TGFB1				Pterygiu	0.1	TP53

	SMAD2/3 in Cancer Homo sapiens R-HSA-3304349	8007					m	124	
	SMAD2/3 MH2 Domain Mutants in Cancer Homo sapiens R-HSA-3315487	0.080007	TGFB1				Retinoblastoma cell line	0.11124	TP53
	FGFR3b ligand binding and activation Homo sapiens R-HSA-190371	0.080007	FGF1				Rto	0.11124	PF4
	PKB-mediated events Homo sapiens R-HSA-109703	0.081331	AKT1;PRKAB1				Blast cell	0.11124	ITGB3
	Platelet homeostasis Homo sapiens R-HSA-418346	0.084577	NOS2;KCNMA1;PTPN11				Calyx	0.11124	CACNA1B
	Elastic fibre	0.	TGFB1;ITGB3				Colon	0.	PTGS2

	formation Homo sapiens R-HSA-1566948	0.08485					oocyte	0.1124	
	Glycosphingolipid metabolism Homo sapiens R-HSA-1660662	0.08485	NEU2;NEU1				Thoracic spine	0.1124	CRP
	Pre-NOTCH Transcription and Translation Homo sapiens R-HSA-1912408	0.08485	JUN;TP53				Endometrial gland	0.1124	PGR
	Factors involved in megakaryocyte development and platelet production Homo sapiens R-HSA-983231	0.08702	IFNA1;IFNB1;JAK2;TP53				Enteric nervous system	0.1124	PRNP
	Transcriptional regulation of pluripotent stem cells	0.08842	STAT3;FGF2				Glioblastoma mault	0.1124	TP53

	Homo sapiens R-HSA-452723	8					iform e cell		
	VEGF ligand-receptor interactions Homo sapiens R-HSA-194313	0.09097 5	VEGFA				HEC-1-B cell	0.11124	PGR
	VEGF binds to VEGFR leading to receptor dimerization Homo sapiens R-HSA-195399	0.09097 5	VEGFA				p1	0.11124	JAK2
	Neurotransmitter Clearance In The Synaptic Cleft Homo sapiens R-HSA-112311	0.09097 5	SLC6A3				Head and neck cancer cell	0.11124	TP53
	ABC transporter disorders Homo sapiens R-HSA-	0.09097	KCNJ11				Hypopharynx	0.11124	TP53

	5619084	5							
	Insulin-like Growth Factor-2 mRNA Binding Proteins (IGF2BPs /IMPs/VICKZs) bind RNA Homo sapiens R-HSA-428359	0.0909975	MYC				IMR-32 cell	0.11124	TP53
	Activation of PUMA and translocation to mitochondria Homo sapiens R-HSA-139915	0.0909975	TP53				Mammary epithelial cell line	0.11124	TGFB1
	Signaling by TGF-beta Receptor Complex in Cancer Homo sapiens R-HSA-3304351	0.0909975	TGFB1				T-lymphocyte	0.116627	IL10;PGRMC1;CHUK;CASP3;CCL3;PTPN11
	Nicotinamide salvaging Homo sapiens R-HSA-	0.0909	PTGS2				Corpus callosu	0.12005	SERPINE1;NR3C1;FGF1;FGF2;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;PRKAB

	197264	75					m	01	1;GABRG2;GABRG1;CACNB1;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;TP53;PPIA;IFNAR1;GRIA1;ABCB1;CHRNA2;SDC2;CACNA1A;CACNA1D;CACNA1C;CACNA1E;CACNA1G;CACNA1I;GRIN2A;PPP3R2;LTA4H;APOE;DRD4;PRNP;JUN;TGFB1;SRD5A1;SRD5A3;GRIN2C;GRIN2B;GRIN2D;IL6;GRIN3A;GGCX;SCN2A;FGFR2;GABRB3;GABRB2;GABRB1;ACY1;HTR2C;SLC7A11;PTH1R;ADRA1A;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;JAK2;JAK1;MBL2;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F3;ADRA2B;PIK3CA;KCNMA1;IL3RA;SLC29A4;TLR4;LRP1;NR1I2;ETFDH;PTGS2;ATP2C1;CACNG7;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG3;KCNJ3;P2RY12;GABRA2;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GSS;GABRA4;STAT3;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS
	Formyl peptide	0.	ANXA1				Mec	0.	ALB

	receptors bind formyl peptides and many other ligands Homo sapiens R-HSA-444473	0.090975					ovarium	0.122924	
	Post-translational protein modification Homo sapiens R-HSA-597592	0.092358	NEU2;GRIA1;F7;F8;F10;GGCX;NEU1;SRD5A3;F2;TP53				Oropharynx	0.122924	TP53
	Transcriptional activity of SMAD2/SMAD3:SMAD4 heterotrimer Homo sapiens R-HSA-2173793	0.095702	MYC;SERPINE1				Osteoblast cell line	0.122924	TNFSF11
	MAPK6/MAPK4 signaling Homo sapiens R-HSA-5687128	0.096105	JUN;MYC;MMP2				Accessory sex gland	0.122924	AR
	ABC-	0	ABCB1;KCNJ11				Pyl	0	CCK

	family proteins mediated transport Homo sapiens R-HSA-382556	.099401					oric cecum	.122924	
	Alpha-defensins Homo sapiens R-HSA-1462054	0.101751	CD4				Sclera	0.122924	CAMLG
	Integration of provirus Homo sapiens R-HSA-162592	0.101751	PPIA				Sto	0.122924	FGF2
	Ca2+ activated K+ channels Homo sapiens R-HSA-1296052	0.101751	KCNMA1				Chondrocyte cell line	0.122924	IL1B
	Nef Mediated CD4 Down-regulation Homo sapiens R-HSA-167590	0.101751	CD4				Cysticercus	0.122924	MT-ND1
	AKT	0	AKT1				Ele	0	CD40LG

	phosphorylates targets in the nucleus Homo sapiens R-HSA-198693	.101751					mentarybody	.122924	
	PTK6 Regulates RTKs and Their Effectors AKT1 and DOK1 Homo sapiens R-HSA-8849469	0.101751	AKT1				Germinal epithelium	0.122924	PGR
	Scavenging of heme from plasma Homo sapiens R-HSA-2168880	0.103144	LRP1;ALB				Primordium	0.126143	TGFB1;AKT1;FGF2
	G alpha (z) signalling events Homo sapiens R-HSA-418597	0.103144	ADRA2B;ADRA2A				Molaris	0.130298	IL1B;TNFSF11
	Generic Transcription Pathway Homo sapiens R-HSA-	0.103775	JUN;VDR;SERPINE1;NR1I2;FOS;NR3C1;PRKAB1;NR3C2;AR;MYC;AKT1;PPARG;PGR;TP53				Osteophyte	0.133332	TGFB1

	212436	3						3	
	Defensins Homo sapiens R-HSA-1461973	0.106916	CD4;TLR2				RKO cell	0.133323	TP53
	Nucleotide-binding domain, leucine rich repeat containing receptor (NLR) signaling pathways Homo sapiens R-HSA-168643	0.106916	IKBKB;CHUK				Sternum	0.133323	CRP
	Visual phototransduction Homo sapiens R-HSA-2187338	0.108233	LRP1;SDC2;APOE				Cornsilk	0.133323	VEGFA
	EPH-ephrin mediated repulsion of cells Homo sapiens R-HSA-3928665	0.110073	MMP2;MMP9				pro-B-lymphocyte cell	0.133323	IL7

							line		
	Netrin mediated repulsion signals Homo sapiens R-HSA-418886	0.1124	PTPN11				ae3	0.134303	PGR;TP53
	Abacavir transport and metabolism Homo sapiens R-HSA-2161522	0.1124	ABCB1				Endothelial cell	0.138336	CDH5;PTGS2
	Nef mediated downregulation of MHC class I complex cell surface expression Homo sapiens R-HSA-164940	0.1124	HLA-A				Blood platelet	0.142714	PRSS1;ACY1;SERPINE1;SLC6A2;SLC6A3;AQP1;MT-ND1;SLC6A4;IKBKB;CA1;CA2;CASP3;AKT1;JAK2;JAK3;JAK1;CCDC51;ANXA1;CAMLG;CHUK;SIGMAR1;HLA-A;F2;PRKAB1;MMP9;ADRA2A;AR;IFNG;PIK3CA;TLR9;PPIF;TLR7;TLR4;PPIA;ABCB1;SERPINC1;ETFDH;CACNA1C;PTGS2;ATP2C1;CACNA1E;CACNG6;NT5E;PGRMC1;NRAS;PPP3R2;CCL5;PTK2B;MAPK1;LTA4H;APOE;GABRE;ELANE;P2RY12;PRNP;ACE;TGFB1;CRBN;STAT1;GSS;STAT3;

									SLC12A1;PRG2;PTPN11;SELP;CD40LG;FCGR2A;IL7;ALB;KRAS;FGFR4;FGFR2;PF4;FGFR1
	eNOS activation Homo sapiens R-HSA-203615	0.1124	AKT1				NAMALWA cell	0.143599	IFNA1
	Tetrahydrobiopterin (BH4) synthesis, recycling, salvage and regulation Homo sapiens R-HSA-1474151	0.1124	AKT1				Brainstem	0.143599	FGF1
	Ligand-independent caspase activation via DCC Homo sapiens R-HSA-418889	0.1124	CASP3				Bone marrow stem cell	0.143599	VEGFA
	Activation of PPARGC1A (PGC-1alpha) by phosphorylation	0.1124	PRKAB1				Sebum	0.143599	SHBG

	Homo sapiens R-HSA-2151209								
	Purine catabolism Homo sapiens R-HSA-74259	0.11244	NT5E				Sertoli cell line	0.143599	AR
	Signal attenuation Homo sapiens R-HSA-74749	0.11244	MAPK1				Subcutaneous tissue	0.143599	ALB
	Regulation of gene expression by Hypoxia-inducible Factor Homo sapiens R-HSA-1234158	0.11244	VEGFA				Corpus striatum	0.143599	CA4
	Transport of inorganic cations/anions and amino acids/oligopeptides Homo sapiens R-HSA-	0.113244	SLC12A3;SLC12A1; SLC7A11				Endometrial cancer cell line	0.143599	AKT1

	425393								
	CLEC7A (Dectin-1) signaling Homo sapiens R-HSA-5607764	0.113244	IKBKB;CHUK;IL1B				Foam cell	0.143599	F3
	Creation of C4 and C2 activators Homo sapiens R-HSA-166786	0.114578	CRP;MBL2				jf1	0.143599	GABRG1
	Transport of organic anions Homo sapiens R-HSA-879518	0.122924	ALB				oa1	0.143599	CACNA1F
	Apoptotic cleavage of cell adhesion proteins Homo sapiens R-HSA-351906	0.122924	CASP3				Finger	0.149172	AR;CD4;TGFB1;MYC;LTA4H;CCR5;F2;TP53
	Arachidonic acid metabolism Homo sapiens R-HSA-2142753	0.130298	LTA4H;PTGS2				NCCIT cell	0.153754	GABRB1

	Passive transport by Aquaporins Homo sapiens R-HSA-432047	0.133323	AQP1				Gastric cancer cell	0.153754	FGFR2
	Defective EXT2 causes exostoses 2 Homo sapiens R-HSA-3656237	0.133323	SDC2				PA-1 cell	0.153754	NRAS
	Defective EXT1 causes exostoses 1, TRPS2 and CHDS Homo sapiens R-HSA-3656253	0.133323	SDC2				PNT-2 cell	0.153754	AR
	P2Y receptors Homo sapiens R-HSA-417957	0.133323	P2RY12				SW-1353 cell	0.153754	IL1B
	Endosomal/Vacuolar pathway Homo sapiens R-HSA-1236977	0.133323	HLA-A				Scolex	0.153754	MT-ND1

	Caspase-mediated cleavage of cytoskeletal proteins Homo sapiens R-HSA-264870	0.133323	CASP3				CHOP cell	0.153754	SELP
	TP53 Regulates Transcription of Caspase Activators and Caspases Homo sapiens R-HSA-6803207	0.133323	TP53				HOS cell	0.153754	CCR5
	TP53 Regulates Transcription of Death Receptors and Ligands Homo sapiens R-HSA-6803211	0.133323	TP53				rt1	0.153754	CD4
	Pyrimidine catabolism Homo sapiens R-HSA-	0.13333	NT5E				Tempo rallobe	0.15552	NR3C1;FGF1;FGF2;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;PRKAB1;GABRG2;GAB

	73621	23						49	RG1;CACNB1;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PPIA;IFNAR1;GRIA1;CHRNA2;SDC2;CACNA1A;CACNA1D;CACNA1C;CACNA1E;CACNA1H;CACNA1G;NEU2;CACNA1I;GRIN2A;PPP3R2;LTA4H;APOE;PRNP;JUN;TGFB1;SRD5A1;HTR1A;GRIN2C;GRIN2B;GRIN2D;IL6;GRIN3A;GGCX;SCN2A;FGFR2;GABRB3;GABRB2;GABRB1;ACY1;SLC7A11;PTH1R;ADRA1A;CKS1B;IKBKB;CA2;CA4;JAK2;JAK1;ANXA1;CAMLG;DDX58;SIGMAR1;FOS;F3;ADRA2B;ADRA2A;PIK3CA;KCNMA1;IL3RA;SLC29A4;SCN4A;TLR4;LRP1;NR1I2;ETFDH;PTGS2;ATP2C1;CACNG7;PGRMC1;NRAS;CACNG8;PTK2B;MAPK1;CACNG2;CACNG3;KCNJ3;P2RY12;GABRA2;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GSS;GABRA4;STAT3;PTPN11;GRIN1;VEGFA;CD4;KRAS
	ERKs are inactivated Homo sapiens R-HSA-	0.133	MAPK1				Gastric aden	0.163	PRSS1

	202670	323					oc arc ino ma cel l lin e	789	
	Synthesis , secretion , and inactivati on of Glucose-dependent Insulinot ropic Polypepti de (GIP) Homo sapiens R-HSA-400511	0.143599	DPP4				Try po ma sti go te	0.163789	TLR2
	Dissoluti on of Fibrin Clot Homo sapiens R-HSA-75205	0.143599	SERPINE1				VC aP cel l	0.163789	AR
	TP53 Regulate s Transcrip tion of Genes Involved in G1 Cell Cycle Arrest Homo	0.143599	TP53				Ne rve	0.164778	JUN;HLA-A;AQP1

	sapiens R-HSA-6804116								
	Activation of DNA fragmentation factor Homo sapiens R-HSA-211227	0.143599	CASP3				Microgametophyte	0.173705	SRD5A3
	Apoptosis induced DNA fragmentation Homo sapiens R-HSA-140342	0.143599	CASP3				Regio parietalis capitis	0.173705	APOE
	p75NTR recruits signalling complexes Homo sapiens R-HSA-209543	0.143599	IKBKB				Biliary epithelial cell	0.173705	HGF
	NF-kB is activated and signals survival Homo sapiens R-HSA-209560	0.143599	IKBKB				CEM cell	0.173705	CD4
	Assembly Of The HIV Virion Homo sapiens	0.1435	PPIA				Chondroblast	0.1737	NT5E

	R-HSA-175474	99						05	
	Downregulation of ERBB2:ERBB3 signaling Homo sapiens R-HSA-1358803	0.143599	AKT1				Tail bud	0.173705	PGR
	Advanced glycosylation endproduct receptor signaling Homo sapiens R-HSA-879415	0.143599	MAPK1				Corpus cardiacum	0.173705	CCK
	TNFR1-induced proapoptotic signaling Homo sapiens R-HSA-5357786	0.143599	TNF				Uterine epithelium	0.173705	PGR
	Pre-NOTCH Expression and Processing Homo sapiens R-HSA-1912422	0.146478	JUN;TP53				Immature cell	0.173705	CD4
	Initial triggerin	0.	CRP;MBL2				Vasc	0.	PRNP;ANXA1;MMP2;SERPINE1;HLA-

	g of complement Homo sapiens R-HSA-166663	1.50586					ular system	1.765578	A;FOS;PTGS2;CDH5;NT5E;PIK3CA;IL1B;LTA4H;TP53;PPIA
	SUMOylation of transcription factors Homo sapiens R-HSA-3232118	0.153754	TP53				Ear	0.179766	CA3;PIK3CA;FOS;PPIA
	TP53 regulates transcription of several additional cell death genes whose specific roles in p53-dependent apoptosis remain uncertain Homo sapiens R-HSA-6803205	0.153754	TP53				Phrenic nerve	0.183505	HTR1A
	Nicotinate metabolism Homo sapiens	0.15337	PTGS2				Stalk cell	0.18335	VEGFA

	R-HSA-196807	54						05	
	Synthesis of Prostaglandins (PG) and Thromboxanes (TX) Homo sapiens R-HSA-2162123	0.153754	PTGS2				Stoma	0.183505	ALB
	Glutathione synthesis and recycling Homo sapiens R-HSA-174403	0.153754	GSS				TZM-blcell	0.183505	CCR5
	Golgi Cisternae Pericentriolar Stack Reorganization Homo sapiens R-HSA-162658	0.153754	MAPK1				Corpuscavernosum	0.183505	KCNMA1
	Role of phospholipids in phagocytosis Homo sapiens R-HSA-2029485	0.158869	FCGR2A;PIK3CA				Erythroblast	0.183505	TMPRSS2
	Transloc	0	AKT1;PRKAB1				b2	0	HLA-A

	ation of GLUT4 to the plasma membrane Homo sapiens R-HSA-1445148	.158869					1	.183505	
	GRB2:SOS provides linkage to MAPK signaling for Integrins Homo sapiens R-HSA-354194	0.163789	ITGB3				mbl2	0.183505	MBL2
	p130Cas linkage to MAPK signaling for integrins Homo sapiens R-HSA-372708	0.163789	ITGB3				Spindle cell	0.184179	PGR;TP53
	Activation of BAD and translocation to mitochondria Homo sapiens R-HSA-111447	0.163789	AKT1				Bile	0.193188	ACE2
	Recycling of bile	0.	ALB				Chon	0.	NOS2

	acids and salts Homo sapiens R-HSA-159418	1637889					drocyte	1931188	
	Cytochrome P450 - arranged by substrate type Homo sapiens R-HSA-211897	0.1672355	CYP11B2;CYP17A1				PC-3 cell	0.1931188	AR
	Fcgamma receptor (FCGR) dependent phagocytosis Homo sapiens R-HSA-2029480	0.1705561	FCGR2A;PIK3CA;MAPK1				Epidermal stem cell	0.1931188	MYC
	TGF-beta receptor signaling in EMT (epithelial to mesenchymal transition) Homo sapiens R-HSA-2173791	0.1737005	TGFB1				Zygote	0.1931188	ALB
	p75NTR signals	0.	IKBKB				Lung	0.	PRSS1;IL1RN;SERPINE1;AQP1;MT-

	via NF-kB Homo sapiens R-HSA-193639	1737705						195431	ND1;ICAM1;MYC;TNFSF11;AKT1;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;ACE2;SFRP4;AR;AGTR1;TP53;ABCB1;SDC2;NEU2;PPP3R2;NEU1;LTA4H;APOE;ELANE;ST14;JUN;ACE;PRG2;GRIN2C;GRIN2D;CD209;REN;SCN2A;HLA-DRB1;GABRB3;GABRB1;ACY1;IFNA1;SLC7A11;PTH1R;SLC6A3;SLC6A4;IKBKB;CTLA4;JAK2;CCR5;JAK3;JAK1;IL10;ANXA1;CAMLG;IL13;FOS;F2;F3;F7;IL1A;F8;IL1B;KCNMA1;TLR9;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;SERPINC1;TMPRSS2;PTGS2;CYP17A1;GLRA1;NT5E;PGRMC1;NRAS;GABRE;CA12;P2RY12;GABRA2;GABRQ;GABRA1;GABRP;F10;CRBN;GABRA6;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;GRIN1;VEGFA;CD40LG;PF4;NR3C1;FGF1;FGF2;TNF;FGF4;NR3C2;CDH5;ADORA1;CA14;KCNH2;IFNAR2;CHRNB4;HGF;CACNB1;CACNB2;CACNB3;CACNB4;GP

									D1;PPIF;PGR;PPIA;IFNAR1;GRIA1;CHRNA3;CALCA;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CACNA1F;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;CACNA1S;DRD2;PRNP;TGFB1;VDR;SRD5A1;SRD5A3;IL2;SELP;IL6;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;ITGB3;HTR2C;ADRA1D;ADRA1B;ADRA1A;CKS1B;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;CCDC51;MBL2;CHUK;DDX58;MMP2;SIGMAR1;MMP9;ADORA2A;IFNG;PIK3CA;IL3RA;CRH;SCN4A;CRP;LRP1;ETFDH;ATP2C1;CACNG6;CACNG7;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;CACNG3;CACNG4;KCNJ3;SLC12A3;NOS2;SLC12A1;OPRK1;CCK;PTPN11;CD4;FCGR2A;KRAS
	PI3K events in ERBB2 signaling Homo sapiens R-HSA-1963642	0.173705	PIK3CA				Lymphoblast	0.201357	SIGMAR1;HLA-DRB1
	Signaling by	0.	JUN;MYC;TP53				Mes	0.	CDH5

	NOTCH Homo sapiens R-HSA-157118	176402					on ephron	202758	
	Trafficking of GluR2-containing AMPA receptors Homo sapiens R-HSA-416993	0.183505	GRIA1				A7r5 cell	0.202758	CACNA1C
	Chylomicron-mediated lipid transport Homo sapiens R-HSA-174800	0.183505	APOE				Trophoblast stem cell	0.202758	FGF4
	KSRP (KHSRP) binds and destabilizes mRNA Homo sapiens R-HSA-450604	0.183505	AKT1				Trophozoite	0.202758	CD40LG
	Butyrate Response Factor 1 (BRF1) binds and destabilizes mRNA Homo	0.183505	AKT1				Hallux	0.202758	FGFR2

	sapiens R-HSA-450385								
	Formation of Senescence-Associated Heterochromatin Foci (SAHF) Homo sapiens R-HSA-2559584	0.183505	TP53				MDCK cell	0.202758	SLC29A4
	Platelet sensitization by LDL Homo sapiens R-HSA-432142	0.183505	PTPN11				Mouth	0.205175	CA12;GABRP;IL1RN;LRP1;GSS;MMP2;STAT3;FOS;ATP2C1;AQP1;ICAM1;FCGR2A;GGCX;MYC;MAPK1;TP53
	Activation of NF-kappaB in B cells Homo sapiens R-HSA-1169091	0.184179	IKBKB;CHUK				Substantia nigra	0.205681	GSS;KCNMA1
	Integrin cell surface interactions Homo sapiens R-HSA-216083	0.188454	ITGB3;ICAM1				BTO:0001239	0.212214	PRG2
	Regulation of RAS	0.	NRAS;KRAS				Spor	0.	SRD5A3

	by GAPs Homo sapiens R-HSA-5658442	1.88454					ophyte	2.12214	
	COPII (Coat Protein 2) Mediated Vesicle Transport Homo sapiens R-HSA-204005	0.192743	GRIA1;F8				Egg yolk	0.212214	APOE
	Cyclin E associated events during G1/S transition Homo sapiens R-HSA-69202	0.192743	MYC;CKS1B				Epididymal fluid	0.212214	SHBG
	Regulation of signaling by CBL Homo sapiens R-HSA-912631	0.193188	PIK3CA				Large intestine	0.212214	PIK3CA
	cGMP effects Homo sapiens R-HSA-418457	0.193188	KCNMA1				Mammary gland	0.218152	KCNJ11;SIGMAR1;F2;FGFR4;ATP2C1;FGFR2;VEGFA
	TP53	0	TP53				Ch	0	ST14

	Regulates Transcription of Genes Involved in G2 Cell Cycle Arrest Homo sapiens R-HSA-6804114	.193188					orionic villus	.221559	
	Asparagine N-linked glycosylation Homo sapiens R-HSA-446203	0.194464	NEU2;GRIA1;F8;NEU1;SRD5A3				Keratinocyte	0.221779	CHRNA3;ITGB3;ATP2C1
	Cyclin A:Cdk2-associated events at S phase entry Homo sapiens R-HSA-69656	0.197044	MYC;CKS1B				Schwann cell	0.223007	JUN;FGF2
	Host Interactions of HIV factors Homo sapiens R-HSA-162909	0.197261	CD4;HLA-A;PPIA				B-lymphocyte cell line	0.223863	JUN;STAT1;LTA4H;MMP9;HLA-DRB1
	Defective	0	SDC2				My	0	MYC

	B3GALT6 causes EDSP2 and SEMDJL1 Homo sapiens R-HSA-4420332	.20275 8					elo id cel l lin e	.23079 3	
	Defective B4GALT7 causes EDS, progeroid type Homo sapiens R-HSA-3560783	0.20275 8	SDC2				M es an gia l cel l	0.23079 3	AQP1
	Defective B3GAT3 causes JDSSDHD Homo sapiens R-HSA-3560801	0.20275 8	SDC2				Re tin al pig me nt epi th eli u m	0.23079 3	AQP1
	Scavenging by Class A Receptors Homo sapiens R-HSA-3000480	0.20275 8	APOE				Re tic ulu m	0.23079 3	ATP2C1
	TP53 Regulates Transcription of Genes	0.207	TP53				Tu be rcl e	0.2307	ALB

	Involved in Cytochrome C Release Homo sapiens R-HSA-6803204	58						93	
	Regulation of TP53 Activity through Methylation Homo sapiens R-HSA-6804760	0.20275 8	TP53				Ec	0.23079 3	FGF4
	Lipid digestion, mobilization, and transport Homo sapiens R-HSA-73923	0.20568 1	ALB;APOE				g2	0.23079 3	TP53
	Biological oxidations Homo sapiens R-HSA-211859	0.21109 8	ACY1;CYP11B2;GSS;CYP17A1				Colonic adenocarcinoma cell	0.23618 5	CAMLG;NOS2
	Synthesis, secretion, and	0.21	DPP4				Bulb	0.23	PIK3CA

	inactivation of Glucagon-like Peptide-1 (GLP-1) Homo sapiens R-HSA-381771	2.214						9.918	
	eNOS activation and regulation Homo sapiens R-HSA-203765	0.212214	AKT1				Hepa-RG cell	0.239918	NR1I2
	Metabolism of nitric oxide Homo sapiens R-HSA-202131	0.212214	AKT1				Trachea	0.248443	GABRP;ANXA1;STAT1;SDC2;STAT3;FOS;ATP2C1;F3;AQP1;DPP4;NT5E;MAPK1;FGFR1
	Signaling by Hippo Homo sapiens R-HSA-2028269	0.212214	CASP3				Nasal cavity	0.248935	FOS
	Regulation of gene expression in beta cells Homo sapiens R-HSA-210745	0.212214	AKT1				Spermatheca	0.248935	ETFDH
	Sphingoli	0	NEU2;NEU1				Ce	0	CACNA2D2

	pid metabolism Homo sapiens R-HSA-428157	.21871 1					rebellar Purkinje cell	.24893 5	
	HS-GAG degradation Homo sapiens R-HSA-2024096	0.22155 9	SDC2				Hindgut	0.24893 5	CCK
	TP53 regulates transcription of additional cell cycle genes whose exact role in the p53 pathway remain uncertain Homo sapiens R-HSA-6804115	0.22155 9	TP53				Striavascularis	0.25784 6	AQP1
	Cobalamin (Cbl, vitamin B12) transport and metabolism Homo	0.22155 9	PRSS1				Mantle cell lymphoo	0.25784 6	AKT1

	sapiens R-HSA-196741						macell		
	Synthesis of Leukotrienes (LT) and Eoxins (EX) Homo sapiens R-HSA-2142691	0.221559	LTA4H				Carcass	0.266652	HLA-A
	Aflatoxin activation and detoxification Homo sapiens R-HSA-5423646	0.221559	ACY1				Erythroid progenitor cell	0.266652	JAK2
	ERK/MAPK targets Homo sapiens R-HSA-198753	0.221559	MAPK1				Mesoderm	0.271309	FGFR4;FGF4
	Nephrin interactions Homo sapiens R-HSA-373753	0.230793	PIK3CA				Barrett's esophagus	0.275353	TP53
	ADP signalling through P2Y purinoce	0.230	P2RY12				Vegetative sta	0.275	PPP3R2

	ptor 12 Homo sapiens R-HSA-392170	793					ge	353	
	HIV Life Cycle Homo sapiens R-HSA-162587	0.234261	CD4;CCR5;PPIA				Pericho ndriu m	0.283952	TGFB1
	Incretin synthesis, secretion, and inactivation Homo sapiens R-HSA-400508	0.239918	DPP4				ae2	0.283952	CA2
	Complement cascade Homo sapiens R-HSA-166658	0.244953	CRP;MBL2				Mantle	0.283952	CD40LG
	TNFs bind their physiological receptors Homo sapiens R-HSA-5669034	0.248935	TNFSF11				Myeloid progenitor cell	0.292449	PTPN11
	Pyrimidine metaboli	0.2	NT5E				PC-12	0.2	PTK2B

	sm Homo sapiens R-HSA-73848	4893 5					cell	924 49	
	Nuclear Events (kinase and transcription factor activation) Homo sapiens R-HSA-198725	0.24893 5	MAPK1				Cestode	0.29244 9	MT-ND1
	Activation of G protein gated Potassium channels Homo sapiens R-HSA-1296041	0.25784 6	KCNJ3				Sweat	0.29244 9	REN
	Inhibition of voltage gated Ca2+ channels via Gbeta/gamma subunits Homo sapiens R-HSA-997272	0.25784 6	KCNJ3				Supporting cell	0.30008 45	CASP3
	G protein gated	0.	KCNJ3				Uret	0.	AR

	Potassium channels Homo sapiens R-HSA-1296059	2578446					hra	3008445	
	Antigen Presentation: Folding, assembly and peptide loading of class I MHC Homo sapiens R-HSA-983170	0.2578446	HLA-A				Gastric juice	0.3008445	ALB
	Budding and maturation of HIV virion Homo sapiens R-HSA-162588	0.2578446	PPIA				BTO:0000868	0.3091443	ST14
	p75 NTR receptor-mediated signalling Homo sapiens R-HSA-193704	0.2581266	IKBKB;CASP3				Ascidian	0.3091443	MBL2
	Regulation of TP53 Activity Homo sapiens	0.2655	AKT1;PRKAB1;TP53				Chorioocarcino	0.3177	SIGMAR1

	R-HSA-5633007	9.59					macell	3.42	
	Diseases associated with glycosaminoglycan metabolism Homo sapiens R-HSA-3560782	0.266652	SDC2				MEL cell	0.317342	MYC
	A tetrasaccharide linker sequence is required for GAG synthesis Homo sapiens R-HSA-1971475	0.266652	SDC2				Natural killer cell line	0.325445	IL2
	Recycling pathway of L1 Homo sapiens R-HSA-437239	0.266652	MAPK1				Pancreatic cancer cell line	0.325445	KRAS
	Downregulation of TGF-beta receptor signaling	0.2666	TGFB1				Semicircularca	0.3254	PGRMC1

	Homo sapiens R-HSA-2173788	52					nal	45	
	Regulation of Hypoxia-inducible Factor (HIF) by oxygen Homo sapiens R-HSA-1234174	0.266652	VEGFA				Filopodium	0.325445	AKT1
	Cellular response to hypoxia Homo sapiens R-HSA-2262749	0.266652	VEGFA				Umbilical vein	0.333451	FGFR1
	HIV Infection Homo sapiens R-HSA-162906	0.269736	CD4;HLA-A;CCR5;PPIA				Seminiferous epithelium	0.333451	SHBG
	Unfolded Protein Response (UPR) Homo sapiens R-HSA-381119	0.271309	CXCL8;CCL2				Secretory cell	0.341363	ELANE
	Ca-depende	0.	MAPK1				Ovary	0.	KCNH2

	nt events Homo sapiens R-HSA-111996	28395 2					cell line	34918 2	
	Energy dependent regulation of mTOR by LKB1-AMPK Homo sapiens R-HSA-380972	0.28395 2	PRKAB1				Parietal lobe	0.35057 2	NR3C1;FGF1;FGF2;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;CACNA2D3;CACNA2D2;PRKAB1;GABRG2;GABRG1;CACNB1;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PPIA;IFNAR1;GRIA1;ABCB1;CHRNA2;SDC2;CACNA1A;CACNA1D;CACNA1C;CACNA1E;CACNA1H;CACNA1G;CACNA1I;GRIN2A;PPP3R2;LTA4H;APOE;PRNP;ST14;JUN;TGFB1;SRD5A1;SRD5A3;HTR1A;GRIN2C;GRIN2B;GRIN2D;IL6;GRIN3A;GGCX;SCN2A;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;ADRA1D;SLC7A11;PTH1R;ADRA1B;ADRA1A;CKS1B;IKBKB;CA2;CASP3;CA4;CA7;JAK2;JAK1;MBL2;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;FOS;F3;ADRA2B;ADRA2A;PIK3CA;KCNMA1;SLC29A4;SCN4A;TLR4;L

									RP1;NR1I2;ETFDH;PTGS2;ATP2C1;CACNG7;NT5E;PGRMC1;NRAS;CACNG8;PTK2B;MAPK1;CACNG2;CACNG3;KCNJ3;P2RY12;GABRA2;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GSS;GABRA4;STAT3;CCK;PTPN11;GRIN1;VEGFA;CD4;KRAS
	Synthesis of PA Homo sapiens R-HSA-1483166	0.283952	GPD1				Inner hair cell	0.356908	CACNA1D
	Regulation of TP53 Activity through Phosphorylation Homo sapiens R-HSA-6804756	0.284486	PRKAB1;TP53				Notochord	0.364543	TGFB1
	Immunoregulatory interactions between a Lymphoid and a non-Lymphoid cell Homo sapiens	0.285223	CD40LG;HLA-A;ICAM1				Orbit	0.386911	F2

	R-HSA-198933								
	Phase 1 - Functionalization of compounds Homo sapiens R-HSA-211945	0.29764	CYP11B2;CYP17A1				Carcinoma cell	0.39419	TGFB1
	Adherens junctions interactions Homo sapiens R-HSA-418990	0.30914 3	CDH5				Gallbladder	0.40194 2	PRSS1;IL1RN;SERPINE1;AQP1;MT-ND1;ICAM1;MYC;TNFSF11;AKT1;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;ACE2;SFRP4;AR;AGTR1;TP53;ABCB1;SDC2;NEU2;GRIN2A;PPP3R2;LTA4H;APOE;ELANE;ST14;JUN;ACE;PRG2;GRIN2C;GRIN2D;CD209;REN;SCN2A;HLA-DRB1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;SLC7A11;PTH1R;SLC6A3;IKBKB;CTLA4;JAK2;CCR5;JAK1;IL10;ANXA1;CAMLG;IL13;FOS;F2;F3;F7;IL1A;F8;IL1B;KCNMA1;TLR9;SLC29A4;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;SERPINC1;NR1I2;TMPRSS2;PTGS2;CYP17A1;GLRA1;NT5E;PG

									RMC1;NRAS;GLRA3;GABRE;CA12;P2RY12;GABRA2;GABRQ;GABRP;F10;CRBN;GABRA6;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;GRIN1;VEGFA;CD40LG;PF4;NR3C1;FGF1;FGF2;FGF4;NR3C2;CDH5;CA14;KCNH2;HGF;CACNB1;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PGR;PPIA;IFNAR1;CHRNA3;CACNA1B;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;CACNA1S;DRD4;PRNP;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;IL2;SELP;IL6;GGCX;IL7;FGF19;ALB;FGFR4;SHBG;FGFR2;FGFR1;HTR2C;ADRA1D;ADRA1A;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;CCDC51;MBL2;CHUK;DDX58;MMP2;SIGMAR1;MMP9;ADRA2A;ADORA2A;IFNG;PIK3CA;IL3RA;CRH;SCN4A;CRP;LRP1;ETFDH;ATP2C1;CACNG6;CACNG7;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;CACNG2;KCNJ3;CACNG5;SLC12A3;NOS2;OPRK1;CCK;PTP

									N11;CD4;FCGR2A; KRAS
	Amino acid transport across the plasma membrane Homo sapiens R-HSA-352230	0.309143	SLC7A11				Osteosarcomacell	0.408493	NR3C1
	HS-GAG biosynthesis Homo sapiens R-HSA-2022928	0.309143	SDC2				Kidney	0.422449	PRSS1;IL1RN;SERPINE1;AQP1;MT-ND1;ICAM1;MYC;TNFSF11;AKT1;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;ACE2;SFRP4;AR;AGTR1;TP53;ABCB1;SDC2;NEU2;PPP3R2;NEU1;LTA4H;APOE;ELANE;ST14;JUN;ACE;GRIN2C;GRIN2D;CD209;REN;SCN2A;HLA-DRB1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;PTH1R;SLC6A2;SLC6A3;IKBKB;JAK2;CCR5;JAK1;IL10;ANXA1;CAMLG;IL13;PTH2R;FOS;F2;F3;F7;IL1A;F8;IL1B;KCNMA1;TLR9;SLC29A4;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;SERPINC1;TMPRSS2;PT

									GS2;CYP17A1;GLR A1;NT5E;PGRMC1; NRAS;GLRA3;GAB RE;GABRD;CA12;P 2RY12;GABRA2;G ABRQ;GABRP;F10; CRBN;GABRA6;ST AT1;IFNB1;GSS;GA BRA4;F11;STAT3;G RIN1;VEGFA;CD40 LG;PF4;NR3C1;FGF 1;FGF2;NR3C2;CD H5;ADORA1;CA14; KCNH2;IFNAR2;HG F;CACNB1;CACNB 2;CACNB3;CACNB 4;GPD1;PPIF;PGR; PPIA;IFNAR1;GRIA 1;CHRNA3;CALCA; CACNA1B;CSF2RB; CACNA1D;CACNA1 C;CSF2RA;CACNA1 E;CACNA1H;CACN A1G;DPP4;CACNA 1S;DRD2;PRNP;TG FB1;VDR;SRD5A1; SRD5A3;HTR1A;IL 2;SELP;IL6;GGCX;IL 7;FGF19;ALB;FGFR 4;SHBG;FGFR2;FG FR1;ITGB3;HTR2C; ADRA1D;ADRA1B; ADRA1A;CKS1B;CA 1;CA3;CA2;CASP3; CA4;CA7;BDKRB1; CCDC51;MBL2;CH UK;DDX58;MMP2; SIGMAR1;MMP9; ADRA2B;ADRA2A; ADORA2A;IFNG;PI K3CA;IL3RA;CRH;S CN4A;CRP;LRP1;ET FDH;ATP2C1;CAC NG6;CACNG7;CCL

									5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;CACNG3;KCNJ3;CACNG5;SLC12A3;NOS2;SLC12A1;OPRK1;CCK;PTPN11;CD4;FCGR2A;KRAS
	Chaperonin-mediated protein folding Homo sapiens R-HSA-390466	0.3107577	STAT3;TP53				Motoneuron	0.4224599	GRIN3B
	Signal amplification Homo sapiens R-HSA-392518	0.3173422	P2RY12				Gastroesophagealcancercell	0.4224599	LTA4H
	TGF-beta receptor signaling activates SMADs Homo sapiens R-HSA-2173789	0.3173422	TGFB1				Scolopidium	0.4224599	GRIA1
	Regulation of beta-cell development Homo sapiens	0.3173734	AKT1				Pericardium	0.4293131	CA3

	R-HSA-186712	2						9	
	Regulation of actin dynamics for phagocytic cup formation Homo sapiens R-HSA-2029482	0.319474	FCGR2A;MAPK1				Umbilical vein endothelial cell	0.429319	ACE
	Metabolism of water-soluble vitamins and cofactors Homo sapiens R-HSA-196849	0.323822	PRSS1;PTGS2				Connective tissue	0.434121	SERPINE1;NR3C1;FGF2;AQP1;ICAM1;NR3C2;CDH5;MYC;AKT1;KCNH2;CACNA2D1;HGF;CACNA2D4;PRKAB1;GABRG3;CACNB1;CACNB2;CACNB4;GPD1;AGTR1;PGR;TP53;PPIA;IFNAR1;GRIA1;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;PPP3R2;LTA4H;APOE;PRNP;JUN;SRD5A3;HTR1A;GRIN2C;GRIN2D;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;FGFR2;FGFR1;GABRB1;HTR2C;PTH1R;ADRA1A;SLC6A3;IKBKB;CA3;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CHUK;DDX58;MMP2;IL13;SIG

									MAR1;FOS;F2;MMP9;F7;IL1A;F8;IFNG;PIK3CA;IL3RA;TLR9;CRH;PPARG;TLR4;CRP;LRP1;SERPINC1;ETFDH;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;CCL2;MAPK1;CACNG1;GABRE;CACNG3;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;KCNJ11;NOS2;STAT1;IFNB1;GABRA3;STAT3;SLC12A1;OPRK1;CCK;PTPN11;VEGFA;CD4;FCGR2A;KRAS
	Smooth Muscle Contraction Homo sapiens R-HSA-445355	0.325445	ANXA1				Stratified epithelium	0.436097	TP53
	EPHA-mediated growth cone collapse Homo sapiens R-HSA-3928663	0.333451	VEGFA				Prepuce	0.442795	AKT1
	Synthesis of PIPs at the plasma membrane Homo sapiens R-HSA-	0.333451	PIK3CA				Brain cortex cell line	0.457708	GSS;ALB;PPIA

	1660499								
	ROS, RNS production in response to bacteria Homo sapiens R-HSA-1222556	0.333451	NOS2				Pharynx	0.460646	ANXA1;CCL5;HLA-A;LTA4H;PPIA;MMP9;HLA-DRB1
	Activated PKN1 stimulates transcription of AR (androgen receptor) regulated genes KLK2 and KLK3 Homo sapiens R-HSA-5625886	0.333451	AR				Bone	0.463081	CA12;JUN;ANXA1;TGFB1;LRP1;SRD5A1;SDC2;MMP2;SERPINE1;FOS;NR3C1;PGRMC1;MAPK1;APOE;PPIA;JAK1;FGFR1
	Purine metabolism Homo sapiens R-HSA-73847	0.333451	NT5E				Endosperm	0.475117	ALB
	Negative regulators of RIG-I/MDA5 signaling Homo sapiens	0.33345	DDX58				Occipital lobe	0.475722	NR3C1;FGF1;FGF2;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;CACNA2D3;CACNA2D2;PRKAB1;G

	R-HSA-936440	1						3	ABRG2;GABRG1;CACNB1;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PPIA;IFNAR1;GRIA1;ABCB1;CHRNA2;SDC2;CACNA1A;CACNA1D;CACNA1C;CACNA1E;CACNA1G;CACNA1I;GRIN2A;PPP3R2;LTA4H;APOE;PRNP;ST14;JUN;TGFB1;SRD5A1;SRD5A3;HTR1A;GRIN2C;GRIN2B;GRIN2D;GRIN3A;GGCX;SCN2A;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;SLC7A11;PTH1R;ADRA1A;CKS1B;IKBKB;CA1;CA2;CASP3;CA4;JAK2;JAK1;CCDC51;MBL2;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;FOS;F3;ADRA2B;ADRA2A;PIK3CA;KCNMA1;IL3RA;SLC29A4;SCN4A;TLR4;LRP1;NR1I2;ETFDH;PTGS2;ATP2C1;CACNG7;NT5E;PGRMC1;NRAS;CACNG8;PTK2B;MAPK1;CACNG2;GABRD;CACNG3;KCNJ3;P2RY12;GABRA2;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GSS;GABRA4;STAT3;CCK;PTPN11;GRIN1;VEGFA;CD4;KRAS
	Transpor	0	SLC6A2;SLC6A3				Ly	0	ACE2

	t of glucose and other sugars, bile salts and organic acids, metal ions and amine compounds Homo sapiens R-HSA-425366	.336825					mphomacell	.4813544	
	Protein folding Homo sapiens R-HSA-391251	0.336825	STAT3;TP53				Breastcancercell	0.4880611	GABRA5;SIGMAR1;PGR
	Bile acid and bile salt metabolism Homo sapiens R-HSA-194068	0.3413633	ALB				Somite	0.4996244	FGFR1
	MHC class II antigen presentation Homo sapiens R-HSA-2132295	0.3454533	HLA-DRB1;HLA-DQB1				Heart	0.5016229	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CHRNB4;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D

									4;HLA-A;PRKAB1;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CALCA;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CACNA1F;CSF2RA;CACNA1H;DPP4;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;DRD2;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;PRG2;SELP;IL6;GGCX;CD209;CYP11B2;IL7;ALB;REN;SCN2A;FGFR4;SHBG;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB1;ACY1;IFNA1;ITGB3;ADRA1D;PTH1R;SLC6A2;ADRA1A;SLC6A3;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;JAK2;CCR5;JAK3;JAK1;CCDC51;MBL2;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F2;F3;MMP9;ADRA2B;ADRA2A;F7;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;SLC29A4;TLR7;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;L

									RP1;SERPINC1;NR1I2;ETFDH;PTGS2;ATP2C1;CACNG6;NT5E;PGRMC1;NRAS;CCL5;PTK2B;CCL2;MAPK1;GABRE;KCNJ3;CACNG5;CA12;P2RY12;GABRP;F10;CRBN;GABRA6;STAT1;GSS;GABRA4;STAT3;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	RHO GTPases Activate WASPs and WAVEs Homo sapiens R-HSA-5663213	0.349182	MAPK1				Synovium	0.510825	PTGS2;CSF2RA
	Apoptotic cleavage of cellular proteins Homo sapiens R-HSA-111465	0.356908	CASP3				Muscle	0.516456	PRNP;ANXA1;CRBN;LRP1;MMP2;HLA-A;FOS;AQP1;ICAM1;CACNB1;CA3;PIK3CA;GPD1;ALB;PPIF;AKT1;PGR;CACNA1S;CACNG1;FGFR4;PPIA;HLA-DRB1
	Beta defensins Homo sapiens R-HSA-1461957	0.364543	TLR2				Toothenamel	0.522992	ALB
	Glutathione	0.	GSS				Colon	0.	PRSS1;IL1RN;SERPINE1;AQP1;MT-

	conjugation Homo sapiens R-HSA-156590	364543						52796	ND1;ICAM1;MYC;TNFSF11;AKT1;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;ACE2;SFRP4;AGTR1;TP53;ABCB1;SDC2;NEU2;PPP3R2;NEU1;LTA4H;APOE;ELANE;ST14;JUN;ACE;PRG2;GRIN2C;GRIN2D;CD209;REN;SCN2A;HLA-DRB1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;SLC7A11;PTH1R;SLC6A3;IKBKB;JAK2;CCR5;JAK3;JAK1;IL10;ANXA1;CAMLG;IL13;PTH2R;FOS;F2;F3;F7;IL1A;F8;IL1B;KCNMA1;TLR9;SLC29A4;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;SERPINC1;NR1I2;TMPRSS2;PTGS2;CYP17A1;GLRA1;NT5E;PGRMC1;NRAS;GABRE;GABRD;CA12;P2RY12;GABRA2;GABRA1;GABRP;F10;CRBN;GABRA6;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;GRIN1;VEGFA;CD40LG;PF4;NR3C1;FGF1;FGF2;NR3C2;CDH5;CA14;KCNH2;IFNAR2;HGF;CACNB1;CACNB2;CACNB

									3;CACNB4;GPD1;PPIF;PGR;PPIA;IFNAR1;GRIA1;CHRNA3;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;CACNA1S;DRD2;PRNP;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;IL2;SELP;IL6;GGCX;IL7;FGF19;ALB;FGFR4;SHBG;FGFR2;FGFR1;ITGB3;HTR2C;ADRA1D;ADRA1A;CKS1B;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;CCDC51;MBL2;CHUK;DDX58;MMP2;SIGMAR1;MMP9;ADRA2A;ADORA2A;IFNG;PIK3CA;IL3RA;CRH;SCN4A;CRP;LRP1;ETFDH;ATP2C1;CACNG6;CACNG7;CACNG8;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;CACNG3;KCNJ3;SLC12A3;NOS2;SLC12A1;OPRK1;CCK;PTPN11;CD4;FCGR2A;KRAS
	G1 Phase Homo sapiens R-HSA-69236	0.364543	CKS1B				Inc isor	0.528662	TNFSF11
	Cyclin D	0	CKS1B				Sp	0	AR;SHBG

	associated events in G1 Homo sapiens R-HSA-69231	.364543					ermatid	.536279	
	Vesicle-mediated transport Homo sapiens R-HSA-5653656	0.365904	GRIA1;F8;LRP1;ALB;AKT1;APOE;PRKAB1				Hypothalamus	0.546279	SERPINE1;NR3C1;FGF1;FGF2;AQP1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG2;GABRG1;CACNB1;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CACNA1A;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1G;CACNA1I;GRIN2A;NEU1;LTA4H;APOE;DRD2;PRNP;ST14;JUN;TGFB1;SRD5A1;PRG2;HTR1A;GRIN2C;GRIN2B;GRIN2D;IL6;GRIN3A;GGCX;CD209;IL7;SCN2A;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;ITGB3;HTR2C;ADRA1D;SLC7A11;PTH1R;SLC6A3;CKS1B;IKBKB;CA2;CASP3;JAK2;CCR5;JA

									K3;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F3;ADRA2A;F7;F8;ADORA2A;PIK3CA;IL1B;KCNMA1;IL3RA;CRH;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;LRP1;ETFDH;PTGS2;ATP2C1;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;GLRA3;CCL5;PTK2B;CCL2;MAPK1;GABRE;CACNG2;GABRD;CACNG3;CACNG4;KCNJ3;CA12;P2RY12;GABRA2;GABRQ;GABRA1;CRBN;GABRA5;STAT1;GSS;GABRA4;GABRA3;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS
	GABA B receptor activation Homo sapiens R-HSA-977444	0.372087	KCNJ3				Renal cell carcinoma cell	0.550679	CA12
	Activation of GABAB receptors Homo sapiens R-HSA-991365	0.372087	KCNJ3				Leukemia cell	0.556022	NRAS

									PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG2;GABRG1;CACNB1;SFRP4;AR;CACNB3;GPD1;PPIF;TP53;PPIA;IFNAR1;ABCB1;SDC2;CACNA1A;CSF2RB;PPP3R2;LTA4H;APOE;ELANE;PRNP;JUN;ACE;TGFB1;SRD5A1;SRD5A3;GRIN2C;GRIN2D;IL6;GRIN3A;GGCX;ALB;FGFR4;HLA-DRB1;FGFR2;FGFR1;ACY1;ADRA1D;SLC7A11;PTH1R;SLC6A2;ADRA1A;SLC6A3;SLC6A4;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;JAK2;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F2;F3;ADRA2B;ADRA2A;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;SLC29A4;TLR7;TLR4;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CYP17A1;CACNG6
	FCERI mediated NF-kB activation Homo sapiens R-HSA-2871837	0.379567	IKBKB;CHUK				Spinal cord	0.582984	

									;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;KCNJ3;P2RY12;GABRA2;GABRP;F10;CRBN;GABRA6;GABRA5;STAT1;IFNB1;GSS;F11;STAT3;SLC12A1;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	G1/S Transition Homo sapiens R-HSA-69206	0.383781	MYC;CKS1B				As cites	0.60495	KCNH2;JUN;ANXA1;GSS;PPIF;AKT1;HLA-A;PPIA;FGFR2;CKS1B
	Host Interactions with Influenza Factors Homo sapiens R-HSA-168253	0.386891	TGFB1				Adrenal gland	0.620302	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;AKT1;KCNH2;CHRNB4;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG2;GABRG1;CACNB1;ACE2;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;CHRNA3;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;DPP4;CA

									CNA1I;MC2R;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;DRD2;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;CYP11B2;IL7;FGF19;ALB;REN;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;HTR2C;ADRA1D;PTH1R;ADRA1B;SLC6A2;ADRA1A;SLC6A3;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;CCR5;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CYP17A1;CACNG6;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG2;GABRD;CACNG3;KCNJ3;CA12;P2RY12;G

									ABRA2;GABRQ;GABRA1;GABRP;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	Netrin-1 signaling Homo sapiens R-HSA-373752	0.3941	PTPN11				Brain	0.630117	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CHRNB4;CACNA2D1;CACNA2D3;CACNA2D2;HLA-A;PRKAB1;GABRG2;GABRG1;CACNB1;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;PPIF;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;CHRNA2;SDC2;CACNA1B;CACNA1A;CACNA1D;CACNA1C;CACNA1F;CACNA1E;CACNA1H;CACNA1G;CACNA1I;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;DRD2;PRNP;JUN;ACE;TGFB1;SRD5A1;SRD5A3;HTR1A;GRIN2C;GRIN3A;GGCX;ALB;SCN2A;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;HTR2C;SLC7A11;SLC

									6A2;CKS1B;IKBKB;CA1;CA2;CASP3;CA4;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;PTH2R;FOS;F2;F3;MMP9;ADRA2A;F7;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;TLR9;CRH;SLC29A4;SCN4A;TLR4;HLA-DQB1;LRP1;SERPINC1;ETFDH;ATP2C1;CYP17A1;CACNG6;NT5E;PGRMC1;NRAS;CACNG8;PTK2B;CCL2;MAPK1;GABRE;CACNG2;GABRD;CACNG3;CACNG4;KCNJ3;CA12;P2RY12;GABRA2;GABRA1;SLC12A3;CRBN;GABRA6;GABRA5;STAT1;GSS;GABRA4;F11;GABRA3;STAT3;SLC12A1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	Deactivation of the beta-catenin transactivating complex Homo sapiens R-HSA-3769402	0.394199	AKT1				Aorta	0.633383	PGR
	Infectious disease	0.	CD4;TGFB1;HLA-A;CCR5;PPIA				Perip	0.	TMPRSS2;ADRA2A

	Homo sapiens R-HSA-5663205	3956644					heralnervous system	6495344	
	Transcriptional Regulation by TP53 Homo sapiens R-HSA-3700989	0.39566 4	JUN;AKT1;FOS;PRKAB1;TP53				Neuroblastomacell	0.652424	CACNA2D1;CACNA1D
	Classical antibody-mediated complement activation Homo sapiens R-HSA-173623	0.401384	CRP				Cerebralcortex	0.6581844	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;PRKAB1;GABRG3;GABRG2;GABRG1;CACNB1;ACE2;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;CACNA1I;GRIN2A;PPP3R2;LTA4H;APOE;CACNA1S;DRD2;PRN

									P;JUN;ACE;TGFB1;SRD5A1;SRD5A3;HTR1A;GRIN2C;GRIN2B;GRIN2D;SELP;IL6;GRIN3A;GGCX;CD209;IL7;FGF19;ALB;REN;SCN2A;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;HTR2C;ADRA1D;SLC7A11;PTH1R;ADRA1B;ADRA1A;SLC6A3;IKBKB;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;PTH2R;FOS;F2;F3;MMP9;ADRA2A;F7;IL1A;F8;ADORA2A;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;SCN4A;TLR4;TLR3;TLR2;LRP1;ETFDH;PTGS2;ATP2C1;CYP17A1;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;CACNG8;GLRA3;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG2;GABRD;CACNG3;CACNG4;KCNJ3;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRA1;GABRP;SLC12A3;CRBN;GABRA6;KCNJ11;NOS2;GABRA5;STAT1;IFNB1;GSS;GABR

									A4;GABRA3;STAT3;SLC12A1;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	Vasopressin regulates renal water homeostasis via Aquaporins Homo sapiens R-HSA-432040	0.401384	AQP1				Interstitial cell of Cajal	0.672134	PRSS1;PPIA
	Voltage gated Potassium channels Homo sapiens R-HSA-1296072	0.401384	KCNH2				Lymph	0.715504	SIGMAR1;PPIF;AKT1;PTK2B;HLA-A;PPIA;HLA-DRB1;HLA-DQB1
	TP53 Regulates Transcription of Cell Death Genes Homo sapiens R-HSA-5633008	0.401384	TP53				Small intestine	0.731577	ACY1;HTR2C;NR3C1;AQP1;ICAM1;SLC6A4;CKS1B;CDH5;CA3;CA2;MYC;CASP3;CA4;AKT1;CA14;JAK1;MBL2;KCNH2;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F2;F3;ACE2;IL3RA;AGTR1;PPIF;PGR;TLR4;HLA-DQB1;IFNAR1;CHRNA3;ABCB1;LRP1;SDC2;ETFDH;TMPRSS2;PGRMC1;CCL5;PTK2B;CCL2;LTA4H;KCNJ3;CA12;P2

									RY12;GABRA2;GABRA1;PRNP;ST14;JUN;ACE;TGFB1;CRBN;STAT1;VDR;SRD5A1;GSS;STAT3;PTPN11;GRIN1;VEGFA;FGF19;ALB;KRAS;FGFR1
	PLC beta mediated events Homo sapiens R-HSA-112043	0.040849	MAPK1				Retina	0.742391	PRSS1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG2;CACNB1;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PPIA;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1A;CACNA1D;CACNA1F;CACNA1G;NEU1;LTA4H;APOE;ELANE;DRD4;PRNP;ST14;JUN;ACE;TGFB1;GRIN2D;IL6;GGCX;ALB;SCN2A;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;SLC7A11;SLC6A2;SLC6A3;IKBKB;CA1;CA3;CA2;CASP3;CA4;JAK2;JAK3;JAK1;CCDC51;MBL2;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F2;F3;F7;ADORA2A;IFNG;PIK3CA;KCNMA1;TLR9;TLR7;PPARG;SC

									N4A;TLR3;HLA-DQB1;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CACNG6;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;GLRA3;PTK2B;CCL2;MAPK1;CACNG2;CACNG5;P2RY12;GABRA2;GABRA1;F10;CRBN;STAT1;IFNB1;GSS;F11;GABRA3;STAT3;SLC12A1;PTPN11;VEGFA;KRAS
	G-protein mediated events Homo sapiens R-HSA-112040	0.415517	MAPK1				Vegetative cell	0.747117	TP53
	RMTs methylate histone arginines Homo sapiens R-HSA-3214858	0.415517	JAK2				Stomach	0.757811	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;TNFSF11;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PGR;TP53;PPIA;IFNAR1;CHRNA3;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CAC

									NA1E;CACNA1H;CACNA1G;DPP4;GRIN2A;PPP3R2;LTA4H;APOE;DRD2;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;IL7;FGF19;ALB;REN;SCN2A;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB1;ACY1;IFNA1;HTR2C;SLC7A11;PTH1R;ADRA1A;SLC6A3;SLC6A4;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;CTLA4;BDKRB1;JAK2;CCR5;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2B;ADRA2A;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;NR1I2;ETFDH;TMPRSS2;PTGS2;ATP2C1;CYP17A1;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;GLRA3;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABR

									D;CACNG3;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS
	NOTCH1 Intracellular Domain Regulates Transcription Homo sapiens R-HSA-2122947	0.429319	MYC				Hypophysis	0.770251	FGFR4
	S Phase Homo sapiens R-HSA-69242	0.433331	MYC;CKS1B				Intestine	0.777668	PRSS1;IL1RN;ACY1;AQP1;ICAM1;CKS1B;IKBKB;CA1;CA2;MYC;AKT1;ANXA1;MMP2;SIGMAR1;HLA-A;FOS;PRKAB1;MMP9;ACE2;SFRP4;PIK3CA;PPIF;PPARG;TP53;PPIA;HLA-DQB1;IFNAR1;LRP1;SDC2;TMPRSS2;CACNA1D;CACNA1F;ATP2C1;DPP4;NT5E;PGRMC1;NEU1;CCL2;MAPK1;LTA4H;APOE;CA12;PRNP;SLC12A3;ST14;JUN;CRBN;STAT1;VDR;SRD5A1;GSS;STAT3;PTPN11;C

									D4;REN;KRAS;FGFR4;HLA-DRB1;FGFR1
	TP53 Regulates Transcription of Cell Cycle Genes Homo sapiens R-HSA-6791312	0.436097	TP53				Rectum	0.782	PRSS1;SERPINE1;NR3C1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;TNFSF11;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;CACNB4;GPD1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1D;CACNA1E;CACNA1H;CACNA1G;NEU2;DPP4;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;DRD2;ELANE;DRD4;PRNP;ST14;JUN;ACE;TGFB1;SRD5A1;SRD5A3;PRG2;HTR1A;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;IL7;FGF19;ALB;REN;SCN2A;FGFR4;SHBG;HLA-DRB1;FGFR2;FGFR1;GABRB1;ACY1;HTR2C;PTH1R;ADRA1A;SLC6A3;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;ANXA1;CAMLG;CHUK;DDX

									58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;CACNG6;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG4;KCNJ3;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRA1;GABRP;SLC12A3;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;SLC12A1;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS
	Amino acid and oligopeptide SLC transporters Homo sapiens R-HSA-425374	0.442795	SLC7A11				Tongue	0.801766	CASP3;TNFSF11;TMPRSS2;SLC7A11
	FCGR activation Homo sapiens R-HSA-2029481	0.44427	FCGR2A				Liver	0.82466	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;TNF;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;TNFS

		95						75	F11;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;CACNB1;ACE2;AR;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;ABCB1;CHRNA2;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;DPP4;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;ELANE;PRNP;ST14;JUN;ACE;TGFB1;SRD5A1;SRD5A3;PRG2;HTR1A;IL2;GRIN2D;SELP;IL6;GGCX;CD209;IL7;ALB;REN;FGFR4;SHBG;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB1;ACY1;ITGB3;HTR2C;ADRA1D;PTH1R;ADRA1B;SLC6A2;ADRA1A;SLC6A3;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;CCR5;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2B;ADRA2A;F7;IL1A;F8;ADORA2A;IF

									NG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;NR1I2;ETFDH;TMPRSS2;PTGS2;ATP2C1;CYP17A1;CACNG6;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;KCNJ3;CACNG5;P2RY12;GABRA2;GABRP;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;F11;GABRA3;STAT3;SLC12A1;OPRK1;CCK;PTPN11;VEGFA;CD4;CD40LG;FCGR2A;KRAS;PF4
	Mitochondrial biogenesis Homo sapiens R-HSA-1592230	0.442795	PRKAB1				Lateral ventricle	0.827207	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;FGF4;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;HGF;CACNA2D2;CACNA2D4;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;CACNB2;CACNB4;GPD1;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1E;CACNA1H;CACNA1G;PPP3R2;LTA4H;

									APOE;DRD2;PRNP;JUN;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;FGF19;ALB;REN;SCN2A;FGFR4;FGFR2;FGFR1;GABRB2;GABRB1;HTR2C;ADRA1D;PTH1R;ADRA1A;SLC6A3;IKBKB;CA3;CA2;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;IL13;SIGMAR1;FOS;F2;F7;IL1A;F8;PIK3CA;IL3RA;TLR9;CRH;TLR7;PPARG;SCN4A;TLR4;CRP;LRP1;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;CACNG8;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRA1;GABRP;CRBN;GABRA6;NOS2;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;PF4
	Chondroitin sulfate/dermatan sulfate metabolism Homo sapiens R-HSA-	0.449415	SDC2				Larynx	0.839933	ANXA1;JAK1

	1793185								
	Aquaporin-mediated transport Homo sapiens R-HSA-445717	0.455955	AQP1				Uterine endometrium	0.842401	SERPINE1;NR3C1;FGF1;AQP1;ICAM1;FGF4;NR3C2;CDH5;MYC;AKT1;KCNH2;CACNA2D1;HGF;PRKAB1;GABRG3;CACNB1;SFRP4;AR;CACNB2;GPD1;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;SDC2;CACNA1B;CSF2RB;CACNA1D;CSF2RA;CACNA1E;CACNA1H;CACNA1G;PPP3R2;LTA4H;APOE;CACNA1S;DRD2;JUN;ACE;TGFB1;SRD5A1;SRD5A3;GRIN2C;IL2;GRIN2D;SELP;GGCX;IL7;FGF19;ALB;REN;FGFR4;FGFR2;FGFR1;GABRB2;GABRB1;ACY1;HTR2C;PTH1R;SLC6A3;IKBKB;CASP3;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;IL1A;F8;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR7;SCN4A;TLR4;TLR3;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG3;CACNG5;CA12;P2RY12;GABRA2;G

									ABRQ;GABRP;CRBN;GABRA6;IFNB1;GSS;GABRA4;STAT3;SLC12A1;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;KRAS
	Ion homeostasis Homo sapiens R-HSA-5578775	0.455955	KCNJ11				Hippocampus	0.845031	SERPINE1;NR3C1;FGF2;MT-ND1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D4;PRKAB1;GABRG3;GABRG1;CACNB1;CACNB2;CACNB4;GPD1;PGR;PPIA;IFNAR1;GRIA1;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1E;CACNA1H;CACNA1G;PPP3R2;LTA4H;APOE;DRD2;PRNP;JUN;SRD5A1;SRD5A3;GRIN2C;GRIN2D;SELP;GGCX;CD209;FGF19;ALB;REN;SCN2A;FGFR4;FGFR2;FGFR1;GABRB2;GABRB1;IFNA1;HTR2C;PTH1R;ADRA1A;SLC6A3;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;MMP2;IL13;SIGMAR1;FOS;F2;F7;IL1A;F8;IFNG;PIK3CA;IL3RA;TLR9;CRH;TLR7;PPARG;SCN4A;TLR4;CRP;LRP1;SERPINC1;PTGS2

									;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRD;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRA1;GABRP;CRBN;GABRA6;STAT1;IFNB1;GSS;GABRA4;GABRA3;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A
	Apoptotic execution phase Homo sapiens R-HSA-75153	0.455955	CASP3				Duodenum	0.854616	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;TNFSF11;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D4;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PGR;TP53;PPIA;IFNAR1;CHRNA3;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;DPP4;GRIN2A;PPP3R2;LTA4H;APOE;CACNA1S;DRD2;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;CYP11B2;IL7;FGF19;ALB;REN;SCN2A;FGF

									R4;SHBG;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;HTR2C;ADRA1D;PTH1R;ADRA1A;SLC6A3;SLC6A4;IKBKB;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;CCR5;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2A;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;SCN4A;TLR4;TLR3;TLR2;CRP;LRP1;SERPINC1;NR1I2;ETFDH;TMPRSS2;PTGS2;ATP2C1;CACNG7;NT5E;PGRMC1;NRAS;GLRA3;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;KCNJ3;CACNG5;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;F10;CRBN;GABRA6;NOS2;STAT1;IFNB1;GSS;GABRA4;F11;GABRA3;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS
	Vpu mediated degradat	0.45	CD4				Gut	0.85	PRSS1;ACY1;SERPINE1;ADRA1D;NR3C1;FGF2;AQP1;MT-

	ion of CD4 Homo sapiens R-HSA-180534	5955						86222	ND1;ICAM1;IKBKB;CDH5;CA1;CA3;CA2;CASP3;AKT1;JAK2;CCDC51;ANXA1;CAMLG;DDX58;CACNA2D1;MMP2;SIGMAR1;CACNA2D2;CACNA2D4;HLA-A;F2;PRKAB1;ADRA2B;ACE2;F8;ADORA2A;IFNG;PIK3CA;GPD1;TLR9;PPIF;TLR7;PPIA;HLA-DQB1;CRP;ABCB1;LRP1;SERPINC1;SDC2;ETFDH;TMPRSS2;CACNA1C;CACNA1E;DPP4;CACNG6;NT5E;PGRMC1;NRAS;NEU1;PTK2B;MAPK1;LTA4H;APOE;GABRE;ELANE;GABRP;PRNP;ST14;ACE;F10;CRBN;STAT1;GSS;STAT3;PRG2;CCK;PTPN11;GGCX;CD209;IL7;ALB;KRAS;FGFR4;SHBG;HLA-DRB1;FGFR2;PF4;FGFR1
	Autodegradation of the E3 ubiquitin ligase COP1 Homo sapiens R-HSA-349425	0.4559555	TP53				Blood	0.8633744	IL1RN;ITGB3;NR3C1;TNF;ICAM1;IKBKB;CA1;CA2;MYC;CASP3;CA4;AKT1;JAK2;CA14;JAK1;MBL2;IFNAR2;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;HLA-A;FOS;MMP9;IL1B;PPIF;TP53;TLR4;PPIA;HLA-DQB1;TLR2;LRP1;S

									DC2;CSF2RB;PTGS2;ATP2C1;CSF2RA;PGRMC1;CCL5;NEU1;CCL3;PTK2B;CCL2;MAPK1;LTA4H;CACNA1S;ELANE;PRNP;JUN;TGFB1;CRBN;STAT1;VDR;GSS;STAT3;PRG2;PTPN11;IL2;CD4;FCGR2A;ALB;KRAS;HLA-DRB1
	ER to Golgi Anterograde Transport Homo sapiens R-HSA-199977	0.461209	GRIA1;F8				Prostate gland	0.868207	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;ABCB1;CHRNA2;SDC2;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;NEU1;LTA4H;APOE;CACNA1S;DRD2;ELANE;DRD4;PRNP;ST14;JUN;ACE;TGFB1;SRD5A1;SRD5A3;PRG2;GRIN2C;IL2;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;FGFR4;SHBG;HLA-

									DRB1;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;HTR2C;ADRA1D;PTH1R;SLC6A2;ADRA1A;SLC6A3;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2A;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;CACNG6;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG3;CACNG4;KCNJ3;CA12;P2RY12;GABRA2;GABRQ;GABRA1;GABRP;SLC12A3;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;SLC12A1;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	Heparan sulfate/heparin	0.4	SDC2				Cerebel	0.8	SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-

	(HS-GAG) metabolism Homo sapiens R-HSA-1638091	751177					lum	782264	ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D2;CACNA2D4;PRKAB1;GABRG3;GABRG2;GABRG1;CACNB1;AR;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;CALCA;CHRNA2;SDC2;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CACNA1E;CACNA1H;CACNA1G;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;DRD4;PRNP;ST14;JUN;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;CYP11B2;FGF19;ALB;REN;SCN2A;FGFR4;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;HTR2C;ADRA1D;SLC7A11;PTH1R;ADRA1A;SLC6A3;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;ADRA2B;ADRA2A;F7;IL1A;F8;PIK3CA;KCNMA1;IL3

									RA;TLR9;CRH;SLC29A4;PPARG;SCN4A;TLR4;TLR3;LRP1;SERPINC1;NR1I2;ETFDH;ATP2C1;CACNG7;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG2;GABRD;CACNG3;KCNJ3;CACNG5;P2RY12;GABRA2;GABRQ;GABRA1;GABRP;SLC12A3;CRBN;GABRA6;NOS2;GABRA5;STAT1;IFNB1;GSS;GABRA4;GABRA3;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS;PF4
	Assembly of collagen fibrils and other multimeric structures Homo sapiens R-HSA-2022090	0.475117	MMP9				Eye	0.882578	GABRB3;ACY1;SERPINE1;AQP1;NR3C2;CKS1B;CA3;CA2;AKT1;CA14;CCDC51;KCNH2;ANXA1;MMP2;SIGMAR1;CACNA2D4;HLA-A;FOS;PRKAB1;GABRG2;SFRP4;CACNB3;PIK3CA;GPD1;PPIF;SLC29A4;PPIA;CHRNA3;LRP1;SDC2;CACNA1A;CACNA1F;ATP2C1;CACNA1G;PGRMC1;NRAS;NEU1;CCL2;MAPK1;LTA4H;APOE;DRD4;CA12;PRNP;JUN;TGFB1;CRBN;STAT1;GSS;STAT3;SRD5A3;GRIN1;VEGFA;GGCX;ALB;HLA-

									DRB1;FGFR2;FGFR1
	Stabilization of p53 Homo sapiens R-HSA-69541	0.475117	TP53				Prefrontal cortex	0.885316	GABRB1;ACY1;SLC7A11;NR3C1;FGF1;AQP1;ICAM1;NR3C2;CA2;MYC;CA4;ADORA1;AKT1;CA14;JAK1;MBL2;IFNAR2;ANXA1;CAMLG;CHUK;DDX58;CACNA2D2;F3;GABRG2;CACNB2;F8;CACNB3;PIK3CA;PPIF;GRIA1;LRP1;CACNA1A;ATP2C1;CACNA1I;PGRMC1;NEU1;PTK2B;MAPK1;LTA4H;APOE;GABRD;CACNG3;GABRA2;GABRA1;PRNP;ST14;CRBN;GABRA5;STAT1;GSS;STAT3;CCK;PTPN11;GRIN1;VEGFA;KRAS;SCN2A;FGFR2;FGFR1
	Mitotic G1-G1/S phases Homo sapiens R-HSA-453279	0.480642	MYC;CKS1B				Oral mucosa	0.891461	IL1RN;SERPINE1;NR3C1;FGF1;AQP1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;HGF;CACNA2D4;PRKAB1;GABRG3;CACNB1;CACNB4;GPD1;PGR;TP53;PPIA;IFNAR1;SDC2;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;PPP3R2;LTA4H;APOE;JUN;SRD5A3;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;IL7;ALB;REN;FGFR4;FGFR2;FGF

									R1;GABRB2;GABRB1;IFNA1;HTR2C;PTH1R;ADRA1A;SLC6A3;IKBKB;CA1;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;IL1A;F8;IFNG;PIK3CA;IL3RA;TLR9;PPARG;TLR4;TLR3;CRP;SERPINC1;ETFDH;ATP2C1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;KRAS
	Ion transport by P-type ATPases Homo sapiens R-HSA-936837	0.481354	ATP2C1				Ovary	0.892195	PRSS1;SERPINE1;NR3C1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IF

									NAR1;GRIA1;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;CACNA1I;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;ELANE;DRD4;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;PRG2;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GRIN3A;GGCX;CD209;IL7;ALB;REN;FGFR4;SHBG;HLA-DRB1;FGFR2;FGFR1;GABRB3;ACY1;IFNA1;ITGB3;HTR2C;ADRA1D;SLC7A11;PTH1R;ADRA1B;SLC6A2;SLC6A3;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;CCR5;JAK3;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F2;F3;ADRA2B;ADRA2A;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CYP17A1;CACNG6;GLRA1;NT5E;PGR

									MC1;NRAS;CCL5;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG3;CACNG5;GABRA2;GABRQ;GABRP;F10;CRBN;GABRA6;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS;PF4
	Constitutive Signaling by NOTCH1 HD+PEST Domain Mutants Homo sapiens R-HSA-2894862	0.493607	MYC				Parenchyma	0.904094	ACY1;SERPINE1;SLC7A11;NR3C1;ICAM1;CKS1B;CDH5;CA3;MYC;CASP3;AKT1;CA14;JAK1;IFNAR2;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;CACNA2D2;F3;IL1B;PPIF;TP53;HLA-DQB1;GRIA1;CALCA;LRP1;SDC2;PTGS2;DPP4;NT5E;PGRMC1;GLRA3;NEU1;CCL2;LTA4H;APOE;PRNP;ST14;JUN;TGFB1;CRBN;STAT1;GSS;STAT3;PTPN11;VEGFA;IL6;IL7;KRAS;FGFR1
	Signaling by NOTCH1 in Cancer Homo sapiens R-HSA-2644603	0.493607	MYC				Tonsil	0.906024	IL1RN;SERPINE1;NR3C1;FGF1;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;TNFSF11;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;HLA-A;PRKAB1;GABRG3;CACNB1;CACNB

									2;CACNB4;GPD1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;PPP3R2;LTA4H;APOE;CACNA1S;DRD2;PRNP;ST14;JUN;ACE;TGFB1;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB2;GABRB1;HTR2C;PTH1R;ADRA1A;SLC6A3;CKS1B;IKBKB;CA3;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;F7;IL1A;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CYP17A1;GLRA1;NT5E;PGRMC1;NRAS;CCL5;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG4;CACNG5;CA12;P2RY12;GABRA2

									;GABRQ;GABRP;SLC12A3;CRBN;GABRA6;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS
	Signaling by NOTCH1 PEST Domain Mutants in Cancer Homo sapiens R-HSA-2644602	0.493607	MYC				Monocyte	0.912165	PRSS1;IL1RN;NR3C1;ADRA1B;MT-ND1;ICAM1;IKBKB;CDH5;CA2;MYC;CASP3;AKT1;JAK2;CA14;JAK1;MBL2;IFNAR2;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;CACNA2D3;HLA-A;FOS;F2;F3;F7;CACNB3;TLR9;PPIF;TP53;TLR4;PPIA;TLR3;HLA-DQB1;TLR2;LRP1;SERPINC1;ETFDH;CSF2RB;PTGS2;CSF2RA;DPP4;CACNG6;PGRMC1;NRAS;CCL5;NEU1;CCL3;PTK2B;MAPK1;LTA4H;APOE;ELANE;PRNP;ST14;JUN;TGFB1;F10;CRBN;STAT1;VDR;SRD5A1;GSS;F11;STAT3;PTPN11;VEGFA;SELP;CD4;FCGR2A;ALB;KRAS;FGFR4;SHBG;HLA-DRB1;FGFR2;PF4;FGFR1
	Constitutive Signaling by NOTCH1	0.4933	MYC				Parathyroid	0.9144	NR3C1;FGF1;AQP1;NR3C2;CDH5;MYC;AKT1;KCNH2;HGF;CACNA2D4;PRKAB1;CACNB1;CAC

	PEST Domain Mutants Homo sapiens R-HSA-2644606	6 0 7					gla nd	9 3	NB2;GPD1;TP53;PPIA;IFNAR1;GRIA1;CACNA1B;CSF2RB;CACNA1D;CACNA1E;CACNA1H;CACNA1G;DPP4;PPP3R2;LTA4H;CACNA1S;JUN;ACE;VDR;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL7;ALB;REN;FGFR4;FGFR2;FGFR1;GABRB1;ACY1;IFNA1;HTR2C;ADRA1D;PTH1R;SLC6A3;IKBKB;CASP3;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;IL10;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;F7;F8;IFNG;PIK3CA;IL3RA;TLR9;CRH;SCN4A;TLR3;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;CACNG7;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CA12;GABRA2;GABRP;SLC12A3;CRBN;GABRA6;KCNJ11;IFNB1;GSS;GABRA4;GABRA3;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;FCGR2A;KRAS
	Signaling by NOTCH1 HD+PEST Domain	0 . 4 9 3	MYC				Te sti s	0 . 9 1 6	PRSS1;IL1RN;SERPINE1;AQP1;MT-ND1;ICAM1;MYC;TNFSF11;AKT1;CACNA2D1;CACNA2D

	Mutants in Cancer Homo sapiens R-HSA-2894858	607						543	3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;ACE2;SFRP4;AR;AGTR1;TP53;ABCB1;SDC2;NEU2;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;ELANE;JUN;ACE;PRG2;GRIN2C;GRIN2D;CD209;REN;SCN2A;HLA-DRB1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;SLC7A11;PTH1R;SLC6A2;SLC6A3;IKBKB;JAK2;JAK3;JAK1;IL10;ANXA1;CAMLG;IL13;FOS;F2;F3;F7;IL1A;F8;KCNMA1;TLR9;SLC29A4;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;SERPINC1;TMPRSS2;CYP17A1;GLRA1;NT5E;PGRMC1;NRAS;GABRE;GABRD;CA12;P2RY12;GABRA2;GABRQ;GABRP;F10;CRBN;GABRA6;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;GRIN1;VEGFA;CD40LG;PF4;NR3C1;FGF1;FGF2;FGF4;NR3C2;CDH5;ADORA1;CA14;KCNH2;IFNAR2;CHRNB4;HGF;CACNB1;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PGR;PPIA;IFNAR1;GRIA

									1;CHRNA3;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;CACNA1I;CACNA1S;PRNP;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;IL2;SELP;GGCX;IL7;FGF19;ALB;FGFR4;SHBG;FGFR2;FGFR1;ITGB3;HTR2C;ADRA1D;ADRA1A;CKS1B;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;CCDC51;CHUK;DDX58;MMP2;SIGMAR1;MMP9;ADRA2A;ADORA2A;IFNG;PIK3CA;IL3RA;CRH;SCN4A;CRP;LRP1;ETFDH;ATP2C1;CACNG6;CACNG7;CACNG8;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;CACNG3;CACNG4;KCNJ3;CACNG5;SLC12A3;KCNJ11;NOS2;SLC12A1;OPRK1;CCK;PTPN11;CD4;FCGR2A;KRAS
	Formation of the beta-catenin:TCF transactivating complex Homo sapiens	0.499624	MYC				Umbilical cord blood	0.917747	PPIF;MMP9

	R-HSA-201722								
	Recruitment and ATM-mediated phosphorylation of repair and signaling proteins at DNA double strand breaks Homo sapiens R-HSA-5693565	0.499624	TP53				Smooth muscle	0.918047	SERPINE1;NR3C1;FGF1;FGF2;AQP1;NR3C2;CDH5;MYC;TNFSF11;AKT1;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D4;PRKAB1;CACNB1;CACNB2;CACNB4;PGR;PPIA;IFNAR1;SDC2;CACNA1C;CSF2RA;CACNA1E;CACNA1G;PPP3R2;LTA4H;DRD2;JUN;SRD5A3;PRG2;HTR1A;GRIN2C;IL2;GRIN2D;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;GABRB1;IFNA1;HTR2C;PTH1R;SLC6A3;IKBKB;CA3;CASP3;CA7;JAK2;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F7;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR7;SCN4A;CRP;LRP1;SERPINC1;PTGS2;ATP2C1;CACNG7;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;KCNJ3;CACNG5;CA12;GABRA2;GABRQ;GABRA1;GABRP;CRBN;GABRA6;IFNB1;GABRA4;STAT3;SLC12A1;PTPN11;VEGFA
	NIK--	0	CHUK				Pa	0	PRSS1;IL1RN;SERPI

	>noncanonical NF-kB signaling Homo sapiens R-HSA-5676590	.4996 24					ncreas	.9213	NE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;IFNAR2;CHRNB4;CACNA2D1;HGF;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;DRD2;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;GRIN2C;IL2;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;HTR2C;SLC7A11;PTH1R;SLC6A3;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGM

									AR1;PTH2R;FOS;F2;F3;MMP9;ADRA2A;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;CYP17A1;CACNG6;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG2;GABRD;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;F11;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	DNA Damage/ Telomere Stress Induced Senescence Homo sapiens R-HSA-2559586	0.505571	TP53				Spleen	0.921743	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;TNF;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;TNFSF11;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D3;CACNA2D4;HLA-A;PRKAB1;GABRG3;CACNB1;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;GRI

									A1;CALCA;ABCB1;SDC2;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1G;DPP4;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;DRD2;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;PRG2;GRIN2D;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB2;GABRB1;ACY1;IFNA1;ITGB3;HTR2C;SLC7A11;PTH1R;ADRA1B;ADRA1A;SLC6A3;CKS1B;IKBKB;CA1;CA2;CASP3;CA4;CA7;CTLA4;BDKRB1;JAK2;CCR5;JAK3;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2B;ADRA2A;F7;IL1A;F8;ADORA2A;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;TLR7;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;P2

									RY12;SLC12A3;F10;CRBN;KCNJ11;STAT1;IFNB1;GSS;STAT3;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS;PF4
	DNA Double Strand Break Response Homo sapiens R-HSA-5693606	0.505571	TP53				Seminal vesicle	0.923656	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;MT-ND1;ICAM1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D4;PRKAB1;GABRG3;CACNB1;ACE2;SFRP4;AR;CACNB4;GPD1;PGR;TP53;PPIA;IFNAR1;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1C;CACNA1E;CACNA1H;DPP4;GRIN2A;LTA4H;APOE;CACNA1S;ACE;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;FGFR2;FGFR1;GABRB2;GABRB1;IFNA1;HTR2C;PTH1R;ADRA1A;SLC6A3;IKBKB;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;F2;F3;MMP9;F7;IL1A;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR4;TLR3;CRP

									;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;CRBN;GABRA6;NOS2;IFNB1;GABRA4;STAT3;OPRK1;CCK;VEGFA;CD4;KRAS
	The role of GTSE1 in G2/M progression after G2 checkpoint Homo sapiens R-HSA-8852276	0.505571	TP53				Amygdala	0.934014	GABRB1;HTR2C;SLC7A11;NR3C1;FGF1;AQP1;ICAM1;NR3C2;CA2;MYC;ADORA1;AKT1;CA14;JAK1;CAMLG;CHUK;DDX58;CACNA2D3;CACNA2D2;FOS;F3;CACNB3;PPIF;CRH;GRIA1;LRP1;SDC2;CACNA1A;ATP2C1;NT5E;PGRMC1;PTK2B;MAPK1;LTA4H;APOE;GABRD;CACNG3;GABRA2;GABRA1;PRNP;ST14;CRBN;GABRA5;STAT1;GSS;STAT3;CCK;PTPN11;GRIN1;VEGFA;KRAS;FGFR2;FGFR1
	SCF(Skp2)-mediated degradation of p27/p21 Homo sapiens R-HSA-	0.505571	CKS1B				Urinary bladder	0.938339	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;TNFSF11;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-

	187577								A;PRKAB1;GABRG3;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;DPP4;PPP3R2;LTA4H;APOE;CACNA1S;ELANE;DRD4;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;PRG2;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;CYP11B2;IL7;FGF19;ALB;REN;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB2;GABRB1;ACY1;HTR2C;ADRA1D;SLC7A11;PTH1R;ADRA1A;SLC6A3;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;CTLA4;BDKRB1;JAK2;CCR5;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2A;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;TLR7;PPARG;TLR4;TLR3;HLA-

									DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;CACNG6;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS;PF4
	PI Metabolism Homo sapiens R-HSA-1483255	0.51447	PIK3CA				Placenta	0.93986	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;TNFSF11;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;CACNB1;ACE2;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;PPP3R2;NEU1;LTA4H;APOE;DRD2;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1

									;SRD5A3;PRG2;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;SHBG;HLA-DRB1;FGFR2;FGFR1;GABRB2;GABRB1;ACY1;ITGB3;HTR2C;PTH1R;SLC6A2;ADRA1A;SLC6A3;SLC6A4;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2A;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;SCN4A;TLR4;TLR3;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CACNG6;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG3;CACNG4;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;F10;CRBN;GABRA6;NOS2;STAT1;IFNB1;GSS;GABRA4;GABRA3;STAT3;SLC12A1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF

									4
	RHO GTPases activate PKNs Homo sapiens R-HSA-5625740	0.511447	AR				Hepatomacell	0.944444	NR1I2
	Cell-cell junction organization Homo sapiens R-HSA-421270	0.517254	CDH5				Thymus	0.955236	CHRNA3;LRP1;CACNA1C;NR3C1;ATP2C1;AQP1;ICAM1;CKS1B;IKBKB;PGRMC1;MYC;CCL5;AKT1;PTK2B;CCL2;MAPK1;LTA4H;APOE;CA14;JAK1;IFNAR2;PRNP;ST14;ANXA1;TGFB1;CAMLG;CRBN;CHUK;STAT1;DDX58;GSS;MMP2;STAT3;PRG2;PTPN11;HLA-A;FOS;MMP9;CD4;ADORA2A;ALB;PPIF;KRAS;TP53;PPIA;HLA-DRB1;HLA-DQB1;FGFR1
	Cell death signalling via NRAGE, NRIF and NADE Homo sapiens R-HSA-204998	0.517254	CASP3				Epididymis	0.962667	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D4;PRKAB1;GABRG3;CACNB1;AR;CACNB4;GPD1;PGR;TP53;PPIA;IFNAR1;CHRNA3;ABCB1;SDC2;CACNA1A;CSF2RB;CACNA1D;CACNA1C;CACNA1E;CACNA1H;CACN

									A1G;PPP3R2;LTA4H;APOE;CACNA1S;DRD2;JUN;ACE;SRD5A1;SRD5A3;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;FGFR2;FGFR1;GABRB2;GABRB1;ACY1;IFNA1;HTR2C;PTH1R;SLC6A3;IKBKB;CA3;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;IL1A;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;PPARG;TLR4;TLR3;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG3;KCNJ3;CACNG5;P2RY12;GABRA2;GABRQ;GABRP;CRBN;GABRA6;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;KRAS;PF4
	Dectin-1 mediated noncanonical NF-kB signaling	0.51725	CHUK				Colonic cancercel	0.9647	ALB;KRAS;JAK1

	Homo sapiens R-HSA-5607761	4					l		
	p53-Dependent G1/S DNA damage checkpoint Homo sapiens R-HSA-69580	0.528662	TP53				Teratocarcinoma cell	0.972961	MMP2;SLC29A4;FGFR1
	p53-Dependent G1 DNA Damage Response Homo sapiens R-HSA-69563	0.528662	TP53				Oviduct	0.973373	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;ICAM1;NR3C2;CDH5;MYC;AKT1;KCNH2;HGF;CACNA2D4;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;AR;CACNB4;GPD1;PGR;TP53;PPIA;IFNAR1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1D;CACNA1E;CACNA1H;CACNA1G;GRIN2A;PPP3R2;LTA4H;CACNA1S;DRD2;JUN;ACE;SRD5A1;SRD5A3;GRIN2C;IL2;GRIN2D;SELP;CD209;IL7;FGF19;ALB;REN;FGFR4;FGFR1;GABRB2;GABRB1;IFNA1;HTR2C;PTH1R;SLC6A3;IKBKB;CASP3;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL1

									3;SIGMAR1;F2;F3;F7;IL1A;F8;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;SCN4A;TLR4;TLR3;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CYP17A1;GLRA1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG3;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;GABRA6;KCNJ11;STAT1;IFNB1;GSS;GABRA4;STAT3;SLC12A1;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;KRAS
	ER-Phagosome pathway Homo sapiens R-HSA-1236974	0.539802	HLA-A				T-cell chronic lymphocytic leukemia cell	0.975169	KCNH2;PRNP;JUN;STAT1;CACNA2D2;PTPN11;FOS;NR3C1;PRKAB1;ICAM1;IKBKB;CACNA1I;NT5E;PGRMC1;ALB;MAPK1;JAK3;PPIA;IFNAR1
	G1/S DNA Damage Checkpoi	0.53	TP53				Superior	0.97	GRIA1;CHRNA3;CALCA;LRP1;NR3C1;NT5E;PGRMC1;GLRA3;CA3;MYC;AKT

	nts Homo sapiens R-HSA-69615	9802					cervical ganglion	66639	1;CCL2;CACNA1S;CCR5;CA14;KCNJ3;IFNAR2;PRNP;ST14;JUN;ANXA1;CAMLG;CRBN;CHUK;VDR;DDX58;GSS;MMP2;STAT3;SRD5A3;SIGMAR1;SLC12A1;CACNA2D2;PTPN11;FOS;F3;VEGFA;SFRP4;F8;IL7;IL3RA;KRAS;HLA-DQB1;FGFR1
	Triglyceride Biosynthesis Homo sapiens R-HSA-75109	0.5452737	GPD1				Dendritic cell	0.9773737	SLC7A11;NR3C1;ICAM1;CKS1B;IKBKB;MYC;AKT1;JAK2;CCR5;CA14;JAK1;MBL2;IFNAR2;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;CACNA2D3;FOS;F3;IL1B;IL3RA;PPIF;TLR7;TP53;HLA-DQB1;TLR2;LRP1;CSF2RB;PTGS2;DPP4;PGRMC1;CCL5;NEU1;CCL3;PTK2B;MAPK1;LTA4H;PRNP;SLC12A3;ST14;JUN;TGFB1;CRBN;STAT1;GSS;STAT3;PTPN11;CD4;FCGR2A;GGCX;KRAS;HLA-DRB1
	Macroautophagy Homo sapiens R-HSA-1632852	0.5506799	PRKAB1				Breast	0.9814443	SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;TNFSF11;AKT1;CA14;KCNH2;HGF;CACNA2D3;CACNA2D4;PRKAB1;GABRG3;CACNB1;AR;CACNB4;

									GPD1;AGTR1;PGR;TP53;PPIA;IFNAR1;SDC2;CSF2RB;CACNA1D;CACNA1C;CACNA1E;CACNA1H;CACNA1G;PPP3R2;LTA4H;APOE;JUN;ACE;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;GABRB1;HTR2C;PTH1R;SLC6A3;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;IL13;SIGMAR1;F2;F3;MMP9;F7;IL1A;F8;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;TLR4;TLR3;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;CACNG8;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;GABRA6;NOS2;STAT1;IFNB1;GABRA4;STAT3;SLC12A1;CCK;PTPN11;GRIN1;VEGFA;FCGR2A
	Amyloid fiber formatio	0.5	CALCA				Esopha	0.9	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-

	n Homo sapiens R-HSA-977225	5602					gus	8367	ND1;ICAM1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D4;HLA-A;PRKAB1;GABRG3;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;DPP4;PPP3R2;LTA4H;APOE;CACNA1S;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;SHBG;HLA-DRB1;FGFR2;FGFR1;GABRB3;GABRB2;GABRB1;ACY1;IFNA1;HTR2C;ADRA1D;PTH1R;ADRA1A;SLC6A3;SLC6A4;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;K

									CNMA1;IL3RA;TLR9;CRH;PPARG;TLR4;TLR3;TLR2;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;CACNG6;NT5E;PGRMC1;NRAS;GLRA3;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;F10;CRBN;GABRA6;GABRA5;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS;PF4
	Phospholipid metabolism Homo sapiens R-HSA-1483257	0.571044	PIK3CA;GPD1				Melanoma cell line	0.984591	MMP2
	Transport to the Golgi and subsequent modification Homo sapiens R-HSA-948021	0.574411	GRIA1;F8				BTO:0000379	0.985321	SDC2
	Signaling by NOTCH1 Homo	0.57	MYC				Bronchus	0.98	IL1RN;NR3C1;FGF1;AQP1;ICAM1;FGF4;NR3C2;CDH5;MYC;TNFSF11;AKT1;

	sapiens R-HSA-1980143	6767666						5875	CA14;KCNH2;HGF;CACNA2D4;PRKAB1;GABRG3;CACNB1;SFRP4;CACNB2;GPD1;PGR;TP53;PPIA;IFNAR1;CHRNA3;SDC2;CACNA1B;CSF2RB;CACNA1D;CACNA1C;CACNA1E;CACNA1H;CACNA1G;GRIN2A;PPP3R2;LTA4H;APOE;DRD2;JUN;ACE;TGFB1;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;FGFR2;FGFR1;GABRB2;GABRB1;ACY1;IFNA1;HTR2C;ADRA1D;PTH1R;ADRA1A;SLC6A3;IKBKB;CA1;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;F7;IL1A;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;SCN4A;TLR4;TLR3;CRP;SERPINC1;ETFDH;ATP2C1;GLRA1;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;KCNJ3;CACNG5;CA12;P2RY12;GABRA2;GABRP;CRBN;GABRA6;NOS2;STAT1;IFNB1;GA

									BRA4;STAT3;SLC12A1;OPRK1;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS
	G2/M DNA damage checkpoint Homo sapiens R-HSA-69473	0.606086	TP53				Ophthalmic nerve	0.986991	CALCA;CALCB;LRP1;AQP1;ICAM1;NT5E;PGRMC1;CA3;MYC;CCL2;APOE;CA14;JAK1;IFNAR2;PRNP;ST14;ANXA1;CAMLG;CRBN;DDX58;GSS;STAT3;PTPN11;FOS;F3;VEGFA;SFRP4;IL6;FGFR1
	Regulation of HSF1-mediated heat shock response Homo sapiens R-HSA-3371453	0.615403	MAPK1				Skeletal muscle	0.984452	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;TNFSF11;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;CALCA;SDC2;CSF2RB;CACNA1E;CACNA1H;CACNA1G;DPP4;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A3;HTR1A;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209

									;IL7;FGF19;ALB;REN;SCN2A;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB1;ACY1;ITGB3;HTR2C;ADRA1D;PTH1R;SLC6A3;CKS1B;IKBKB;CA3;CA2;CASP3;CA4;CA7;JAK2;JAK1;CCDC51;MBL2;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;PTH2R;FOS;F2;F3;MMP9;ADRA2B;F7;IL1A;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;SLC29A4;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CACNG6;NT5E;PGRMC1;NRAS;GLRA3;CCL5;PTK2B;CCL2;MAPK1;CACNG1;GABRD;CACNG3;KCNJ3;CA12;GABRA2;GABRQ;GABRA1;GABRP;SLC12A3;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;SLC12A1;PTPN11;VEGFA;CD4;FCGR2A;KRAS
	Opioid Signalling Homo sapiens R-HSA-	0.619	MAPK1				Uterine cervix	0.989	IL1RN;SERPINE1;NR3C1;FGF1;AQP1;ICAM1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;HGF;HLA-

	111885	979						595	A;PRKAB1;GABRG3;CACNB1;SFRP4;AR;CACNB4;GPD1;PPIF;PGR;TP53;PPIA;IFNAR1;CHRNA3;SDC2;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;PPP3R2;LTA4H;APOE;JUN;ACE;SRD5A1;GRIN2C;IL2;GRIN2D;IL6;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;FGFR2;FGFR1;GABRB1;ACY1;IFNA1;HTR2C;PTH1R;SLC6A3;IKBKB;CASP3;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;F7;IL1A;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;PPARG;TLR4;TLR3;CRP;SERPINC1;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;CA12;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;GABRA6;KCNJ11;NOS2;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4
	Antigen processin	0.	HLA-A				Bron	0.	IL1RN;ACY1;LRP1;SERPINE1;SLC7A1

	g-Cross presentation Homo sapiens R-HSA-1236975	6245					chial epithelial cell	9899005	1;PTGS2;NR3C1;ICAM1;CKS1B;NT5E;PGRMC1;CA2;MYC;CASP3;NEU1;AKT1;MAPK1;LTA4H;CA14;JAK1;CCDC51;CA12;PRNP;ST14;JUN;ANXA1;TGFB1;CAMLG;CRBN;CHUK;STAT1;DDX58;GSS;MMP2;STAT3;SIGMAR1;PTPN11;F3;VEGFA;IL1A;IL1B;PPIF;KRAS
	Collagen formation Homo sapiens R-HSA-1474290	0.6377466	MMP9				Adipose tissue	0.9908666	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;ICAM1;NR3C2;CDH5;MYC;ADORA1;TNFSF11;AKT1;IFNAR2;CACNA2D1;HGF;CACNA2D4;HLA-A;PRKAB1;CACNB1;ACE2;SFRP4;AR;CACNB3;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;ABCB1;SDC2;CSF2RB;CACNA1C;CSF2RA;CACNA1H;DPP4;NEU1;LTA4H;APOE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A3;GRIN2B;SELP;IL6;GGCX;CD209;IL7;ALB;HLA-DRB1;FGFR2;FGFR1;GABRB2;ACY1;IFNA1;ITGB3;PTH1R;ADRA1A;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;JAK2;CCR5;JAK3;JAK1;CCDC51;MBL2;ANXA

									1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F3;MMP9;ADRA2B;ADRA2A;F7;F8;PIK3CA;KCNMA1;IL3RA;SLC29A4;TLR7;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;LRP1;ETFDH;TMPRSS2;ATP2C1;NT5E;PGRMC1;NRAS;CCL5;PTK2B;CCL2;MAPK1;GABRE;CA12;P2RY12;F10;CRBN;GABRA6;NOS2;STAT1;GSS;STAT3;PTPN11;VEGFA;CD4;FCGR2A;KRAS
	Cell junction organization Homo sapiens R-HSA-446728	0.642057	CDH5				Preonephros	0.991125	PGRMC1;CRBN;TP53
	Regulation of mRNA stability by proteins that bind AU-rich elements Homo sapiens R-HSA-450531	0.642057	AKT1				Pineal gland	0.991131	ACY1;HTR2C;SLC7A11;NR3C1;AQP1;ICAM1;SLC6A4;IKBKB;CA2;MYC;ADORA1;AKT1;CA14;JAK1;KCNH2;IFNAR2;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;CACNA2D2;FOS;F3;GABRG2;CACNB2;F8;KCNMA1;IL3RA;GRIA1;CHRNA3;CALCA;CALCB;LRP1;SDC2;CACNA1A;CACNA1G;PGRMC1;NEU1;

									LTA4H;APOE;CACNA1S;GABRA1;PRNP;ST14;CRBN;STAT1;GSS;STAT3;PTPN11;VEGFA;KRAS;FGFR1
	Metabolism of nucleotides Homo sapiens R-HSA-15869	0.646317	NT5E				Pancreatic islet	0.991694	CRP;PRSS1;ACY1;LRP1;SDC2;SERPINE1;PTGS2;NR3C1;AQP1;ICAM1;PGRMC1;MYC;CCL5;NEU1;AKT1;CCL2;LTA4H;CA14;JAK1;CA12;IFNAR2;PRNP;ST14;JUN;ANXA1;CAMLG;CRBN;CHUK;STAT1;DDX58;GSS;MMP2;STAT3;CACNA2D2;PTPN11;FOS;F3;VEGFA;IL6;ALB;PPIF;KRAS;HLA-DQB1;FGFR1
	Diseases of glycosylation Homo sapiens R-HSA-3781865	0.650526	SDC2				Caudate nucleus	0.992097	GRIA1;LRP1;CACNA1A;HTR2C;SLC7A11;NR3C1;FGF1;AQP1;ICAM1;PGRMC1;CA2;MYC;MAPK1;LTA4H;APOE;CACNG3;CA14;JAK1;CA12;GABRA2;PRNP;ST14;ANXA1;CAMLG;CRBN;GABRA5;DDX58;GSS;STAT3;CACNA2D3;CACNA2D2;PTPN11;FOS;F3;GRIN1;ADORA2A;PPIF;FGFR2;FGFR1
	Respiratory electron transport Homo sapiens	0.650505	ETFDH				Salivary gland	0.992727	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;ADORA1;AKT1;CA

	R-HSA-611105	26						55	14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D4;PRKAB1;GABRG3;GABRG1;CACNB1;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1D;CSF2RA;CACNA1E;CACNA1H;CACNA1G;DPP4;GRIN2A;PPP3R2;LTA4H;APOE;CACNA1S;DRD2;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;HTR1A;GRIN2C;GRIN2D;SELP;IL6;GGCX;CD209;IL7;FGF19;ALB;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB1;ACY1;HTR2C;ADRA1D;PTH1R;ADRA1A;SLC6A3;IKBKB;CA3;CA2;CASP3;CA4;CA7;BDKRB1;JAK2;CCR5;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;PTH2R;FOS;F2;F3;MMP9;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;SCN4A;TLR4;TLR3;TLR2;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2

									;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;FCGR2A;KRAS
	Activation of anterior HOX genes in hindbrain development during early embryogenesis Homo sapiens R-HSA-5617472	0.654686	JUN				Cardiac muscle	0.993874	PRSS1;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;PRKAB1;GABRG1;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;GRIA1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;NEU2;DPP4;GRIN2A;PPP3R2;LTA4H;APOE;CACNA1S;PRNP;JUN;ACE;TGFB1;SRD5A1;SRD5A3;HTR1A;GRIN2C;GRIN2D;SELP;IL6;GGCX;CD209;IL7;FGF19;A

									LB;REN;FGFR4;FGFR2;FGFR1;GABRB3;GABRB1;ACY1;HTR2C;ADRA1D;PTH1R;ADRA1A;SLC6A3;IKBKB;CA3;CA2;CASP3;CA4;CA7;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;ADRA2B;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;SCN4A;TLR4;TLR3;CRP;LRP1;SERPINC1;ETFDH;TMPRSS2;PTGS2;ATP2C1;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;GABRD;CACNG3;KCNJ3;CACNG5;CA12;GABRA2;GABRP;F10;CRBN;GABRA6;KCNJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;GABRA3;STAT3;SLC12A1;CCK;PTPN11;VEGFA;CD4;FCGR2A;KRAS
	Activation of HOX genes during differentiation Homo sapiens R-HSA-5654686	0.654686	JUN				Subthalamic nucleus	0.994189	GRIA1;GABRB1;LRP1;CACNA1A;NR3C1;FGF1;ICAM1;PGRMC1;CA2;MYC;NEU1;PTK2B;APOE;CACNG3;CA14;JAK1;MBL2;GABRA2;IFNAR2;GABRA1;PRNP;ST14;CAMLG;

	5619507								CRBN;GABRA5;DDX58;GSS;STAT3;CACNA2D2;CCK;PTPN11;F3;GRIN1;CYP11B2;KRAS;SCN2A;FGFR1
	Cellular response to heat stress Homo sapiens R-HSA-3371556	0.682454	MAPK1				Adrenal cortex	0.994193	ABCB1;ACY1;LRP1;NR3C1;ICAM1;CYP17A1;NT5E;PGRMC1;MYC;NEU1;AKT1;CCL2;LTA4H;APOE;CA14;IFNAR2;PRNP;ST14;ANXA1;CAMLG;CRBN;VDR;DDX58;GSS;MMP2;STAT3;SIGMAR1;CACNA2D2;PTPN11;FOS;F3;VEGFA;CYP11B2;IL3RA;AGTR1;PPIF;HLA-DRB1;HLA-DQB1;FGFR1
	SUMO E3 ligases SUMOylate target proteins Homo sapiens R-HSA-3108232	0.682454	TP53				BTO:0004410	0.995053	PRSS1;ACY1;NR3C1;TNF;MT-ND1;ICAM1;NR3C2;IKBKB;CA1;CA2;CASP3;CA4;AKT1;JAK2;JAK3;JAK1;CCDC51;KCNH2;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;CACNA2D2;HLA-A;PRKAB1;SFRP4;AR;F7;F8;CACNB3;CACNB4;ADORA2A;IFNG;PIK3CA;GPD1;TLR9;PPIF;TLR7;TLR4;PPIA;TLR3;HLA-DQB1;TLR2;ABCB1;LRP1;ETFDH;CACNA1A;ATP2C1;CACNA1E;CACNA1G;DPP4;CACNG6;NT5E

									;PGRMC1;NRAS;PPP3R2;CCL5;NEU1;PTK2B;MAPK1;LTA4H;GABRE;CACNG2;ELANE;GABRA2;PRNP;JUN;ACE;TGFB1;CRBN;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;CCK;PTPN11;GRIN2D;SELP;CD4;GRIN3A;IL7;ALB;KRAS;FGFR4;HLA-DRB1;FGFR2;PF4;FGFR1
	TCF dependent signaling in response to WNT Homo sapiens R-HSA-201681	0.685647	MYC;AKT1				Vagina	0.995344	IL1RN;NR3C1;FGF1;NR3C2;CDH5;MYC;AKT1;KCNH2;HGF;PRKAB1;CACNB1;CACNB2;CACNB4;GPD1;PGR;TP53;PPIA;IFNAR1;CHRNA3;SDC2;CACNA1B;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;PPP3R2;LTA4H;APOE;JUN;GRIN2C;IL2;GRIN2D;CD209;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;GABRB2;GABRB1;HTR2C;PTH1R;ADRA1A;SLC6A3;IKBKB;CA4;CA7;JAK2;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;F7;IL1A;F8;PIK3CA;IL3RA;TLR9;TLR7;PPARG;TLR4;CRP;LRP1;SERPINC1;ETFDH;ATP2C1;NT5E;NRA

									S;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;GABRA6;IFNB1;GSS;GABRA4;STAT3;OPRK1;PTPN11;GRIN1;VEGFA
	Phase II conjugation Homo sapiens R-HSA-156580	0.697312	GSS				Cerebral peduncle	0.995452	GRIA1;LRP1;CACNA1A;NR3C1;FGF1;SLC6A2;AQP1;ICAM1;CACNA1G;NT5E;PGRMC1;CA2;MYC;NEU1;CA4;AKT1;PTK2B;LTA4H;APOE;GABRD;CA14;JAK1;IFNAR2;GABRA1;PRNP;ST14;CAMLG;CRBN;GABRA6;DDX58;GSS;STAT3;SIGMAR1;CACNA2D2;PTPN11;F3;CACNB3;CACNB4;KRAS;SCN2A;FGFR2;FGFR1
	SUMOylation Homo sapiens R-HSA-2990846	0.700917	TP53				Erythroid cell	0.995852	LRP1;NR3C1;AQP1;ICAM1;CKS1B;PGRMC1;CA1;CA3;CA2;MYC;AKT1;MAPK1;LTA4H;JAK2;CA14;JAK1;MBL2;KCNH2;IFNAR2;PRNP;ST14;CAMLG;CRBN;CHUK;DDX58;GSS;STAT3;SIGMAR1;CACNA2D2;PTPN11;FOS;PRKAB1;F3;VEGFA;PPIF;KRAS;FGFR1
	Glycerophospholipid	0.7	GPD1				Spinalga	0.9	CALCA;CALCB;LRP1;NR3C1;FGF1;AQP1;ICAM1;PGRMC

	biosynthesis Homo sapiens R-HSA-1483206	0.04479					ngl ion	0.96968	1;MYC;APOE;CA14;JAK1;MBL2;IFNAR2;PRNP;ST14;ANXA1;CAMLG;CRBN;DDX58;GSS;STAT3;PTPN11;FOS;F3;SFRP4;KRAS;FGFR1
	Mitotic Prophase Homo sapiens R-HSA-68875	0.721665	MAPK1				Bone marrow	0.99823	PRSS1;IL1RN;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;TNFSF11;AKT1;CA14;KCNH2;IFNAR2;HGF;CACNA2D3;CACNA2D4;PRKAB1;GABRG3;CACNB1;CACNB4;GPD1;PPIF;TP53;PPIA;IFNAR1;GRIA1;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1C;CSF2RA;CACNA1E;CACNA1H;CACNA1G;LTA4H;APOE;CACNA1S;DRD2;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;PRG2;GRIN2C;IL2;GRIN2D;SELP;IL6;GGCX;CD209;IL7;ALB;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB1;ACY1;HTR2C;ADRA1D;PTH1R;CKS1B;IKBKB;CA1;CA3;CA2;CASP3;CA4;CA7;CTLA4;JAK2;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;PTH2R;F

									OS;F2;F3;MMP9;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;CRH;TLR7;PPARG;TLR4;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;CYP17A1;GLRA1;CACNG7;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;KCNJ3;CACNG5;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;STAT1;IFNB1;GSS;GABRA4;STAT3;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS;PF4
	Respiratory electron transport, ATP synthesis by chemiosmotic coupling, and heat production by uncoupling proteins. Homo sapiens R-HSA-163200	0.728258	ETFDH				Nasopharynx	0.998383	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;CACNA2D1;HGF;CACNA2D4;PRKAB1;GABRG3;CACNB1;CACNB2;CACNB4;GPD1;PGR;PPIA;IFNAR1;CHRNA3;SDC2;CACNA1B;CSF2RB;CACNA1D;CACNA1C;CACNA1E;CACNA1H;GRIN2A;LTA4H;JUN;ACE;SRD5A1;SRD5A3;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;IL7;FGF19;ALB;REN;FGFR4;FGFR2;FGFR1;

									GABRB1;IFNA1;HTR2C;ADRA1D;PTH1R;SLC6A3;IKBKB;CA1;CASP3;CA4;CA7;BDKRB1;JAK2;JAK1;CCDC51;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;F7;IL1A;F8;IFNG;PIK3CA;KCNMA1;IL3RA;TLR9;CRH;SCN4A;TLR4;TLR3;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CA12;P2RY12;GABRA2;GABRQ;GABRP;SLC12A3;CRBN;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;PTPN11;GRIN1;VEGFA;CD4;FCGR2A
	Fatty acid, triacylglycerol, and ketone body metabolism Homo sapiens R-HSA-535734	0.730568	GPD1;PPARG				Pons	0.998465	GRIA1;GABRB1;LRP1;CACNA1A;NR3C1;FGF1;ICAM1;NT5E;PGRMC1;CA2;MYC;CCL2;APOE;CACNG3;CA14;JAK1;MBL2;IFNAR2;GABRA1;PRNP;ST14;ANXA1;CAMLG;CRBN;DDX58;GSS;STAT3;CACNA2D2;CCK;PTPN11;F3;IL6;IL3RA;FGFR1
	Membrane Trafficking Homo	0.73	GRIA1;F8;AKT1;PRKAB1				Trigeminal	0.99	CALCA;LRP1;NR3C1;FGF1;AQP1;ICAM1;NT5E;PGRMC1;CA3;MYC;CCL2;A

	sapiens R-HSA-199991	6361					ganglion	848	POE;CA14;IFNAR2;PRNP;ST14;ANXA1;CAMLG;CRBN;CHUK;DDX58;GSS;MMP2;STAT3;PTPN11;FOS;F3;VEGFA;SFRP4;IL7;IL3RA;HLA-DQB1;FGFR1
	PPARA activates gene expression Homo sapiens R-HSA-1989781	0.740998	PPARG				Medulla oblongata	0.998566	GRIA1;GABRB1;LRP1;CACNA1A;NR3C1;FGF1;ICAM1;PGRMC1;CA2;MYC;ADORA1;LTA4H;APOE;GABRD;CACNG3;CA14;JAK1;MBL2;GABRA2;GABRA1;PRNP;ST14;CAMLG;CRBN;DDX58;GSS;STAT3;CACNA2D2;CCK;PTPN11;FOS;F3;KRAS;SCN2A;FGFR2;FGFR1
	Regulation of lipid metabolism by Peroxisome proliferator-activated receptor alpha (PPARalpha) Homo sapiens R-HSA-400206	0.750131	PPARG				Cingulate cortex	0.998592	GRIA1;GABRB1;CHRNA3;LRP1;CACNA1A;NR3C1;FGF1;ICAM1;PGRMC1;CA2;MYC;NEU1;ADORA1;PTK2B;LTA4H;APOE;CACNG3;CA14;JAK1;MBL2;GABRA2;IFNAR2;GABRA1;PRNP;ST14;CAMLG;CRBN;DDX58;GSS;STAT3;CACNA2D2;CCK;PTPN11;F3;CACNB3;KRAS;SCN2A;FGFR2;FGFR1
	Glycosaminoglycan metabolism	0.764	SDC2				Embryonic br	0.9998	GRIA1;LRP1;CACNA1A;ATP2C1;ICAM1;CACNA1G;PGRMC1;CA2;MYC;CASP3;AKT1;CCL2;LTA4

	Homo sapiens R-HSA-1630316	673					ain	596	H;APOE;CA14;JAK1;GABRA2;PRNP;ST14;CAMLG;CRBN;CHUK;GABRA5;SRD5A1;DDX58;GSS;STAT3;CACNA2D3;CACNA2D2;CCK;PTPN11;FOS;F3;ADRA2A;VEGFA;CACNB3;CRH;KRAS;SCN2A;FGFR1
	Late Phase of HIV Life Cycle Homo sapiens R-HSA-162599	0.783626	PPIA				B-lymphocyte	0.998754	PRSS1;ACY1;NR3C1;MT-ND1;ICAM1;NR3C2;IKBKB;CA2;MYC;CASP3;AKT1;JAK2;JAK3;JAK1;CCDC51;KCNH2;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;HLA-A;PRKAB1;AR;F7;ADORA2A;IFNG;PIK3CA;GPD1;TLR9;PPIF;TLR7;PGR;PPIA;TLR3;HLA-DQB1;TLR2;ABCB1;LRP1;CACNA1B;ETFDH;ATP2C1;CACNG6;NT5E;PGRMC1;NRAS;CCL5;PTK2B;MAPK1;LTA4H;APOE;GABRE;CACNG2;ELANE;SLC12A3;ST14;JUN;TGFB1;CRBN;NOS2;STAT1;GSS;STAT3;SLC12A1;PRG2;PTPN11;SELP;CD4;FCGR2A;ALB;KRAS;FGFR4;HLA-DRB1;FGFR2;PF4;FGFR1
	Cell Cycle,	0.	MYC;MAPK1;TP53;CKS1B				Natur	0.	PRSS1;IL1RN;ACY1;NR3C1;MT-

	Mitotic Homo sapiens R-HSA-69278	8.040.1					al killer cell	9.989.97	ND1;ICAM1;CKS1B;IKBKB;CA1;CA2;MYC;CASP3;AKT1;JAK2;CA14;JAK1;MBL2;KCNH2;IFNAR2;ANXA1;CAMLG;CHUK;DDX58;SIGMAR1;CACNA2D2;HLA-A;FOS;PRKAB1;F3;ADRA2A;CACNB1;ACE2;F8;CACNB3;CACNB4;ADORA2A;IFNG;PIK3CA;TLR9;PPIF;TP53;PPIA;TLR3;HLA-DQB1;TLR2;ABCB1;LRP1;SERPINC1;ETFDH;CACNA1A;PTGS2;CACNA1E;DPP4;CACNG6;PGRMC1;NRAS;CCL5;NEU1;CCL3;PTK2B;MAPK1;LTA4H;GABRE;CACNG2;ELANE;PRNP;ST14;JUN;ACE;TGFB1;CRBN;STAT1;SRD5A1;GSS;STAT3;SLC12A1;PRG2;CCK;PTPN11;GRIN2C;SELP;GRIN3A;GGCX;ALB;KRAS;FGFR4;HLA-DRB1;FGFR2;PF4;FGFR1
	RHO GTPase Effectors Homo sapiens R-HSA-195258	0.807743	AR;MAPK1				Olfactory bulb	0.99248	LRP1;NR3C1;FGF1;AQP1;ICAM1;PGRMC1;CA2;MYC;CCL2;LTA4H;APOE;CA14;JAK1;MBL2;IFNAR2;PRNP;ANXA1;CAMLG;CRBN;STAT1;DDX58;GSS;MMP2;STAT3;PTPN1

									1;FOS;F3;SFRP4;FCGR2A;KRAS;HLA-DRB1;FGFR1
	DNA Double-Strand Break Repair Homo sapiens R-HSA-5693532	0.823564	TP53				Globus pallidus	0.994244	GRIA1;GABRB1;LRP1;CACNA1A;NR3C1;ICAM1;PGRMC1;MYC;APOE;CACNG3;CA14;JAK1;GABRA2;GABRA1;PRNP;ST14;CAMLG;CRBN;DDX58;GSS;STAT3;CCK;PTPN11;F3;KRAS;SCN2A;FGFR1
	Influenza Infection Homo sapiens R-HSA-168254	0.827751	TGFB1				Thalamus	0.995997	CHRNA3;ACY1;LRP1;CACNA1A;NR3C1;FGF1;ATP2C1;AQP1;ICAM1;CACNA1G;PGRMC1;CA2;MYC;ADORA1;PTK2B;LTA4H;APOE;CA14;JAK1;IFNAR2;PRNP;ST14;CAMLG;CRBN;GABRA5;STAT1;DDX58;GSS;STAT3;SIGMAR1;CACNA2D2;PTPN11;F3;PPIF;CRH;FGFR2;FGFR1
	G2/M Checkpoints Homo sapiens R-HSA-69481	0.833846	TP53				Lymph node	0.996017	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;FGF4;NR3C2;CDH5;MYC;TNFSF11;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D3;CACNA2D4;PRKAB1;GABRG3;CACNB1;SFRP4;CACNB2;CACNB3;CACNB4;GPD1;PPIF;TP53;PPIA;IFNAR1;GRIA1;ABCB1;SD

									C2;CACNA1B;CSF2RB;CACNA1D;CSF2RA;CACNA1E;CACNA1H;DPP4;CACNA1I;PPP3R2;LTA4H;APOE;CACNA1S;DRD2;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;GRIN2C;IL2;SELP;IL6;GGCX;CD209;IL7;ALB;REN;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB1;ACY1;HTR2C;PTH1R;SLC6A3;IKBKB;CA2;CASP3;CA4;CA7;CTLA4;BDKRB1;JAK2;CCR5;JAK1;CCDC51;MBL2;IL10;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2A;F7;IL1A;F8;ADORA2A;IFNG;PIK3CA;IL1B;KCNMA1;IL3RA;TLR9;TLR7;PPARG;TLR4;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;PTGS2;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;P2RY12;GABRA2;GABRA1;GABRP;F10;CRBN;NOS2;STAT1;IFNB1;GSS;STAT3;CCK;PTPN11;GRIN1;VEGFA;CD4;CD4

									0LG;FCGR2A;KRAS
	The citric acid (TCA) cycle and respiratory electron transport Homo sapiens R-HSA-1428517	0.839727	ETFDH				B-lymphoblastoid cell	0.999722	ACY1;LRP1;CACNA1A;CSF2RB;SLC7A11;NR3C1;ATP2C1;ICAM1;CKS1B;IKBKB;NT5E;PGRMC1;MYC;CASP3;CCL5;NEU1;CCL3;AKT1;PTK2B;MAPK1;LTA4H;CA14;JAK1;CCDC51;MBL2;IFNAR2;PRNP;ST14;ANXA1;TGFB1;CAMLG;CRBN;CHUK;STAT1;DDX58;GSS;STAT3;SIGMAR1;PTPN11;VEGFA;GGCX;PIK3CA;IL7;PPIF;KRAS;TP53;HLA-DQB1;FGFR1
	Signaling by Wnt Homo sapiens R-HSA-195721	0.867188	MYC;AKT1				BTO:0005453	0.999801	PRSS1;NR3C1;MT-ND1;ICAM1;SLC6A4;NR3C2;IKBKB;CA2;CASP3;AKT1;JAK2;JAK3;JAK1;CCDC51;ANXA1;CHUK;DDX58;SIGMAR1;HLA-A;PRKAB1;CACNB3;ADORA2A;PIK3CA;TLR9;PPIF;TLR7;PPIA;TLR3;HLA-DQB1;ETFDH;ATP2C1;DPP4;CACNG6;PGRMC1;NRAS;PPP3R2;PTK2B;MAPK1;LTA4H;ELANE;KCNJ3;PRNP;TGFB1;CRBN;NOS2;STAT1;GSS;STAT3;PRG2;CCK;PTPN11;CD4;GGCX;ALB;KRAS;FGFR4;HLA-DRB1;FGFR2;PF4;F

									GFR1
	G2/M Transition Homo sapiens R-HSA-69275	0.873973	TP53				Uterus	0.999896	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;AKT1;KCNH2;CACNA2D1;HGF;CACNA2D2;CACNA2D4;PRKAB1;CACNB1;SFRP4;AR;CACNB2;CACNB3;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;ABCB1;SDC2;CSF2RB;CACNA1D;CACNA1C;CSF2RA;CACNA1H;CACNA1G;DPP4;NEU1;LTA4H;APOE;DRD2;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;SELP;IL6;GGCX;IL7;REN;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB3;ACY1;PTH1R;SLC6A2;CKS1B;IKBKB;CA3;CA2;CASP3;CA4;JAK2;CCR5;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F3;ADRA2A;IL1A;F8;ADORA2A;PIK3CA;IL1B;KCNMA1;IL3RA;SLC29A4;PPARG;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;ETFDH;PTGS2;ATP2C1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;

									MAPK1;GABRE;CA12;GABRQ;GABRP;F10;CRBN;STAT1;GSS;STAT3;PTPN11;VEGFA;CD4;FCGR2A;KRAS
	Mitotic G2-G2/M phases Homo sapiens R-HSA-453274	0.876967	TP53				Thyroid gland	0.999902	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;FGF2;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;ADORA1;TNFSF11;AKT1;CA14;CACNA2D1;HGF;CACNA2D3;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;CACNB1;ACE2;SFRP4;AR;CACNB2;CACNB3;CACNB4;AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;CHRNA3;CALCA;ABCB1;CALCB;SDC2;CACNA1D;CACNA1C;CSF2RA;CACNA1H;NEU2;DPP4;NEU1;LTA4H;APOE;CACNA1S;PRNP;ST14;JUN;ACE;TGFB1;SRD5A1;SRD5A3;GRIN2C;SELP;GGCX;CD209;FGF19;ALB;REN;HLA-DRB1;FGFR2;FGFR1;GABRB3;ACY1;SLC7A11;IKBKB;CA3;CA2;CASP3;CA4;JAK2;JAK1;CCDC51;ANXA1;CAMLG;CHUK;DDX58;MMP2;SIGMAR1;FOS;F3;MMP9;IL1A;F8;PIK3CA;IL1B;KCNMA1;I

									L3RA;SLC29A4;PPARG;SCN4A;TLR4;TLR3;TLR2;LRP1;ETFDH;TMPRSS2;PTGS2;ATP2C1;CYP17A1;GLRA1;NT5E;PGRMC1;NRAS;CCL5;CCL3;PTK2B;CCL2;MAPK1;GABRE;CACNG3;CACNG5;CA12;P2RY12;GABRQ;F10;CRBN;KCNJ11;NOS2;STAT1;GSS;STAT3;PTPN11;VEGFA;CD4;FCGR2A;KRAS;PF4
	Cell Cycle Checkpoints Homo sapiens R-HSA-69620	0.886902	TP53				Cytotoxic T-lymphocyte	0.999919	ABCB1;LRP1;NR3C1;ICAM1;IKBKB;DPP4;NT5E;PGRMC1;MYC;CASP3;CCL5;AKT1;PTK2B;MAPK1;LTA4H;CCR5;CA14;JAK1;MBL2;IFNAR2;PRNP;ST14;ANXA1;TGFB1;CAMLG;CRBN;CHUK;STAT1;DDX58;GSS;STAT3;CACNA2D2;PTPN11;FOS;F3;ADORA2A;PIK3CA;KRAS
	Cell Cycle Homo sapiens R-HSA-1640170	0.906199	MYC;MAPK1;TP53;CKS1B				Skin	0.999559	PRSS1;IL1RN;SERPINE1;NR3C1;FGF1;AQP1;MT-ND1;ICAM1;NR3C2;CDH5;MYC;AKT1;CA14;KCNH2;IFNAR2;CACNA2D1;HGF;CACNA2D3;CACNA2D2;HLA-A;PRKAB1;GABRG1;CACNB1;SFRP4;AR;CACNB2;CACNB3;CACNB4;GPD1;

									AGTR1;PPIF;PGR;TP53;PPIA;IFNAR1;CHRNA3;ABCB1;SDC2;CACNA1B;CSF2RB;CACNA1C;CACNA1F;CSF2RA;CACNA1E;CACNA1H;DPP4;PPP3R2;NEU1;LTA4H;APOE;CACNA1S;ELANE;PRNP;ST14;JUN;ACE;TGFB1;VDR;SRD5A1;SRD5A3;GRIN2C;IL2;GRIN2D;SELP;GGCX;CD209;IL7;FGF19;ALB;REN;SCN2A;FGFR4;HLA-DRB1;FGFR2;FGFR1;GABRB2;GABRB1;ACY1;ITGB3;HTR2C;PTH1R;SLC6A2;ADRA1A;SLC6A3;CKS1B;IKBKB;CA3;CA2;CASP3;CA7;BDKRB1;JAK2;JAK1;CCDC51;MBL2;ANXA1;CAMLG;CHUK;DDX58;MMP2;IL13;SIGMAR1;FOS;F2;F3;MMP9;ADRA2A;F7;IL1A;F8;PIK3CA;IL3RA;TLR9;CRH;PPARG;SCN4A;TLR4;TLR3;HLA-DQB1;TLR2;CRP;LRP1;SERPINC1;ETFDH;ATP2C1;GLRA1;NT5E;PGRMC1;NRAS;CCL5;PTK2B;CCL2;MAPK1;CACNG1;GABRE;CACNG5;CA12;GABRA2;GABRQ;GABRP;F10;CRBN;GABRA6;KC

									NJ11;NOS2;STAT1;IFNB1;GSS;GABRA4;STAT3;OPRK1;CCK;PTPN11;GRIN1;VEGFA;CD4;CD40LG;FCGR2A;KRAS
	Gene Expression Homo sapiens R-HSA-74160	0.92349 5	JUN;VDR;SERPINE1;NR1I2;FOS;NR3C1;PRKAB1;NR3C2;AR;MYC;AKT1;PPARG;PGR;TP53				Helper T-lymphocyte	0.99996 9	ABCB1;LRP1;NR3C1;ICAM1;IKBKB;DPP4;NT5E;PGRMC1;MYC;CCL5;AKT1;PTK2B;MAPK1;LTA4H;CA14;JAK1;MBL2;IFNAR2;PRNP;ST14;ANXA1;TGFB1;CAMLG;CRBN;CHUK;STAT1;DDX58;GSS;STAT3;SIGMAR1;CACNA2D2;PTPN11;FOS;CD4;PIK3CA;KRAS;FGFR1
	Chromatin organization Homo sapiens R-HSA-4839726	0.93342 5	JAK2				Erythroleukemia cell	0.99997 5	ITGB3;SLC7A11;NR3C1;ATP2C1;ICAM1;IKBKB;PGRMC1;MYC;CASP3;AKT1;PTK2B;MAPK1;JAK2;CCDC51;KCNH2;JUN;ANXA1;CAMLG;CRBN;STAT1;GSS;STAT3;PTPN11;PRKAB1;PGR;PPIA;IFNAR1
	Chromatin modifying enzymes Homo sapiens R-HSA-3247509	0.93342 5	JAK2				Cervical carcinoma cell	0.99994	ABCB1;SLC7A11;NR3C1;ATP2C1;ICAM1;IKBKB;PGRMC1;MYC;CASP3;AKT1;PTK2B;MAPK1;IFNAR2;SLC12A3;JUN;ANXA1;CAMLG;CHUK;STAT1;STAT3;PTPN11;HLA-A;PRKAB1;PPARG;KRAS;FGFR4;PPIA;HLA-DRB1;IFNAR1
	Signaling	0	AR;MAPK1				M	0	LRP1;ICAM1;CKS1

	by Rho GTPases Homo sapiens R-HSA-194315	.933716					OLT-4 cell	.999994	B;PGRMC1;MYC;CASP3;AKT1;LTA4H;CA14;JAK1;PRNP;ST14;ANXA1;CAMLG;CRBN;CHUK;DDX58;GSS;STAT3;SIGMAR1;PTPN11;VEGFA;PPIF;KRAS;FGFR1
	M Phase Homo sapiens R-HSA-68886	0.95999	MAPK1						
	Metabolism of carbohydrates Homo sapiens R-HSA-71387	0.966142	SDC2						
	DNA Repair Homo sapiens R-HSA-73894	0.967348	TP53						
	Class I MHC mediated antigen processing & presentation Homo sapiens R-HSA-983169	0.974366	HLA-A						
	Organell	0	PRKAB1						

	e biogenesis and maintenance Homo sapiens R-HSA-1852241	.980123							

Supplementary Table 6: Host-Antihaemorrhagicfever drug.

Genes	**Reactome**			**Kegg**			**Tissues**		
IL6	Term	P-value	Genes	Term	P-value	Genes	Term	P-value	Genes
TNF	Amine ligand-binding receptors Homo sapiens R-HSA-375280	1.76E-47	CHRM2;CHRM3;CHRM1;CHRM4;CHRM5;HTR2B;HTR2C;ADRB1;ADRA1D;HTR2A;ADRB2;ADRA1B;HTR4;ADRA1A;HTR6;HRH1;HTR7;HRH2;HRH4;DRD1;DRD2;DRD3;DRD4;DRD5;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;ADRA2C;ADRA2B;ADRA2A;ADRB3	Neuroactive ligand-receptor interaction	3.37E-75	GABRB3;CHRM2;GABRB2;CHRM3;GABRB1;CHRM1;THRB;THRA;CHRM4;CHRM5;HTR2B;HTR2C;ADRA1D;HTR2A;HTR4;ADRA1B;ADRA1A;EDNRA;HTR6;HTR7;ADORA3;ADORA1;BDKRB1;CHRNB2;CHRNB4;CHRNB3;AVPR2;OPRM1;F2;ADRA2C;GABRG3;ADRA2B;ADRA2A;GABRG1;ADRB3;ADORA2A;ADORA2B;OPRD1;PTGER4;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA5;PTGER1;CHRNA4;PTGE	Adult	1.74E-59	IL1RN;PROS1;SERPINE1;TNF;MPO;ICAM1;HTR7;CCND1;MYC;ADORA1;KDR;AKT1;PDGFRB;PDGFRA;CYBB;HLA-A;SCN8A;TP53;GRIA1;GRIA2;ABCB1;CHRNA4;ADRB1;ADRB2;CACNA1C;DPP4;GRIN2A;ABL1;APOE;DRD2;ELANE;DRD4;GRIA4;JUN;ACE;TGFB1;VCAM1;HTR1A;HTR1B;TRPV1;GRIN2C;GRIN2B;IL2;IL4;IL6;IL7;ALB;CALM1;SCN2A;HLA-DRB1;FGFR2;FGFR1;RET;RYR1;FLT1;I

						R2;CHRNA7;PTGER3;CHRNA6;CHRNA9;OPRL1;ADRB1;ADRB2;GLRA1;GRIN2A;GLRA2;HRH1;HRH2;HRH4;CHRNA10;DRD1;GABRE;DRD2;GABRD;DRD3;DRD4;GRIA3;DRD5;GRIA4;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;HTR1E;GABRA5;HTR1F;GABRA4;GABRA3;HTR1D;HTR1A;HTR1B;OPRK1;TRPV1;GRIN2C;GRIN2B;GRIN2D;GRIN1;GRIN3B;GRIN3A			FNA1;FLT3;FLT4;HTR2C;HBB;HTR2A;SLC6A2;SLC6A3;SLC6A4;CASP3;CTLA4;SCN5A;JAK2;CCR5;IL10;VWF;AVPR2;IL13;HTR3A;FOS;HBA1;OPRM1;F2;F3;MMP9;F7;IL1A;F8;F9;ADRB3;IFNG;IL1B;KIT;PPARG;PDE5A;SCN4A;PPARA;MET;TLR4;TLR2;CRP;NR1I2;NOD2;PTGS2;NRAS;NT5E;CCL5;ERBB2;CCL2;MAPK3;NTRK1;IFNB1;NTRK3;AKR1C1;STAT3;PTPN11;VEGFA;GRIN1;CD4;CD40LG;KRAS;TEK
TP53	Signal Transduction Homo sapiens R-HSA-162582	1.40E-46	ATF1;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;SERPINE1;CHRM5;NCF4;HTR4;TNF;RPS6KA3;HTR6;EDNRA;HTR7;CCND1;MYC;ADORA3;ADORA1;KDR;AKT1;PDE8B;PDE8A;PDGFRB;PDGFRA;PRKAB2;MAP2K1;CPT1A;CYBB;CYBA;PRKAB1;RAF1;TP53;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADRB1;ADRB2;GRIN2A;HRH1;HRH2;HRH4;ABL1;DRD1;APOE;DRD2;DRD3;DRD4;DRD5;JUN;TGFB1;HTR1E;HTR1F;HTR1D;PDE2A;HTR1A;HTR1B	cAMP signaling pathway	2.29E-54	CHRM2;RYR2;CHRM1;PDE3B;PIK3CD;PIK3CB;HTR4;EDNRA;HTR6;RAC2;ADORA1;PDE4B;AKT1;PDE4A;RAC1;MAP2K1;PDE4D;PDE4C;FOS;ADORA2A;PIK3CA;PPARA;RAF1;GRIA1;GRIA2;NPR1;PTGER2;PTGER3;ADCY2;ADRB1;CACNA1D;ADCY1;ADRB2;CACNA1C;ADCY5;GRIN2A;MAPK1;CACNA1S;DRD1;DRD2;GRIA3;DRD5;GRIA4;MAPK3;JUN;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;BRAF;NFATC1;GRIN2C;GRIN2B;NFKB1;GRIN2D;GR	Immune system	3.35E-54	IL1RN;NCF1;SERPINE1;TNF;MPO;ICAM1;CCND1;MYC;KDR;AKT1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;CYBB;HLA-A;PLA2G10;RAF1;TP53;ATF3;ABCB1;PRKDC;ADRB2;DPP4;TPO;HRH2;HRH4;ABL1;APOE;ELANE;PRNP;JUN;ACE;TGFB1;VCAM1;HSPA5;NFKB1;IL2;IL4;NFKBIA;IL6;IL7;ALB;ATM;CALR;CALM1;HLA-DRB1;FGFR1;FLT1;IFNA1;ITGB3;PIK3CD;HBB;IKBKB;CASP9;SMPD1;CASP3;RAC2;CASP1;PDE4A;JAK2;CCR5;CCR4

			;BRAF;NFATC1;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;NFKBIA;IL6;PDE3A;CALM1;FGFR2;FGFR1;RET;FLT1;CXCL8;PTGDR2;ITGB3;FLT4;PDE3B;PRKAG1;HTR2B;PRKAG2;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1B;ADRA1A;PRKAG3;IKBKB;CASP9;CASP3;RAC2;PDE4B;PDE4A;BDKRB1;ITGAV;RAC1;JAK2;CCR5;CCR4;JAK1;VWF;PARP1;PDE4D;AVPR2;PDE4C;OPRM1;F2;ADRA2C;ADRA2B;MMP9;ADRA2A;PIK3CA;ADORA2A;ADRB3;ADORA2B;KIT;PPARD;OPRD1;PTGER4;PRKAA1;PRKAA2;LRP1;PTGER1;PTGER2;PTGER3;OPRL1;ADCY2;ADCY1;ADCY5;NRAS;PDE11A;RXRA;MAPK7;CXCR1;CCL5;ERBB2;CCL3;CCL2;MAPK1;PDE6B;PDE6A;MAPK6;CD55;MAPK4;MAPK3;NTRK1;STAT1;AKR1C1;STAT3;LIMK1;AKR1C3;OPRK1;PTPN11;VEGFA;GRIN1;MAPK11;PDE10A;FAS;KRAS;PDE7B;TEK;PDE7A			IN1;NFKBIA;GRIN3B;GRIN3A;PDE10A;PDE3A;CALM1			;JAK1;MBL2;IL10;VWF;PARP1;DDX58;IL13;FOS;HBA1;F2;F3;MMP9;IL1A;F8;F9;ADORA2A;IFNG;IL1B;CANX;KIT;PPARG;PPARA;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGER4;LRP1;PTGER1;NOD2;PTGS2;PTGS1;NRAS;NT5E;CXCR1;CCL5;CCL3;CCL2;MAPK1;PDE6B;CD55;MAPK3;NOS2;STAT1;IFNB1;STAT3;PLA2G2A;PTPN11;VEGFA;CD4;FCGR2A;CD40LG;FAS;TEK
I	Signaling	2	CHRM2;CHRM3;C	Cal	6	RET;RYR1;CHRM2;	Ga	2	RET;HTR2B;HTR2C

L10	by GPCR Homo sapiens R-HSA-372790	.42E-41	HRM1;CHRM4;CHRM5;HTR4;RPS6KA3;HTR6;EDNRA;HTR7;ADORA3;ADORA1;AKT1;PDE8B;PDE8A;PDGFRB;PDGFRA;MAP2K1;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADRB1;ADRB2;GRIN2A;HRH1;HRH2;HRH4;DRD1;DRD2;DRD3;DRD4;DRD5;HTR1E;HTR1F;HTR1D;PDE2A;HTR1A;HTR1B;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;PDE3A;CALM1;FGFR2;FGFR1;RET;CXCL8;PTGDR2;ITGB3;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1B;ADRA1A;RAC2;PDE4B;PDE4A;BDKRB1;RAC1;JAK2;CCR5;CCR4;JAK1;VWF;PDE4D;AVPR2;PDE4C;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;PIK3CA;ADORA2A;ADRB3;ADORA2B;KIT;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;OPRL1;ADCY2;ADCY1;ADCY5;NRAS;PDE11A;MAPK7;CXCR1;CCL5;ERBB2;CCL3;CCL2;MAPK1;CD55;MAPK3;OPRK1;GRIN1;PDE10A;KRAS;PDE7B;	ciu m sig nal ing pat hw ay	.68E-50	RYR2;CHRM3;CHRM1;FLT1;FLT4;CHRM5;HTR2B;HTR2C;ADRA1D;HTR2A;HTR4;ADRA1B;ADRA1A;SLC8A1;EDNRA;HTR6;HTR7;KDR;BDKRB1;PDGFRB;PDGFRA;TNNC1;ADRB3;ADORA2A;ADORA2B;MET;PDE1C;PDE1B;PTGER1;PDE1A;CHRNA7;PTGER3;CACNA1B;ITPR1;ITPR2;ADCY2;ADRB1;CACNA1D;ITPR3;ADCY1;ADRB2;CACNA1C;GRIN2A;HRH1;HRH2;ERBB2;CACNA1S;DRD1;DRD5;NTRK1;NOS2;NTRK3;GRIN2C;GRIN2D;GRIN1;VEGFA;CALM1;FGFR2;FGFR1	ngl ion	.09E-40	;PIK3CD;HTR2A;HTR4;SLC6A2;TNF;SLC6A3;SLC6A4;HTR6;HTR7;CASP3;ADORA1;AKT1;HTR3A;FOS;OPRM1;SCN10A;ADORA2A;IL1B;SCN8A;TP53;ATF3;GRIA1;GRIA2;CHRNA4;CACNA1B;OPRL1;CACNA1D;PTGS2;GRIN2A;APOE;DRD1;DRD2;SCN3A;DRD3;DRD4;GRIA4;MAPK3;NTRK1;PRNP;JUN;KCNJ6;ACE;HTR1E;HTR1F;NTRK3;HTR1D;HTR1A;HTR1B;OPRK1;TRPV1;GRIN2C;GRIN2B;GRIN2D;VEGFA;GRIN1;IL6;ALB;CALM1

			TEK;PDE7A						
IFNG	Neurotransmitter Receptor Binding And Downstream Transmission In The Postsynaptic Cell Homo sapiens R-HSA-112314	5.48E-38	GRIA1;GABRB3;GRIA2;GABRB2;CHRNA3;GABRB1;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9;ADCY2;ADCY1;ADCY5;RPS6KA3;GRIN2A;MAPK1;CACNG2;GRIA3;GRIA4;KCNJ3;CHRNB2;GABRQ;GABRA2;KCNJ5;GABRA1;CHRNB4;KCNJ6;CHRNB3;GABRA6;KCNJ9;GABRA5;GABRA4;GABRA3;BRAF;GRIN2C;GABRG3;GRIN2B;GRIN2D;GRIN1;RAF1;CALM1	Morphine addiction	2.43E-46	GABRB3;GABRB2;GABRB1;PDE1C;PDE1B;PDE1A;PDE3B;CACNA1B;ADCY2;ADCY1;ADCY5;PDE11A;ADORA1;PDE4B;PDE4A;DRD1;PDE8B;GABRE;PDE8A;GABRD;KCNJ3;GABRA2;GABRQ;GABRA1;GABRP;KCNJ5;KCNJ6;GABRA6;GABRA5;KCNJ9;PDE4D;GABRA4;PDE4C;GABRA3;PDE2A;OPRM1;GABRG3;GABRG1;PDE10A;PDE3A;PDE7B;PDE7A	HUVEC cell	1.66E-38	FLT1;SERPINE1;TFPI;PTGS2;TNF;ICAM1;CASP9;CASP3;KDR;AKT1;CCL2;MAPK1;ITGAV;APOE;MAPK3;MAP2K1;JUN;TGFB1;VCAM1;ACE;VWF;PARP1;F10;STAT3;HBA1;MMP9;F3;VEGFA;IL4;NFKBIA;PROCR;IL1A;IL6;IFNG;IL1B;ALB;PPARG;TEK;TP53;TLR4
CD209	Transmission across Chemical Synapses Homo sapiens R-HSA-112315	4.71E-37	GABRB3;ACHE;GABRB2;GABRB1;SLC6A3;RPS6KA3;CHRNB2;CHRNB4;CHRNB3;CACNA2D1;CACNA2D2;GABRG3;CACNB1;RAF1;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9;CACNA1B;ADCY2;ADCY1;ADCY5;GRIN2A;MAPK1;CACNG2;GRIA3;GRIA4;KCNJ3;GABRA2;GABRQ;GABRA1;KCNJ5;KCNJ6;GABRA6;GABRA5;KCNJ9;GABRA4;GABRA3;BRAF;GRIN2C;GRIN2B;GRIN2D;GRIN1;CALM1	Nicotine addiction	6.81E-45	GABRB3;GRIA1;GABRB2;GRIA2;GABRB1;CHRNA4;CHRNA7;CHRNA6;CACNA1B;GRIN2A;GABRE;GABRD;GRIA3;GRIA4;CHRNB2;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;GABRA5;GABRA4;GABRA3;GRIN2C;GABRG3;GRIN2B;GABRG1;GRIN1;GRIN2D;GRIN3B;GRIN3A	U-937 cell	1.39E-37	IFNA1;TNF;ICAM1;CASP9;MYC;CASP3;CASP1;AKT1;CCL2;MAPK1;ELANE;MAPK3;IL10;MAP2K1;JUN;TGFB1;VCAM1;PARP1;STAT1;IFNB1;FOS;MMP9;F3;IL2;IL4;NFKBIA;IL1A;IL6;CD4;FCGR2A;IFNG;IL1B;TLR4;TP53

IL1B	Class A/1 (Rhodopsin-like receptors) Homo sapiens R-HSA-373076	4.45E-36	CHRM2;CHRM3;CHRM1;CXCL8;PTGDR2;CHRM4;CHRM5;HTR2B;HTR2C;ADRA1D;HTR2A;HTR4;ADRA1B;ADRA1A;HTR6;EDNRA;HTR7;ADORA3;ADORA1;BDKRB1;CCR5;CCR4;AVPR2;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;ADRB3;ADORA2A;ADORA2B;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;OPRL1;ADRB1;ADRB2;HRH1;CXCR1;HRH2;CCL5;HRH4;CCL3;CCL2;DRD1;DRD2;DRD3;DRD4;DRD5;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;OPRK1	Human cytomegalovirus infection	7.59E-43	ATF2;CXCL8;IFNA1;ITGB3;PIK3CD;PIK3CB;TNF;IKBKB;CASP9;CCND1;MYC;CASP3;RAC2;AKT1;ITGAV;RAC1;CCR5;JAK1;PDGFRA;MAP2K1;HLA-A;PIK3CA;IL1B;RAF1;TP53;ATF4;PTGER4;PTGER1;PTGER2;PTGER3;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;PTGS2;ADCY5;NRAS;CCL5;CCL3;CCL2;MAPK1;MAPK3;IFNB1;STAT3;NFATC1;NFKB1;VEGFA;NFKBIA;MAPK11;IL6;FAS;KRAS;CALR;CALM1	Stromal cell	3.77E-34	PTGER4;FLT1;FLT3;FLT4;SERPINE1;PTGS2;TNF;ICAM1;DPP4;NT5E;CCND1;MYC;CASP3;CCL5;KDR;CCL3;AKT1;CCL2;CCR5;MAPK3;PDGFRB;IL10;JUN;TGFB1;VCAM1;VWF;STAT3;HBA1;MMP9;IL2;VEGFA;IL4;IL1A;IL6;CD4;IFNG;IL7;IL1B;KIT;S100A4;PPARG;TP53;MET;FGFR2
HLA-DRB1	Neuronal System Homo sapiens R-HSA-112316	1.82E-32	GABRB3;ACHE;GABRB2;GABRB1;SLC6A3;RPS6KA3;CHRNB2;KCNH2;CHRNB4;CHRNB3;CACNA2D1;CACNA2D2;GABRG3;CACNB1;KCNQ3;KCNQ5;RAF1;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9;CACNA1B;ADCY2;ADCY1;ADCY5;GRIN2A;MAPK1;CACNG2;GRIA3;GRIA4;KCNJ3;GABRA2;GABRQ;GABRA1;KCNJ5;KCNJ6;GABRA6;GABRA5;K	Serotonergic synapse	1.90E-41	GABRB3;GABRB2;GABRB1;CACNA1B;ITPR1;HTR2B;ITPR2;HTR2C;CACNA1D;ITPR3;CACNA1C;HTR2A;HTR4;PTGS2;SLC6A4;ADCY5;PTGS1;HTR6;NRAS;HTR7;CASP3;MAPK1;CACNA1S;KCNJ3;MAPK3;KCNJ5;MAP2K1;KCNJ6;HTR1E;HTR1F;KCNJ9;HTR3E;HTR1D;HTR1A;HTR3C;HTR1B;HTR3D;BRAF;HTR3A;HTR3B;KRAS;RAF1	Artery	4.69E-29	NCF1;SERPINE1;HTR2B;HBB;HTR2A;MPO;ADRA1A;SLC8A1;EDNRA;CASP3;ADORA1;AKT1;PDE4A;IL10;PARP1;CYBB;CYBA;HTR3A;FOS;F2;MMP9;F7;F9;IL1B;PPARG;PDE5A;PTGER4;CRP;NPR1;NPR2;PTGER3;ADRB1;ADRB2;CACNA1C;PTGS1;PGRMC1;CCL2;APOE;MAPK3;JUN;ACE;TGFB1;HSPA5;NOS2;HTR1D;HTR1A;HTR1B;TRPV1;IL6;ALB;CALM1

			CNJ9;GABRA4;GABRA3;BRAF;GRIN2C;GRIN2B;GRIN2D;GRIN1;CALM1						
F2	GPCR downstream signaling Homo sapiens R-HSA-388396	1.07E-29	CHRM2;CHRM3;CHRM1;CXCL8;PTGDR2;CHRM4;CHRM5;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;HTR4;ADRA1B;ADRA1A;HTR6;EDNRA;HTR7;ADORA3;ADORA1;RAC2;PDE4B;AKT1;PDE4A;BDKRB1;RAC1;JAK2;CCR5;PDE8B;CCR4;PDE8A;JAK1;PDE4D;AVPR2;PDE4C;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;PIK3CA;ADORA2A;ADRB3;ADORA2B;OPRD1;PTGER4;PDE1B;PTGER1;PDE1A;PTGER2;PTGER3;ITPR1;OPRL1;ITPR2;ADCY2;ITPR3;ADRB1;ADCY1;ADRB2;ADCY5;HRH1;PDE11A;CXCR1;HRH2;CCL5;HRH4;DRD1;DRD2;DRD3;DRD4;DRD5;HTR1E;HTR1F;HTR1D;PDE2A;HTR1A;HTR1B;OPRK1;IL2;PDE10A;PDE3A;PDE7B;PDE7A	Lipid and atherosclerosis	1.24E-36	CXCL8;IFNA1;NCF1;NCF4;PIK3CD;PIK3CB;TNF;ICAM1;IKBKB;CASP9;CASP3;CASP1;AKT1;RAC1;JAK2;CYBB;CYBA;FOS;MMP9;PIK3CA;IL1B;PPARG;ATF6;TP53;TLR4;ATF4;TLR2;ITPR1;NRAS;RXRA;CCL5;CCL3;CCL2;MAPK1;MAPK3;JUN;VCAM1;HSPA5;IFNB1;STAT3;NFATC1;NFKB1;NFKBIA;MAPK11;IL6;CD40LG;FAS;KRAS;CALM1	Mast cell	9.57E-29	PTGDR2;PTGS2;MPO;TNF;ICAM1;HRH1;HTR7;HRH2;ADORA3;CCL5;HRH4;CASP1;CCL3;AKT1;CCL2;ELANE;IL10;PDGFRA;TGFB1;VCAM1;ACE;IL13;PTPN11;TRPV1;MMP9;IL2;VEGFA;IL4;IL6;CD4;CD40LG;IFNG;IL1B;ALB;KIT;TLR4;TLR2
ALB	GPCR ligand binding Homo sapiens	2.97E	CHRM2;CHRM3;CHRM1;CXCL8;PTGDR2;CHRM4;CHRM5;HTR2B;HTR2C;ADRA1D;HTR2A;H	Oxytocin signal	2.66E	RYR1;RYR2;PRKAA1;PRKAA2;NPR1;NPR2;ITPR1;PRKAG1;ITPR2;PRKAG2;CACNA1D;ITPR3;AD	Bronchoalve	5.29E	CRP;SERPINE1;PTGS2;MPO;TNF;ICAM1;CCL5;CCL3;PDE4A;CCL2;ELANE;IL10;TGFB1;VCAM1

	R-HSA-500792	-29	TR4;ADRA1B;ADRA1A;HTR6;EDNRA;HTR7;ADORA3;ADORA1;BDKRB1;CCR5;CCR4;AVPR2;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;ADORA2A;ADRB3;ADORA2B;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;OPRL1;ADRB1;ADRB2;HRH1;CXCR1;HRH2;CCL5;HRH4;CCL3;CCL2;DRD1;DRD2;DRD3;DRD4;CD55;DRD5;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;OPRK1	ingpathway	-36	CY2;CACNA1C;ADCY1;PTGS2;PRKAG3;ADCY5;NRAS;MAPK7;CCND1;MAPK1;CACNA1S;CACNG1;CACNG2;KCNJ3;MAPK3;GUCY1A2;KCNJ5;MAP2K1;PRKAB2;JUN;KCNJ6;KCNJ9;CACNA2D1;CACNA2D2;NFATC1;FOS;PRKAB1;CACNB1;KRAS;RAF1;CALM1	olarlavage	-28	;ACE;NOS2;IL13;MMP9;F3;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;ALB;TLR4;TLR2
KRAS	Innate Immune System Homo sapiens R-HSA-168249	2.26E-27	ATF1;RET;ATF2;IFNA1;PROS1;ITGB3;PIK3CD;PIK3CB;IKBKB;CASP9;RPS6KA3;CASP1;AKT1;RAC1;JAK2;JAK1;MBL2;PDGFRB;PDGFRA;MAP2K1;VWF;DDX58;FOS;PIK3CA;IL1B;KIT;TLR8;TLR7;RAF1;TLR4;TLR3;TLR2;CRP;PDE1C;PRKDC;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;NOD2;ADCY5;GRIN2A;NRAS;MAPK7;ERBB2;ABL1;MAPK1;CD55;MAPK3;JUN;IFNB1;LIMK1;BRAF;NFATC1;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;NFKBIA;MAPK11;CD4;FC	Pathways in cancer	9.25E-36	RET;CXCL8;IFNA1;FLT3;FLT4;PIK3CD;PIK3CB;IKBKB;CASP9;EDNRA;CCND1;MYC;CASP3;RAC2;AKT1;BDKRB1;ITGAV;RAC1;JAK2;JAK1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;IL13;FOS;F2;MMP9;PIK3CA;IFNG;KIT;PPARG;RAF1;MET;TP53;PPARD;IFNAR1;PTGER4;PTGER1;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;ADCY5;NRAS;RXRA;ERBB2;ABL1;MAPK1;MAPK3;NTRK1;JUN;TGFB1;NOS2;STAT1;STAT3;BRAF;NFKB1;IL2;VEGFA;IL4;NFKBIA;IL6;IL7;FAS;KRAS;CALM1;FGFR2;FGF	Synovial tissue	8.06E-28	CRP;IL1RN;PTGS2;TNF;ICAM1;CASP3;CCL5;CCL3;AKT1;CCL2;CD55;IL10;JUN;TGFB1;VCAM1;STAT3;MMP9;IL2;VEGFA;IL4;NFKBIA;IL1A;CD4;IL6;CD40LG;IFNG;IL1B;TLR4;TLR2

			GR2A;CD209;KRAS;TEK;CALM1;FGFR2;FGFR1			R1			
TGFB1	Hemostasis Homo sapiens R-HSA-109582	7.09E-27	ORM1;IFNA1;PROS1;ITGB3;SERPINE1;PDE3B;PIK3CD;HBB;PIK3CB;ORM2;SLC8A1;RAC2;AKT1;ITGAV;RAC1;JAK2;JAK1;GUCY1A2;VWF;F2;ADRA2C;F3;ADRA2B;ADRA2A;F7;PROCR;F8;F9;PIK3CA;PDE5A;RAF1;TP53;PDE9A;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;TFPI;NRAS;PDE11A;ABL1;MAPK1;MAPK3;TGFB1;F10;HSPA5;NOS2;IFNB1;PDE2A;PTPN11;L1CAM;IL2;VEGFA;PROC;PDE10A;ALB;PDE3A;KRAS;TEK;CALM1	Cholinergic synapse	1.23E-35	CHRM2;CHRM3;ACHE;CHRNA3;CHRM1;CHRNA4;CHRM4;CHRNA7;CHRM5;CHRNA6;CACNA1B;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;ADCY2;CACNA1C;PIK3CB;ADCY1;ADCY5;NRAS;AKT1;MAPK1;CACNA1S;JAK2;KCNJ3;MAPK3;CHRNB2;CHRNB4;MAP2K1;KCNJ6;FOS;PIK3CA;KCNQ3;KCNQ5;KRAS;ATF4	Vasculature	1.06E-27	CRP;FLT1;FLT4;SERPINE1;PTGS2;TNF;ICAM1;EDNRA;HTR7;KDR;AKT1;CCL2;APOE;MAPK3;PDGFRB;TGFB1;VCAM1;ACE;VWF;CYBB;CYBA;HBA1;MMP9;F3;VEGFA;IL6;IL1B;ALB;PPARG;PDE5A;TEK;TP53;EPHA2
CXCL8	Immune System Homo sapiens R-HSA-168256	8.92E-27	ATF1;ATF2;IL1RN;NCF1;PROS1;NCF4;TNF;ICAM1;RPS6KA3;AKT1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;CYBB;CYBA;HLA-A;RAF1;IFNAR1;PDE1C;PRKDC;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;GRIN2A;ABL1;JUN;VCAM1;HSPA5;BRAF;NFATC1;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;NFKBIA;IL6;CD209;IL7;CALR;CALM1;HLA-DRB1;FGFR2;FGFR	Kaposi sarcoma-associated herpesvirus infection	3.69E-34	CXCL8;IFNA1;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;PTGS2;ICAM1;IKBKB;CASP9;NRAS;CCND1;MYC;CASP3;AKT1;MAPK1;RAC1;CCR5;JAK2;CCR4;JAK1;MAPK3;IFNAR2;JUN;MAP2K1;IFNB1;STAT1;STAT3;NFATC1;HLA-A;FOS;NFKB1;VEGFA;NFKBIA;MAPK11;IL6;PIK3CA;FAS;KRAS;CALM1;RAF1;TP53;TLR3;IFNAR1	Vascular cell	4.72E-26	CRP;FLT1;TGFB1;VCAM1;VWF;SERPINE1;CYBB;HBA1;PTGS2;TNF;MMP9;F3;ICAM1;VEGFA;IL6;IL1B;KDR;AKT1;CCL2;PPARG;APOE;TEK

			1;RET;IFNA1;FLT3;ITGB3;PIK3CD;PIK3CB;IKBKB;CASP9;CASP3;CASP1;CTLA4;ITGAV;RAC1;JAK2;JAK1;MBL2;VWF;DDX58;IL13;FOS;IL1A;PIK3CA;IFNG;IL1B;CANX;KIT;TLR8;TLR7;TLR4;TLR3;HLA-DQB1;TLR2;CRP;ADCY2;ADCY1;NOD2;ADCY5;NRAS;MAPK7;ERBB2;MAPK1;CD55;MAPK3;NOS2;STAT1;IFNB1;STAT3;LIMK1;PTPN11;GRIN1;MAPK11;CD4;FCGR2A;CD40LG;KRAS;TEK						
VEGFA	Ligand-gated ion channel transport Homo sapiens R-HSA-975298	5.63E-25	GABRB3;GABRA2;GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;HTR3E;GABRA3;HTR3C;HTR3D;HTR3A;HTR3B;GABRG3;GLRA1;GLRA2	Hepatitis B	5.34E-34	ATF2;CXCL8;PCNA;IFNA1;PIK3CD;PIK3CB;TNF;CASP9;IKBKB;NRAS;MYC;CASP3;AKT1;MAPK1;JAK2;JAK1;MAPK3;MAP2K1;JUN;TGFB1;DDX58;IFNB1;STAT1;STAT3;BRAF;NFATC1;FOS;MMP9;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;FAS;KRAS;RAF1;TP53;TLR4;TLR3;ATF4;IFNAR1;TLR2	Blood vessel endothelium	8.00E-25	CRP;ABCB1;NCF1;SERPINE1;MPO;PTGS1;EDNRA;HTR7;CASP3;AKT1;CCL2;APOE;MAPK3;IL10;JUN;ACE;HSPA5;PARP1;NOS2;CYBB;CYBA;FOS;F2;MMP9;F7;IL6;IL1B;ALB;PPARG;CALM1;EPHA2
1HLA-B	Signalling by NGF Homo sapiens R-HSA-166520	1.01E-24	ATF1;RET;ITGB3;PIK3CD;PIK3CB;IKBKB;CASP9;RPS6KA3;CASP3;AKT1;RAC1;JAK2;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;PIK3CA;ADORA2A;KIT;RAF1;P	MAPK signaling pathway	5.41E-33	ATF2;FLT1;FLT3;FLT4;TNF;IKBKB;RPS6KA3;MYC;CASP3;KDR;RAC2;AKT1;RAC1;PDGFRB;PDGFRA;MAP2K1;CACNA2D1;CACNA2D2;FOS;CACNB1;IL1A	Breast cancer cell	2.07E-22	ABCB1;FLT1;PRKDC;SERPINE1;PTGS2;TYMS;TNF;CASP9;CCND1;MYC;CASP3;ERBB2;KDR;AKT1;MAPK1;JAK2;MAPK3;JUN;MAP2K1;TGFB1;PARP1;HSP

			DE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;ADCY5;GRIN2A;NRAS;MAPK7;ERBB2;MAPK1;MAPK3;NTRK1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;NFKBIA;MAPK11;KRAS;TEK;CALM1;FGFR2;FGFR1			;IL1B;KIT;RAF1;TP53;MET;ATF4;EPHA2;CACNA1B;CACNA1D;CACNA1C;NRAS;MAPK7;ERBB2;MAPK1;CACNA1S;CACNG1;CACNG2;MAPK3;NTRK1;JUN;TGFB1;BRAF;NFATC1;NFKB1;VEGFA;MAPK11;FAS;KRAS;TEK;FGFR2;FGFR1	line		A5;STAT3;FOS;F2;MMP9;VEGFA;NFKBIA;IL6;PIK3CA;ALB;ATM;PPARG;S100A4;RAF1;TP53;MET
ICAM1	NGF signalling via TRKA from the plasma membrane Homo sapiens R-HSA-187037	4.36E-24	ATF1;RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;RPS6KA3;GRIN2A;NRAS;MAPK7;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;MAPK11;PIK3CA;ADORA2A;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	PI3K-Akt signaling pathway	7.54E-31	CHRM2;ATF2;CHRM1;FLT1;IFNA1;FLT3;FLT4;ITGB3;PIK3CD;PIK3CB;IKBKB;CASP9;CCND1;MYC;KDR;AKT1;ITGAV;RAC1;JAK2;JAK1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;VWF;PIK3CA;KIT;RAF1;TP53;TLR4;MET;ATF4;EPHA2;TLR2;IFNAR1;PRKAA1;PRKAA2;NRAS;RXRA;ERBB2;MAPK1;MAPK3;NTRK1;IFNB1;IL2;NFKB1;VEGFA;IL4;IL6;IL7;KRAS;TEK;FGFR2;FGFR1	Atherosclerotic plaque	6.64E-22	IL10;CRP;TGFB1;ACE;VCAM1;VWF;SERPINE1;HBA1;TFPI;TNF;MMP9;F3;ICAM1;VEGFA;IL6;IL1B;CCL5;ALB;AKT1;CCL2;PPARG;APOE;TLR4
PIK3CA	G alpha (s) signalling events Homo sapiens R-HSA-418555	4.59E-24	PTGER4;PDE1B;PDE1A;PTGER2;PDE3B;ADRB1;ADCY2;ADRB2;ADCY1;HTR4;ADCY5;HTR6;PDE11A;HTR7;HRH2;PDE4B;PDE4A;DRD1;PDE8B;PDE8A;DRD5;PDE4D;PDE2A;AVPR2;PDE4C;PDE10A;ADORA2A;A	cGMP-PKG signaling pathway	9.68E-30	OPRD1;ATF2;NPR1;NPR2;PDE3B;ITPR1;ITPR2;ADRB1;CACNA1D;ITPR3;ADRA1D;ADCY2;ADRB2;CACNA1C;ADCY1;ADRA1B;ADRA1A;SLC8A1;ADCY5;EDNRA;ADORA3;ADORA1;AKT1;MAPK1;CACNA1S;MAPK	Neointima	5.54E-21	PDGFRB;TGFB1;ACE;VCAM1;VWF;SERPINE1;HBA1;TFPI;TNF;MMP9;F3;ICAM1;VEGFA;CCND1;IL1B;KDR;AKT1;CCL2;PPARG;APOE;MAPK3

			DRB3;ADORA2B;PDE3A;PDE7B;PDE7A			3;GUCY1A2;MAP2K1;PDE2A;NFATC1;ADRA2C;ADRA2B;ADRA2A;ADRB3;PDE3A;PDE5A;RAF1;CALM1;ATF4			
APOE	Axon guidance Homo sapiens R-HSA-422475	1.53E-23	RET;ITGB3;RPS6KA3;SCN11A;SCN9A;KDR;RAC2;ITGAV;RAC1;SCN5A;JAK2;JAK1;SCN1A;PDGFRB;PDGFRA;MAP2K1;VWF;MMP9;CACNB1;SCN10A;SCN8A;KIT;KCNQ3;SCN4A;RAF1;MET;EPHA2;CACNA1D;CACNA1C;GRIN2A;NRAS;ERBB2;ABL1;MAPK1;SCN7A;CACNA1S;SCN3A;MAPK3;PRNP;LIMK1;BRAF;PTPN11;L1CAM;GRIN2C;GRIN2B;IL2;GRIN2D;VEGFA;GRIN1;KRAS;TEK;CALM1;SCN2A;FGFR2;FGFR1	Retrograde endocannabinoid signaling	2.00E-29	GRIA1;GABRB3;GRIA2;GABRB2;GABRB1;CACNA1B;ITPR1;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;PTGS2;ADCY5;MAPK1;CACNA1S;GABRE;GABRD;GRIA3;GRIA4;KCNJ3;MAPK3;GABRA2;GABRQ;GABRA1;GABRP;KCNJ5;KCNJ6;GABRA6;GABRA5;KCNJ9;GABRA4;GABRA3;GABRG3;GABRG1;MAPK11	Tendon	4.72E-19	CRP;IL1RN;PTGS2;TNF;ICAM1;CASP3;CCL5;AKT1;CCL2;IL10;TGFB1;VCAM1;HBA1;MMP9;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;ALB;SIK1
AKT1	Developmental Biology Homo sapiens R-HSA-1266738	2.78E-22	RET;ITGB3;TNF;RPS6KA3;SCN11A;SCN9A;KDR;RAC2;AKT1;ITGAV;RAC1;SCN5A;JAK2;JAK1;SCN1A;PDGFRB;PDGFRA;MAP2K1;VWF;MMP9;CACNB1;SCN10A;SCN8A;KIT;KCNQ3;PPARG;SCN4A;PPARA;RAF1;MET;EPHA2;CACNA1D;CACNA1C;GRIN2A;NRAS;RXRA;ERBB2;ABL1;MAPK1;SCN7A;CACNA1S	Chagas disease	4.65E-29	CXCL8;SERPINE1;PIK3CD;PIK3CB;ADCY1;TNF;IKBKB;CCL5;CCL3;AKT1;CCL2;MAPK1;MAPK3;IL10;JUN;ACE;TGFB1;NOS2;IFNB1;FOS;IL2;NFKB1;NFKBIA;MAPK11;IL6;IFNG;PIK3CA;IL1B;FAS;CALR;TLR4;TLR2	Synovia	9.97E-19	IL10;CRP;TGFB1;TNFAIP6;PLA2G2A;TNF;MMP9;IL4;IL1A;CD4;IL6;CD40LG;IFNG;IL1B;CCL5;KIT;PLA2G10;ALB;CCL2;ELANE

			;CACNG2;SCN3A;MAPK3;PRNP;JUN;TGFB1;STAT3;LIMK1;BRAF;PTPN11;L1CAM;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;VEGFA;GRIN1;MAPK11;KRAS;TEK;CALM1;SCN2A;FGFR2;FGFR1						
CCL2	Signaling by VEGF Homo sapiens R-HSA-194138	4.99E-22	RET;FLT1;NCF1;FLT4;ITGB3;NCF4;ITPR1;ITPR2;ITPR3;PIK3CB;GRIN2A;NRAS;ERBB2;KDR;AKT1;MAPK1;ITGAV;RAC1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;CYBB;BRAF;CYBA;GRIN2C;GRIN2B;IL2;GRIN2D;VEGFA;GRIN1;MAPK11;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	InfluenzaA	4.83E-28	CXCL8;IFNA1;PIK3CD;PIK3CB;TNF;ICAM1;CASP9;IKBKB;CASP3;CCL5;CASP1;AKT1;CCL2;MAPK1;JAK2;JAK1;MAPK3;IFNAR2;FDPS;MAP2K1;DDX58;IFNB1;STAT1;NFKB1;NFKBIA;IL1A;IL6;IFNG;PIK3CA;IL1B;FAS;TLR7;RAF1;TLR4;HLA-DRB1;TLR3;IFNAR1;HLA-DQB1	Fruit	5.37E-18	CRP;JUN;TGFB1;PARP1;FOS;F2;PTGS2;TNF;MMP9;ICAM1;VEGFA;CASP9;IL6;CD4;CD40LG;CCND1;CASP3;SMPD1;IL1B;ALB;AKT1;PPARG;TP53;MAPK3
ACE	Cytokine Signaling in Immune system Homo sapiens R-HSA-1280215	6.63E-22	RET;IL1RN;IFNA1;FLT3;ITGB3;PIK3CD;PIK3CB;TNF;ICAM1;IKBKB;CASP3;CASP1;JAK2;JAK1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;VWF;DDX58;IL13;HLA-A;IL1A;PIK3CA;IFNG;IL1B;KIT;RAF1;HLA-DQB1;IFNAR1;NOD2;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;VCAM1;STAT1;IFNB1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2	AGE-RAGE signaling pathway in diabetic complicatio	5.29E-28	CXCL8;SERPINE1;PIK3CD;PIK3CB;TNF;ICAM1;NRAS;CCND1;CASP3;AKT1;CCL2;MAPK1;RAC1;JAK2;MAPK3;JUN;TGFB1;VCAM1;STAT1;STAT3;CYBB;NFATC1;F3;NFKB1;VEGFA;IL1A;MAPK11;IL6;PIK3CA;IL1B;KRAS	Mesenchymal stem cell	3.93E-17	TNFAIP6;TNF;ICAM1;CCND1;MYC;CASP3;KDR;AKT1;CCL2;MAPK3;PDGFRB;IL10;TGFB1;VCAM1;VWF;STAT3;HBA1;MMP9;VEGFA;IL6;CD4;IL1B;ALB;KIT;PPARG;TP53;TLR4

			;GRIN2D;GRIN1;IL6;CD4;CD40LG;IL7;KRAS;TEK;CALM1;HLA-DRB1;FGFR2;FGFR1	ns					
TLR4	Downstream signal transduction Homo sapiens R-HSA-186763	2.33E-21	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;STAT1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Leishmaniasis	1.22E-27	NCF1;NCF4;PTGS2;TNF;MAPK1;JAK2;JAK1;MAPK3;IL10;JUN;TGFB1;NOS2;STAT1;CYBB;CYBA;FOS;NFKB1;IL4;NFKBIA;IL1A;MAPK11;FCGR2A;IFNG;IL1B;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Marrow	6.94E-17	TGFB1;IFNA1;FLT3;ITGB3;HBB;HLA-A;TNF;IL2;VEGFA;IL1A;IL6;CD4;CD40LG;IL7;IL1B;ALB;KIT;ABL1;CCL3;PPARG;JAK2;HLA-DRB1
JAK2	Phase 0 - rapid depolarisation Homo sapiens R-HSA-5576892	7.35E-21	CACNA2D1;CACNA2D2;CACNA1D;CACNA1C;CACNB1;SCN10A;SCN11A;SCN8A;SCN9A;SCN7A;SCN4A;CACNA1S;SCN5A;CACNG1;CACNG2;SCN2A;CALM1;SCN3A;SCN1A	Chemical carcinogenesis	1.16E-26	ATF2;CHRNA3;CHRNA4;NR1I3;CHRNA7;CACNA1B;CHRNA9;PIK3CD;ADCY2;ADRB1;CACNA1D;ADCY1;ADRB2;CACNA1C;PIK3CB;PTGS2;ADCY5;RPS6KA3;NRAS;RXRA;CCND1;MYC;AKT1;MAPK1;CACNA1S;JAK2;MAPK3;CHRNB2;JUN;CHRNB4;MAP2K1;PTGES3;STAT3;FOS;NFKB1;VEGFA;ADRB3;PIK3CA;KRAS;PPARA;RAF1;ATF4	Gingiva	1.49E-16	IL10;CRP;TGFB1;PTGS2;TNF;MMP9;ICAM1;IL4;IL1A;IL6;CD4;CD40LG;IFNG;CASP3;IL1B;CCL2;TLR4;ELANE;TLR2
CRP	VEGFA-VEGFR2 Pathway	1.1	RET;NCF1;ITGB3;NCF4;ITPR1;ITPR2;ITPR3;PIK3CB;GRIN	Toll-like	4.3	CXCL8;IFNA1;PIK3CD;PIK3CB;TNF;IKBKB;CCL5;CCL3;AK	Acute	1.6	TGFB1;IFNA1;PARP1;TYMS;TNF;IL2;CASP9;CD4;CCND1

	Homo sapiens R-HSA-4420097	4E-20	2A;NRAS;ERBB2;KDR;AKT1;MAPK1;ITGAV;RAC1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;CYBB;BRAF;CYBA;GRIN2C;GRIN2B;IL2;GRIN2D;VEGFA;GRIN1;MAPK11;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	receptor signaling pathway	6E-26	T1;MAPK1;RAC1;MAPK3;IFNAR2;MAP2K1;JUN;IFNB1;STAT1;FOS;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;IL1B;TLR8;TLR7;TLR4;TLR3;IFNAR1;TLR2	lymphoblastic leukemia cell	1E-16	;IL7;CASP3;ERBB2;ABL1;AKT1;FAS;KRAS;TP53
CCL5	Signaling by Interleukins Homo sapiens R-HSA-449147	1.21E-20	RET;IL1RN;FLT3;ITGB3;PIK3CD;PIK3CB;NOD2;IKBKB;GRIN2A;NRAS;CASP3;ERBB2;CASP1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;STAT1;STAT3;IL13;BRAF;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;IL1A;IL6;CD4;PIK3CA;IL7;IL1B;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	C-type lectin receptor signaling pathway	8.75E-25	ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;PTGS2;TNF;IKBKB;NRAS;CASP1;AKT1;MAPK1;MAPK3;IL10;JUN;STAT1;NFATC1;PTPN11;IL2;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;CD209;IL1B;KRAS;RAF1;CALM1	Ovarycancer cell line	3.34E-16	JUN;ABCB1;TGFB1;PARP1;SERPINE1;STAT3;F2;TNF;MMP9;VEGFA;CASP9;CCND1;MYC;CASP3;ERBB2;AKT1;TP53;MAPK3
IFNA1	DAP12 signaling Homo sapiens R-HSA-2424491	2.41E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;RAC1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RA	Osteoclast differentiation	1.76E-24	NCF1;ITGB3;NCF4;PIK3CD;PIK3CB;TNF;IKBKB;AKT1;MAPK1;RAC1;JAK1;MAPK3;IFNAR2;MAP2K1;JUN;TGFB1;IFNB1;STAT1;CYBA;NFATC1;FOS;NFKB1;NFKBIA;IL1A;MAPK11;FCGR2A;IFNG;PIK3CA;IL1B;PPARG;IFNAR1	Cervicalcancer cell line	6.25E-16	JUN;IFNA1;PARP1;HSPA5;STAT1;IFNB1;STAT3;FOS;TNF;CASP9;IL6;CD4;CCND1;MYC;CASP3;ALB;AKT1;APOE;CALM1;TP53;MAPK3

			F1;FGFR2;FGFR1						
CD4	Signaling by PDGF Homo sapiens R-HSA-186797	3.01E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;STAT1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Prion disease	2.72E-24	RYR1;ATF2;RYR2;NCF1;NCF4;CACNA1B;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;CACNA1C;PIK3CB;TNF;CASP9;GRIN2A;TUBA1A;CASP3;CCL5;RAC2;MAPK1;RAC1;CACNA1S;MAPK3;PRNP;HSPA5;TUBB;CYBB;CYBA;GRIN2C;TUBB4B;GRIN2B;GRIN2D;GRIN1;IL1A;MAPK11;GRIN3B;IL6;GRIN3A;PIK3CA;IL1B;ATF4	NIH-3T3 cell	7.70E-16	RET;NTRK1;MAP2K1;JUN;TGFB1;STAT3;FOS;TNF;NRAS;CCND1;MYC;ALB;ERBB2;ABL1;AKT1;MAPK1;PPARG;KRAS;RAF1;JAK2;TP53;MAPK3
TLR3	Downstream signaling of activated FGFR2 Homo sapiens R-HSA-5654696	3.25E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Human T-cell leukemia virus 1 infection	5.31E-24	ATF2;PIK3CD;ADCY2;ADCY1;PIK3CB;TNF;ICAM1;ADCY5;IKBKB;POLB;NRAS;CCND1;MYC;AKT1;MAPK1;JAK1;MAPK3;FDPS;JUN;MAP2K1;TGFB1;NFATC1;HLA-A;FOS;IL2;NFKB1;NFKBIA;IL6;CD4;PIK3CA;CANX;ATM;KRAS;CALR;TP53;HLA-DRB1;ATF4;HLA-DQB1	Lamina propria	2.66E-15	IL10;TGFB1;IL13;NOD2;TNF;IL2;ICAM1;IL4;IL6;CD4;CD40LG;IFNG;IL1B;KIT;TLR4;TLR2
CCR5	Downstream signaling of activated FGFR4 Homo sapiens R-HSA-5654716	3.25E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;V	Dopaminergic synapse	6.26E-24	GRIA1;ATF2;GRIA2;CACNA1B;ITPR1;ITPR2;CACNA1D;ITPR3;CACNA1C;SLC6A3;ADCY5;GRIN2A;AKT1;DRD1;DRD2;DRD3;DRD4;GRIA3;SCN1A;DRD5;GRIA4;KCNJ3;KCNJ5;KCNJ6;KCNJ9;FOS	Pancreatic cancer cell	3.59E-15	JUN;TGFB1;PARP1;STAT3;PTGS2;MMP9;VEGFA;CASP9;NFKBIA;CCND1;MYC;CASP3;IL1B;AKT1;KRAS;TP53;MET;MAPK3

			WF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1			;GRIN2B;MAPK11;CALY;CALM1;ATF4			
SERPINE1	Downstream signaling of activated FGFR3 Homo sapiens R-HSA-5654708	3.25E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Hepatitis C	9.52E-24	IFNA1;PIK3CD;PIK3CB;TNF;CASP9;IKBKB;NRAS;RXRA;CCND1;MYC;CASP3;AKT1;MAPK1;JAK1;MAPK3;IFNAR2;MAP2K1;DDX58;IFNB1;STAT1;STAT3;BRAF;NFKB1;NFKBIA;IFNG;PIK3CA;FAS;KRAS;RAF1;PPARA;TP53;TLR3;IFNAR1	Peritoneal cavity	8.35E-15	IL10;IL6;CD4;TGFB1;IL1B;ALB;CCL2;TNF;IL2;ICAM1;VEGFA
IL2	Cardiac conduction Homo sapiens R-HSA-5576891	3.71E-20	RYR1;RYR2;NPR1;NPR2;ITPR1;ITPR2;CACNA1D;ITPR3;CACNA1C;SLC8A1;SCN11A;SCN9A;SCN7A;CACNA1S;SCN5A;CACNG1;CACNG2;SCN3A;SCN1A;KCNH2;CACNA2D1;CACNA2D2;CACNB1;SCN10A;SCN8A;SCN4A;CALM1;SCN2A	Rap1 signaling pathway	1.22E-23	FLT1;FLT4;ITGB3;PIK3CD;ADCY2;ADCY1;PIK3CB;ADCY5;GRIN2A;NRAS;KDR;RAC2;AKT1;MAPK1;RAC1;DRD2;MAPK3;PDGFRB;PDGFRA;MAP2K1;BRAF;GRIN2B;GRIN1;VEGFA;MAPK11;ADORA2A;PIK3CA;ADORA2B;KIT;KRAS;TEK;CALM1;RAF1;MET;FGFR2;EPHA2;FGFR1	Knee	1.15E-14	IL10;CRP;IL1RN;TGFB1;F10;PROS1;AKR1C1;F2;PTGS2;TNF;MMP9;F3;VEGFA;IL1A;IL6;F8;PGRMC1;IL1B;ALB;SIK1;DDR2
IL4	Signaling by FGFR4 Homo sapiens R-HSA-5654743	4.56E-2	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAP	Human immunodef	1.73E-2	IFNA1;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;TNF;IKBKB;CASP9;NRAS;CASP3;RAC2;AKT1;MAPK1;RAC1;CCR5;MAPK3;JUN;MAP2K1;IF	K-562 cell	1.35E-1	JUN;ABCB1;IFNA1;PARP1;ITGB3;STAT3;HBB;TNF;IL2;CASP9;CCND1;IFNG;MYC;CASP3;ABL1;AKT1;JAK2;TP53

		0	APK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	icie ncy vir us 1 inf ect ion	3	NB1;LIMK1;NFATC1;HLA-A;FOS;NFKB1;NFKBIA;MAPK11;CD4;PIK3CA;FAS;ATM;KRAS;CALR;CALM1;RAF1;TLR4;TLR2		4	
HLA-A	Downstream signaling of activated FGFR1 Homo sapiens R-HSA-5654687	4.56E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Circadian entrainment	3.92E-23	GRIA1;RYR1;GRIA2;RYR2;ITPR1;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;ADCY5;GRIN2A;MAPK1;GRIA3;GRIA4;KCNJ3;MAPK3;GUCY1A2;KCNJ5;KCNJ6;KCNJ9;FOS;GRIN2C;GRIN2B;GRIN2D;GRIN1;CALM1	Embryonic fibroblast	2.00E-14	JUN;TGFB1;LRP1;DDX58;STAT1;IFNB1;STAT3;TNF;IKBKB;NFKBIA;CCND1;MYC;CASP3;AKT1;PPARG;ATM;TP53;ATF4;MAPK3
STAT3	Signaling by FGFR3 Homo sapiens R-HSA-5654741	5.10E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	PD-L1 expression and PD-1 checkpoint pathway in can	6.38E-23	PIK3CD;PIK3CB;IKBKB;NRAS;AKT1;MAPK1;JAK2;JAK1;MAPK3;MAP2K1;JUN;STAT1;STAT3;NFATC1;PTPN11;FOS;NFKB1;NFKBIA;MAPK11;CD4;IFNG;PIK3CA;KRAS;RAF1;TLR4;TLR2	Colorectal cancer cell	3.53E-14	TGFB1;PARP1;STAT3;TYMS;PTGS2;MMP9;VEGFA;CASP9;CCND1;PIK3CA;MYC;CASP3;AKT1;KRAS;TP53;ATF3;MAPK3

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STAT1	IRS-mediated signalling Homo sapiens R-HSA-112399	6.85E-20	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;PIK3CB;PRKAG3;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Pathways of neurodegeneration	8.74E-23	RYR1;CHRM3;RYR2;CHRM1;CHRM5;TNF;SLC6A3;CASP9;TUBA1A;CASP3;RAC1;MAP2K1;TUBB;SIGMAR1;CYBB;IL1A;IL1B;RAF1;ATF6;ATF4;GRIA1;GRIA2;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;CACNA1C;PTGS2;GRIN2A;NRAS;MAPK1;CACNA1S;GRIA3;GRIA4;MAPK3;PRNP;HSPA5;NOS2;BRAF;GRIN2C;TUBB4B;GRIN2B;NFKB1;GRIN2D;GRIN1;MAPK11;IL6;FAS;KRAS;CALM1	Capillary	3.54E-14	CRP;ABCB1;TGFB1;ACE;SERPINE1;HBB;F2;MPO;MMP9;IL6;HTR7;CASP3;SMPD1;IL1B;ALB;AKT1;CCL2;APOE;SCN2A;MAPK3
F3	Signaling by FGFR1 Homo sapiens R-HSA-5654736	7.14E-20	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Alzheimer disease	1.40E-22	CHRM3;CHRM1;LRP1;CHRNA7;CHRM5;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;CACNA1C;PIK3CB;PTGS2;TNF;IKBKB;CASP9;GRIN2A;NRAS;TUBA1A;CASP3;AKT1;MAPK1;APOE;CACNA1S;MAPK3;MAP2K1;NOS2;TUBB;CYBB;BRAF;GRIN2C;TUBB4B;GRIN2B;NFKB1;GRIN2D;GRIN1;IL1A;IL6;PIK3CA;IL1B;FAS;KRAS;CALM1;RAF1;ATF6;ATF4	Rotnodule	4.33E-14	RET;CRP;TGFB1;HBA1;F2;TNF;MMP9;IL2;VEGFA;TPO;NRAS;PGRMC1;CD4;CD40LG;CCND1;MYC;ALB;KIT;ERBB2;KRAS;TP53;HLA-DRB1
CCL3	Gastrin-CREB signalling pathway	9.46	RET;CHRM3;CHRM1;PTGER1;ITGB3;CHRM5;ITPR1;HTR2B;ITPR2;HTR2C;I	TNF signal	1.56	ATF2;PIK3CD;PIK3CB;NOD2;PTGS2;TNF;ICAM1;IKBKB;CASP3;CCL5;AKT1;C	HaCaT cel	4.53	JUN;IL6;TGFB1;PARP1;STAT1;CASP3;IL1B;AKT1;PTGS2;TNF;MMP9;TP53

	via PKC and MAPK Homo sapiens R-HSA-881907	E-20	TPR3;ADRA1D;HTR2A;ADRA1B;ADRA1A;RPS6KA3;GRIN2A;NRAS;EDNRA;HRH1;MAPK7;ERBB2;BDKRB1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;F2;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	ing pathway	E-22	CL2;MAPK1;MAPK3;MAP2K1;JUN;VCAM1;IFNB1;FOS;MMP9;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;IL1B;FAS;ATF4	l	E-14	
CTLA4	Insulin receptor signalling cascade Homo sapiens R-HSA-74751	9.93E-20	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;PIK3CB;PRKAG3;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Yersinia infection	3.05E-22	CXCL8;PIK3CD;PIK3CB;TNF;IKBKB;RPS6KA3;CASP1;RAC2;AKT1;CCL2;MAPK1;RAC1;MAPK3;IL10;MAP2K1;JUN;IFNB1;LIMK1;NFATC1;FOS;IL2;NFKB1;NFKBIA;MAPK11;IL6;CD4;FCGR2A;PIK3CA;IL1B;TLR4	Fiber	4.78E-14	RYR1;CRP;CHRNA4;TNF;SLC6A3;SLC6A4;HTR7;SCN11A;CASP3;SCN9A;ERBB2;AKT1;APOE;CACNA1S;NTRK1;TGFB1;NTRK3;HTR3A;FOS;TRPV1;F2;MMP9;VEGFA;SCN10A;IL6;IL1B;ALB;PPARG;CALM1;TP53
CASP3	IGF1R signaling cascade Homo sapiens R-HSA-2428924	1.12E-19	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;PIK3CB;PRKAG3;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RA	Coronavirus disease	4.52E-22	CXCL8;IFNA1;PIK3CD;PIK3CB;TNF;IKBKB;CASP1;CCL2;MAPK1;JAK1;MBL2;MAPK3;IFNAR2;JUN;ACE;VWF;IFNB1;STAT1;DDX58;STAT3;CYBB;FOS;F2;IL2;NFKB1;NFKBIA;MAPK11;IL6;FCGR2A;PIK3CA;IL1B;TLR8;TLR7;TLR4;TLR3;TLR2;IFNAR1	BTO:0000964	6.05E-14	GRIA1;TNFAIP6;CHRNA4;ITPR1;HTR2C;SLC8A1;RPS6KA3;GRIN2A;HTR7;SCN5A;CACNG2;KCNJ3;KCNH2;KCNJ5;SLC15A1;KCNJ6;KCNJ9;HTR3A;GRIN2C;GRIN2B;GRIN2D;GRIN1;ALB;KCNQ3;PDE3A;SCN4A;SCN2A;SLC29A1;SLC29A2

			F1;FGFR2;FGFR1						
MAPK1	Signaling by Type 1 Insulin-like Growth Factor 1 Receptor (IGF1R) Homo sapiens R-HSA-2404192	1.12E-19	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;PIK3CB;PRKAG3;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Ras signaling pathway	4.52E-22	FLT1;FLT3;FLT4;PIK3CD;PIK3CB;IKBKB;GRIN2A;NRAS;HTR7;KDR;RAC2;ABL1;AKT1;MAPK1;RAC1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;PLA2G2A;PTPN11;GRIN2B;NFKB1;GRIN1;VEGFA;PIK3CA;KIT;PLA2G10;KRAS;TEK;CALM1;RAF1;MET;FGFR2;EPHA2;FGFR1	Sputum	8.21E-14	IL10;CRP;IL13;MPO;TNF;MMP9;IL4;IL6;CD4;CD40LG;IFNG;IL1B;CCL5;ALB;ELANE
PTGS2	IRS-related events triggered by IGF1R Homo sapiens R-HSA-2428928	1.12E-19	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;PIK3CB;PRKAG3;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Fluid shear stress and atherosclerosis	4.79E-22	PRKAA1;PRKAA2;NCF1;ITGB3;PIK3CD;PIK3CB;TNF;ICAM1;IKBKB;MAPK7;KDR;RAC2;AKT1;CCL2;ITGAV;RAC1;JUN;VCAM1;CYBA;FOS;MMP9;NFKB1;VEGFA;IL1A;MAPK11;IFNG;PIK3CA;IL1B;CALM1;TP53	Prostate gland cancer cell	1.18E-13	JUN;TGFB1;HSPA5;PARP1;STAT3;AKR1C3;PTGS2;TNF;MMP9;VEGFA;NFKBIA;CASP9;IL6;CCND1;MYC;CASP3;ERBB2;AKT1;TP53;EPHA2;MAPK3
ELANE	DAP12 interactions Homo sapiens R-HSA-2172127	1.22E-19	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;RAC1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GR	Measles	4.79E-22	IFNA1;PIK3CD;PIK3CB;CASP9;IKBKB;CCND1;CASP3;AKT1;JAK1;IFNAR2;JUN;DDX58;IFNB1;STAT1;STAT3;FOS;IL2;NFKB1;NFKBIA;IL1A;IL6;PIK3CA;CD209;IL1B;FAS;TLR7;TP53;TLR4;IFNAR1;TLR2	Blood clot	1.54E-13	CRP;VWF;F10;ITGB3;SERPINE1;HBA1;F2;TFPI;MMP9;F3;F7;F8;CD40LG;ALB;APOE;EPHA2

			IN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1						
FCGR2A	Signaling by EGFR Homo sapiens R-HSA-177929	5.48E-19	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Tastetransduction	5.00E-22	CHRM3;PDE1C;PDE1B;PDE1A;ITPR3;CACNA1C;SCN9A;SCN3A;GABRA2;GABRA1;GABRA6;HTR1E;GABRA5;HTR1F;HTR3E;GABRA4;GABRA3;HTR1D;HTR3C;HTR1A;HTR3D;HTR1B;HTR3A;HTR3B;SCN2A	Spike	1.74E-13	ITPR1;HTR1A;HTR3A;CACNA1D;HTR4;GRIN2B;DPP4;SCN10A;GRIN2A;CD4;HTR7;CD40LG;SCN8A;ADORA1;KCNQ3;PDE6B;CALM1;SCN1A
IL13	Signaling by FGFR2 Homo sapiens R-HSA-5654738	1.01E-18	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Proteoglycans in cancer	6.04E-22	ITGB3;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;TNF;NRAS;CCND1;MYC;CASP3;ERBB2;KDR;AKT1;MAPK1;ITGAV;RAC1;MAPK3;MAP2K1;TGFB1;STAT3;BRAF;PTPN11;MMP9;VEGFA;MAPK11;PIK3CA;FAS;KRAS;RAF1;TP53;TLR4;MET;TLR2;FGFR1	Peritoneal exudate	5.51E-13	IL10;IL4;GLRA1;IL6;CD4;IFNA1;IL1B;ALB;TNF;IL2
HLA-DQB1	Signaling by Insulin receptor Homo sapiens R-HSA-74752	1.64E-18	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;PIK3CB;PRKAG3;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;	Reninsecretion	6.64E-22	PTGER4;GUCY1A2;ACE;PDE1C;NPR1;PDE1B;PDE1A;PTGER2;PDE3B;ITPR1;ITPR2;ADRB1;CACNA1D;ITPR3;ADRB2;CACNA1C;ADCY5;EDNRA;ADRB3;ADORA1;PDE3A;CA	Mesenchyme	2.07E-12	FLT1;TNF;NT5E;CCND1;MYC;ERBB2;AKT1;MAPK3;PDGFRB;PDGFRA;TGFB1;VCAM1;VWF;STAT3;HBA1;MMP9;VEGFA;IL6;IL1B;KIT;PPARG;S100A4;KRAS;TEK;TP53;M

			BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1			CNA1S;CALM1			ET;FGFR2;FGFR1
IFNB1	Signaling by FGFR Homo sapiens R-HSA-190236	1.68E-18	RET;PDE1C;PDE1B;PDE1A;ITGB3;ITPR1;ITPR2;PIK3CD;ADCY2;ITPR3;ADCY1;PIK3CB;ADCY5;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Purine metabolism	6.97E-22	PDE1C;NPR1;PDE1B;NPR2;PDE1A;PDE3B;ADCY2;ADCY1;ADCY5;NT5E;PDE11A;PDE4B;PDE4A;PDE6C;PDE6B;PDE6A;PDE8B;PDE8A;XDH;GUCY1A2;PDE4D;PDE2A;PDE4C;PDE10A;PDE3A;PDE5A;PDE7B;PDE7A;PDE9A	Blood vessel wall	1.14E-11	CRP;IL6;TGFB1;ACE;IL1B;ALB;CCL2;CYBA;PPARG;APOE;MMP9
PRNP	Serotonin receptors Homo sapiens R-HSA-390666	3.53E-18	HTR6;HTR7;HTR1E;HTR1F;HTR1D;HTR2B;HTR1A;HTR1B;HTR2C;HTR2A;HTR4	Apoptosis	9.27E-22	ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;TNF;CASP9;IKBKB;NRAS;TUBA1A;CASP3;AKT1;MAPK1;MAPK3;NTRK1;MAP2K1;JUN;PARP3;PARP1;PARP2;FOS;NFKB1;NFKBIA;PIK3CA;FAS;ATM;KRAS;RAF1;TP53;ATF4	Peritoneal fluid	1.60E-11	IL10;IL6;IL1B;SERPINE1;ALB;CCL2;TNF;VEGFA
TLR2	Fc epsilon receptor (FCERI) signaling Homo sapiens R-HSA-2454202	4.35E-18	RET;ITGB3;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;IKBKB;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;RAC1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;JUN;MAP2K1;VWF;NFATC1;BRAF;PTPN11;FOS;GRIN2C;GRIN2	Gap junction	9.43E-22	HTR2B;ITPR1;HTR2C;ITPR2;ADCY2;ADRB1;ITPR3;HTR2A;ADCY1;ADCY5;NRAS;TUBA1A;MAPK7;MAPK1;DRD1;DRD2;MAPK3;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;TUBB;TUBB4B;KRAS;RAF1	Dopaminergic system	2.01E-11	HTR7;CHRNA4;HTR1A;HTR2C;DRD1;FOS;DRD2;DRD3;SLC6A3;DRD4;SLC6A4;DRD5

			B;NFKB1;IL2;GRIN2D;GRIN1;NFKBIA;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1						
IL1RN	GABA A receptor activation Homo sapiens R-HSA-977441	2.25E-17	GABRA2;GABRB3;GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;GABRG3	Central carbon metabolism in cancer	9.70E-22	RET;PDGFRB;NTRK1;PDGFRA;MAP2K1;FLT3;NTRK3;PIK3CD;PIK3CB;NRAS;PIK3CA;MYC;KIT;ERBB2;AKT1;MAPK1;KRAS;RAF1;MET;TP53;FGFR2;MAPK3;FGFR1	SH-SY5Y cell	2.50E-10	NTRK1;PRNP;MAP2K1;JUN;PARP1;HSPA5;CHRNA4;OPRM1;SLC6A3;CASP9;CASP3;AKT1;TP53;MAPK3
PTPN11	GABA receptor activation Homo sapiens R-HSA-977443	2.98E-17	GABRB3;GABRA2;GABRQ;GABRB2;KCNJ5;GABRA1;GABRB1;KCNJ6;GABRA6;KCNJ9;GABRA5;GABRA4;GABRA3;ADCY2;ADCY1;GABRG3;ADCY5;KCNJ3	Long-term potentiation	7.68E-21	GRIA1;GRIA2;MAP2K1;ITPR1;ITPR2;ITPR3;BRAF;ADCY1;CACNA1C;GRIN2C;GRIN2B;GRIN1;GRIN2D;RPS6KA3;GRIN2A;NRAS;MAPK1;KRAS;RAF1;CALM1;ATF4;MAPK3	Conjunctiva	2.80E-10	IL4;IL6;CD4;TGFB1;CD40LG;IL1B;IL13;ALB;TNF;MMP9;ICAM1;VEGFA
ITGB3	Muscle contraction Homo sapiens R-HSA-397014	1.23E-16	RYR1;RYR2;NPR1;NPR2;ITPR1;ITPR2;CACNA1D;ITPR3;CACNA1C;SLC8A1;SCN11A;SCN9A;SCN7A;CACNA1S;SCN5A;CACNG1;CACNG2;SCN3A;SCN1A;KCNH2;CACNA2D1;TNNC1;CACNA2D2;CACNB1;SCN10A;SCN8A;SCN4A;CALM1;SCN2A	Pancreatic cancer	8.23E-21	MAP2K1;TGFB1;STAT1;STAT3;PIK3CD;BRAF;PIK3CB;NFKB1;VEGFA;CASP9;IKBKB;CCND1;PIK3CA;ERBB2;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;TP53;JAK1;MAPK3	MG-63 cell	3.02E-10	IL6;TGFB1;CCND1;PARP1;CASP3;IL1B;AKT1;TNF;MMP9;TP53
NOS2	Highly calcium permeable	1.58	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;	Hypertrophi	3.28	RYR2;PRKAB2;PRKAA1;PRKAA2;ACE;TGFB1;ITGB3;CACNA2D1;TNNC1;PR	Neonate	3.41	IL10;CRP;AKR1C1;F2;TNF;F3;IL2;IL4;F7;IL6;CD40LG;IFNG;IL1B;ALB;TLR4

	postsynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-629594	E-16	CHRNA6;CHRNA9	cardiomyopathy	E-20	KAG1;PRKAG2;CACNA2D2;CACNA1D;CACNA1C;TNF;PRKAB1;PRKAG3;SLC8A1;CACNB1;IL6;ITGAV;CACNA1S;CACNG1;CACNG2		E-10	
DDX58	Signaling by SCF-KIT Homo sapiens R-HSA-1433557	3.24E-16	RET;ITGB3;PIK3CD;PIK3CB;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;RAC1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;STAT1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;MMP9;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Apelin signaling pathway	5.65E-20	RYR1;RYR2;PRKAA1;PRKAA2;SERPINE1;PDE3B;ITPR1;PRKAG1;ITPR2;PRKAG2;ITPR3;ADCY2;ADCY1;SLC8A1;PRKAG3;ADCY5;NRAS;CCND1;AKT1;MAPK1;MAPK3;MAP2K1;PRKAB2;NOS2;PRKAB1;KRAS;RAF1;CALM1	Myofibroblast	3.67E-10	PDGFRB;TGFB1;SERPINE1;HBA1;TNF;MMP9;VEGFA;IL6;IL1B;KIT;AKT1;CCL2;S100A4;PPARG
CD40LG	Platelet activation, signaling and aggregation Homo sapiens R-HSA-76002	3.35E-16	ORM1;PROS1;ITGB3;SERPINE1;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;ORM2;RAC2;AKT1;MAPK1;RAC1;JAK2;JAK1;MAPK3;TGFB1;HSPA5;VWF;PTPN11;F2;ADRA2C;ADRA2B;IL2;ADRA2A;VEGFA;F8;PIK3CA;ALB;CALM1;RAF1	T cell receptor signaling pathway	8.54E-20	PIK3CD;PIK3CB;TNF;IKBKB;NRAS;AKT1;CTLA4;MAPK1;MAPK3;IL10;MAP2K1;JUN;NFATC1;FOS;IL2;NFKB1;IL4;NFKBIA;MAPK11;CD4;CD40LG;IFNG;PIK3CA;KRAS;RAF1	Trophoblast	1.28E-09	IL10;TGFB1;FLT1;IFNA1;SERPINE1;STAT3;HLA-A;TNF;MMP9;F3;VEGFA;IL6;IFNG;CASP3;IL1B;KDR;AKT1;TP53;MAPK3
MMP9	G alpha (i) signalling events Homo sapiens R-HSA-418594	5.43E-16	OPRD1;CHRM2;CXCL8;PTGDR2;CHRM4;PTGER3;OPRL1;ADCY2;ADCY1;ADCY5;CXCR1;ADORA3;CCL5;HRH4;ADORA1;BDKRB1;CCR5;DRD2;CCR4;D	Non-alcoholic fatty live	1.61E-19	PRKAA1;CXCL8;PRKAA2;PRKAG1;PIK3CD;PRKAG2;PIK3CB;TNF;PRKAG3;IKBKB;RXRA;CASP3;AKT1;RAC1;PRKAB2;JUN;TGFB1;FOS;PRKAB1;NFKB1;IL1	Mammary gland cell	1.60E-09	TGFB1;CCND1;PARP1;MYC;CASP3;ERBB2;STAT3;AKT1;MMP9;TP53;MAPK3

			RD3;DRD4;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;OPRK1;OPRM1;ADRA2C;ADRA2B;ADRA2A	r disease		A;MAPK11;IL6;PIK3CA;IL1B;FAS;PPARG;PPARA;ATF4	line		
MBL2	Adrenoceptors Homo sapiens R-HSA-390696	7.14E-16	ADRB3;ADRB1;ADRA1D;ADRB2;ADRA2C;ADRA1B;ADRA2B;ADRA1A;ADRA2A	Growth hormone synthesis, secretion and action	2.08E-19	ATF2;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;ADCY2;CACNA1C;PIK3CB;ADCY1;ADCY5;NRAS;AKT1;MAPK1;CACNA1S;JAK2;MAPK3;MAP2K1;STAT1;STAT3;FOS;MAPK11;PIK3CA;KRAS;RAF1;ATF4	Autonomic nervous system	2.00E-09	RET;NTRK1;ACE;CHRNA4;NTRK3;HTR3A;ADRB1;FOS;TNF;IL6;HTR7;IL1B;SCN9A
IL1A	Activation of NMDA receptor upon glutamate binding and postsynaptic events Homo sapiens R-HSA-442755	8.14E-16	GRIA1;GRIA2;BRAF;ADCY1;GRIN2C;GRIN2B;GRIN2D;GRIN1;RPS6KA3;GRIN2A;MAPK1;RAF1;CALM1;GRIA3;GRIA4	Neurotrophin signaling pathway	2.08E-19	PIK3CD;PIK3CB;IKBKB;RPS6KA3;NRAS;MAPK7;ABL1;AKT1;MAPK1;RAC1;MAPK3;NTRK1;MAP2K1;JUN;NTRK3;BRAF;PTPN11;NFKB1;NFKBIA;MAPK11;PIK3CA;KRAS;RAF1;CALM1;TP53;ATF4	DAUDI cell	3.46E-09	CD4;CD40LG;IFNA1;IFNG;IFNB1;MYC;HLA-A;IL2;IFNAR1
NRAS	VEGFR2 mediated cell proliferation Homo sapiens R-HSA-	1.38E-15	RET;ITGB3;ITPR1;ITPR2;ITPR3;GRIN2A;NRAS;ERBB2;KDR;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRI	Prostate cancer	2.26E-19	PDGFRB;PDGFRA;MAP2K1;PIK3CD;BRAF;PIK3CB;MMP9;NFKB1;NFKBIA;CASP9;IKBKB;NRAS;CCND1;PIK3CA;ERBB2;AKT1;MAPK1;KRAS;RAF1;TP53;F	Latex	4.93E-09	CRP;FDPS;IL6;CD4;CD40LG;VWF;IL1B;ALB;TNF

	5218921		N2D;VEGFA;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1			GFR2;ATF4;FGFR1;MAPK3			
IL7	MAPK family signaling cascades Homo sapiens R-HSA-5683057	1.43E-15	RET;ITGB3;GRIN2A;NRAS;MYC;ERBB2;MAPK1;RAC1;JAK2;MAPK6;MAPK4;JAK1;MAPK3;PDGFRB;PDGFRA;JUN;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Amphetamine addiction	3.62E-19	GRIA1;ATF2;GRIA2;JUN;CACNA1D;FOS;CACNA1C;GRIN2C;GRIN2B;SLC6A3;ADCY5;GRIN1;GRIN2D;GRIN2A;GRIN3B;GRIN3A;DRD1;CALM1;GRIA3;ATF4;GRIA4	Peripheral nerve	5.57E-09	GRIA1;NTRK1;JUN;NTRK3;AVPR2;CACNA1B;TRPV1;OPRM1;FOS;SCN10A;CD40LG;SCN11A;SCN8A;PDE6B;CALM1;SCN3A;ATF3;GRIA4
PTGS1	L1CAM interactions Homo sapiens R-HSA-373760	8.48E-15	MAP2K1;ITGB3;L1CAM;RPS6KA3;SCN10A;SCN11A;SCN8A;SCN9A;KCNQ3;SCN7A;MAPK1;ITGAV;SCN4A;SCN5A;RAC1;SCN2A;SCN3A;SCN1A;MAPK3;FGFR1	Epstein-Barr virus infection	3.81E-19	IFNA1;PIK3CD;PIK3CB;TNF;ICAM1;IKBKB;CASP9;CCND1;MYC;CASP3;AKT1;RAC1;JAK1;IFNAR2;JUN;IFNB1;STAT1;DDX58;STAT3;HLA-A;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;FAS;CALR;TP53;HLA-DRB1;HLA-DQB1;TLR2;IFNAR1	Hip	6.67E-09	CRP;VWF;F10;PROS1;AKR1C1;SERPINE1;F2;TNF;F3;F7;IL6;ADRB3;IL1B;ALB;SIK1
PTGES3	NCAM signaling for neurite out-growth Homo sapiens R-HSA-375165	9.84E-15	RET;ITGB3;CACNA1D;CACNA1C;GRIN2A;NRAS;ERBB2;MAPK1;CACNA1S;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;PRNP;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;CACNB1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	GABAergic synapse	4.41E-19	GABRB3;GABRA2;GABRQ;GABRB2;GABRA1;GABRP;GABRB1;KCNJ6;GABRA6;GABRA5;GABRA4;GABRA3;CACNA1B;ADCY2;CACNA1D;ADCY1;CACNA1C;GABRG3;GABRG1;ADCY5;CACNA1S;GABRE;GABRD	Periosteum	6.91E-09	IL1A;ITGB3;STAT3;KIT;CCL3;CCL2;MAPK1;TNF;MMP9
T	Activatio	1	CHRNB2;CHRNA3;	Est	7	ATF2;ITPR1;ITPR2;	Ca	7	ABCB1;TGFB1;STA

RPV1	n of Nicotinic Acetylcholine Receptors Homo sapiens R-HSA-629602	.36E-14	CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9	rogen signaling pathway	.17E-19	PIK3CD;ITPR3;ADCY2;PIK3CB;ADCY1;ADCY5;NRAS;AKT1;MAPK1;KCNJ3;MAPK3;KCNJ5;MAP2K1;JUN;KCNJ6;KCNJ9;FOS;OPRM1;MMP9;PIK3CA;KRAS;RAF1;CALM1;ATF4	ncer stem cell	.98E-09	T3;VEGFA;CCND1;MYC;KIT;ERBB2;ABL1;AKT1;KRAS;TP53;MET
AKR1C1	Postsynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-622327	1.36E-14	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9	Adrenergic signaling in cardiomyocytes	7.34E-19	ATF2;RYR2;ADRB1;CACNA1D;ADRA1D;ADCY2;ADRB2;CACNA1C;ADCY1;ADRA1B;ADRA1A;SLC8A1;ADCY5;AKT1;MAPK1;SCN7A;CACNA1S;SCN5A;CACNG1;CACNG2;MAPK3;CACNA2D1;TNNC1;CACNA2D2;CACNB1;MAPK11;CALM1;ATF4	Plasma cell	9.28E-09	IL1RN;ORM1;ACE;TGFB1;VCAM1;VWF;LRP1;CACNA2D1;PROS1;FLT4;ITGB3;L1CAM;F2;TFPI;ORM2;MPO;ICAM1;ASGR2;DPP4;F8;PROC;KIT;FGFR1;MBL2
PRKAA1	Acetylcholine Binding And Downstream Events Homo sapiens R-HSA-181431	1.36E-14	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9	GnRH secretion	1.42E-18	KCNJ5;MAP2K1;KCNJ6;KCNJ9;ITPR1;PIK3CD;ITPR2;CACNA1D;ITPR3;PIK3CB;CACNA1C;NRAS;PIK3CA;AKT1;MAPK1;KRAS;CACNA1S;RAF1;KCNJ3;MAPK3	nd7/23	9.38E-09	SCN10A;SCN11A;SCN8A;SCN9A;SCN4A;SCN2A;SCN3A
PRKAA2	Nitric oxide stimulates guanylate cyclase Homo sapiens R-HSA-392154	2.49E-14	GUCY1A2;PDE11A;PDE10A;NOS2;PDE1B;PDE1A;PDE3B;PDE2A;ITPR1;PDE3A;PDE5A;PDE9A	IL-17 signaling pathway	1.69E-18	JUN;CXCL8;IL13;FOS;PTGS2;TNF;MMP9;MAPK15;NFKB1;IKBKB;IL4;NFKBIA;MAPK11;IL6;MAPK7;IFNG;CASP3;IL1B;CCL2;MAPK1;MAPK6;MAPK4;MAPK3	Human aortic endotheli	9.38E-09	VCAM1;AKT1;CCL2;APOE;TNF;F3;ICAM1

							al cell		
PRKAB1	Interleukin-3, 5 and GM-CSF signaling Homo sapiens R-HSA-512988	3.90E-14	RET;ITGB3;PIK3CD;PIK3CB;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Inflammatory bowel disease	2.02E-18	IL10;JUN;TGFB1;STAT1;IL13;STAT3;NFATC1;NOD2;TNF;IL2;NFKB1;IL4;IL1A;IL6;IFNG;IL1B;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Gingival fluid	1.29E-08	CRP;IL10;IL1A;IL6;IL1B;TNF;MMP9;ELANE
PRKAB2	Interleukin receptor SHC signaling Homo sapiens R-HSA-912526	4.89E-14	RET;ITGB3;PIK3CD;PIK3CB;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Cellular senescence	2.19E-18	CXCL8;SERPINE1;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;PIK3CB;NRAS;CCND1;MYC;AKT1;MAPK1;MAPK3;MAP2K1;TGFB1;NFATC1;HLA-A;NFKB1;IL1A;MAPK11;IL6;PIK3CA;ATM;KRAS;RAF1;CALM1;TP53	BMMC cell	1.31E-08	IL4;IL6;IL13;KIT;AKT1;PTPN11;PTGS2;TNF;VEGFA
PRKAG1	Interleukin-2 signaling Homo sapiens R-HSA-451927	1.02E-13	RET;ITGB3;PIK3CD;PIK3CB;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	FoxO signaling pathway	2.68E-18	PRKAA1;PRKAA2;PRKAG1;PIK3CD;PRKAG2;PIK3CB;PRKAG3;IKBKB;NRAS;CCND1;AKT1;MAPK1;MAPK3;IL10;MAP2K1;PRKAB2;TGFB1;STAT3;BRAF;PRKAB1;MAPK11;IL6;PIK3CA;ATM;KRAS;RAF1	Acute myeloid leukemia cell	2.32E-08	CASP9;NRAS;PARP1;FLT3;MYC;CASP3;KIT;STAT3;AKT1;TNF;TP53
PRKAG	MAPK1/MAPK3 signaling Homo sapiens	2.16E	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;B	Acute myeloid	3.97E	MAP2K1;FLT3;STAT3;PIK3CD;BRAF;PIK3CB;MPO;NFKB1;IKBKB;NRAS;CCND1;PIK3CA;MYC;KIT;	Cranium	4.57E	CRP;TGFB1;NFATC1;FOS;F2;PTGS2;TNF;MMP9;VEGFA;IL1A;IL6;PGRMC1;IL1B;TP53;FGFR2;F

2	R-HSA-5684996	-13	RAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	leukemia	-18	AKT1;MAPK1;KRAS;RAF1;PPARD;MAPK3		-08	GFR1
PRKAG3	Interaction between L1 and Ankyrins Homo sapiens R-HSA-445095	2.30E-13	SCN10A;SCN11A;SCN8A;SCN9A;KCNQ3;SCN7A;SCN4A;SCN5A;L1CAM;SCN2A;SCN3A;SCN1A	Vascular smooth muscle contraction	4.00E-18	NPR1;NPR2;ITPR1;ITPR2;CACNA1D;ITPR3;ADRA1D;ADCY2;CACNA1C;ADCY1;ADRA1B;ADRA1A;ADCY5;EDNRA;MAPK1;CACNA1S;MAPK3;GUCY1A2;MAP2K1;PLA2G2A;BRAF;ADORA2A;ADORA2B;PLA2G10;RAF1;CALM1	MC3T3-E1 cell	5.80E-08	JUN;IL6;TGFB1;CASP3;AKT1;FOS;PTGS2;TNF;MAPK3;VEGFA
EDNRA	Signaling by Leptin Homo sapiens R-HSA-2586552	2.66E-13	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Chemokine signaling pathway	7.55E-18	CXCL8;NCF1;PIK3CD;ADCY2;PIK3CB;ADCY1;ADCY5;IKBKB;NRAS;CXCR1;CCL5;RAC2;CCL3;AKT1;CCL2;MAPK1;RAC1;CCR5;JAK2;CCR4;MAPK3;MAP2K1;STAT1;STAT3;BRAF;NFKB1;NFKBIA;PIK3CA;KRAS;RAF1	Multiple myeloma cell	1.36E-07	CASP9;IL6;CCND1;PARP1;MYC;CASP3;STAT3;VEGFA
HSPA5	Highly calcium permeable nicotinic acetylcholine receptors Homo sapiens R-HSA-629597	3.07E-13	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA6	Toxoplasmosis	8.39E-18	IL10;TGFB1;NOS2;STAT1;STAT3;TNF;NFKB1;NFKBIA;CASP9;IKBKB;MAPK11;CD40LG;IFNG;CASP3;AKT1;MAPK1;CCR5;JAK2;TLR4;HLA-DRB1;JAK1;HLA-DQB1;TLR2;MAPK3	HEK-293 cell	2.19E-07	RYR1;RYR2;GRIN2A;SCN4A;HTR3B;GRIN2B;KCNJ3
RP	Signalling to RAS	3.	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAP	Tuber	1.	IFNA1;NOD2;TNF;CASP9;CASP3;AKT	Sciati	2.	NTRK1;JUN;SCN10A;NTRK3;SCN8A;T

S6KA3	Homo sapiens R-HSA-167044	61E-13	K1;JAK2;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;MAPK11;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	culosis	15E-17	1;MAPK1;JAK2;JAK1;MAPK3;IL10;TGFB1;NOS2;IFNB1;STAT1;NFKB1;IL1A;MAPK11;IL6;FCGR2A;IFNG;CD209;IL1B;RAF1;CALM1;TLR4;HLA-DRB1;HLA-DQB1;TLR2	cnerve	35E-07	RPV1;GRIN2B;ATF3
NFKBIA	cGMP effects Homo sapiens R-HSA-418457	5.51E-13	PDE11A;PDE10A;PDE1B;PDE1A;PDE3B;PDE2A;ITPR1;PDE3A;PDE5A;PDE9A	Th17 cell differentiation	3.81E-17	JUN;TGFB1;STAT1;STAT3;NFATC1;FOS;IL2;NFKB1;IL4;NFKBIA;IKBKB;MAPK11;IL6;CD4;RXRA;IFNG;IL1B;MAPK1;JAK2;HLA-DRB1;JAK1;HLA-DQB1;MAPK3	BTO:0002979	2.64E-07	IL10;IL4;IL6;CD4;CD40LG;IL1B;ALB;TNF;ELANE
TNFAIP6	Signaling by ERBB4 Homo sapiens R-HSA-1236394	6.20E-13	RET;ITGB3;PIK3CD;PIK3CB;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Colorectal cancer	5.56E-17	MAP2K1;JUN;TGFB1;PIK3CD;BRAF;PIK3CB;FOS;CASP9;NRAS;CCND1;PIK3CA;CASP3;MYC;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;TP53;MAPK3	Whole plant	2.64E-07	IL10;IL4;ACE;F9;IFNG;KDR;CALR;MPO;PTGS1
CASP1	Signalling to ERKs Homo sapiens R-HSA-187687	7.25E-13	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;MAPK11;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Chronic myeloid leukemia	6.28E-17	MAP2K1;TGFB1;PIK3CD;BRAF;PTPN11;PIK3CB;NFKB1;IKBKB;NFKBIA;NRAS;CCND1;PIK3CA;MYC;ABL1;AKT1;MAPK1;KRAS;RAF1;TP53;MAPK3	3T3-L1 cell	2.98E-07	IL6;WARS;MYC;PDE3B;SERPINE1;STAT3;AKT1;CCL2;PPARG;PPARA;TNF;MAPK3
IK	FRS-mediate	8.	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAP	Malari	1.	IL10;CXCL8;TGFB1;VCAM1;LRP1;HBB;	Micro	3.	IL6;TGFB1;ACE;IL1B;ALB;AKT1;MMP

BKB	d FGFR2 signaling Homo sapiens R-HSA-5654700	50E-13	K1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	a	09E-16	HBA1;TNF;ICAM1;IL6;CD40LG;IFNG;IL1B;CCL2;MET;TLR4;TLR2	vessel	09E-07	9
MAPK15	FRS-mediated FGFR4 signaling Homo sapiens R-HSA-5654712	8.50E-13	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Relaxin signaling pathway	2.62E-16	ATF2;MAP2K1;JUN;TGFB1;NOS2;PIK3CD;ADCY2;PIK3CB;FOS;ADCY1;MMP9;NFKB1;ADCY5;VEGFA;NFKBIA;MAPK11;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAF1;ATF4;MAPK3	Spinal nerve	3.48E-07	SCN10A;SCN11A;SCN9A;TRPV1;SCN3A;ATF3
MAPK3	FRS-mediated FGFR3 signaling Homo sapiens R-HSA-5654706	8.50E-13	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Rheumatoid arthritis	3.13E-16	JUN;CXCL8;FLT1;TGFB1;FOS;TNF;ICAM1;VEGFA;IL1A;IL6;IFNG;IL1B;CCL5;CCL3;CTLA4;CCL2;TEK;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Gastric ulcer	3.48E-07	HRH2;IL1B;PTGS2;MPO;TNF;VEGFA
MAPK4	FRS-mediated FGFR1 signaling Homo sapiens R-HSA-5654693	8.50E-13	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Non-small cell lung cancer	3.59E-16	RET;MAP2K1;STAT3;PIK3CD;BRAF;PIK3CB;CASP9;NRAS;RXRA;CCND1;PIK3CA;ERBB2;AKT1;MAPK1;KRAS;RAF1;MET;TP53;MAPK3	Gbm cell	3.48E-07	CASP3;STAT3;AKT1;MET;TP53;VEGFA
MAPK6	ARMS-mediated activation Homo sapiens	1.15E-	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2	Natural killer cell	3.78E-	IFNAR2;MAP2K1;IFNA1;IFNB1;PIK3CD;BRAF;NFATC1;PTPN11;HLA-A;PIK3CB;TNF;ICAM1;NRAS;IFNG;PI	Peritoneal mesot	5.47E-	IL6;TGFB1;IL1B;SERPINE1;CCL2;TNF

	R-HSA-170984	12	C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	mediated cytotoxicity	16	K3CA;CASP3;RAC2;MAPK1;FAS;KRAS;RAC1;RAF1;IFNAR1;MAPK3	helium	07	
MAPK7	Signalling to p38 via RIT and RIN Homo sapiens R-HSA-187706	1.15E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Inflammatory mediator regulation of TRP channels	9.77E-16	PTGER4;NTRK1;PTGER2;ITPR1;HTR2B;ITPR2;HTR2C;PIK3CD;ITPR3;ADCY2;TRPV1;HTR2A;PIK3CB;ADCY1;ADCY5;MAPK11;HRH1;PIK3CA;IL1B;BDKRB1;CALM1	Esophageal cancer cell	5.47E-07	CCND1;CASP3;STAT3;AKT1;PTGS2;TP53
CCND1	Frs2-mediated activation Homo sapiens R-HSA-170968	1.27E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	NOD-like receptor signaling pathway	1.15E-15	CXCL8;IFNA1;ITPR1;ITPR2;ITPR3;NOD2;TNF;IKBKB;CCL5;CASP1;CCL2;MAPK1;JAK1;MAPK3;IFNAR2;JUN;IFNB1;STAT1;CYBB;CYBA;NFKB1;NFKBIA;MAPK11;IL6;IL1B;TLR4;IFNAR1	B16-F10 cell	5.84E-07	CD4;CASP3;AKT1;MMP9;TP53;IL2;VEGFA
MYC	Prolonged ERK activation events Homo sapiens R-HSA-	1.55E-1	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRI	Cocaine addiction	1.84E-1	ATF2;GRIA2;JUN;GRIN2C;GRIN2B;SLC6A3;NFKB1;ADCY5;GRIN1;GRIN2D;GRIN2A;GRIN3B;GRIN3A;DRD1;DRD2;ATF4	Interstitial cell	8.30E-0	PDGFRA;TGFB1;CASP3;KIT;HTR2B;PTGS2

	169893	2	N2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1		5			7	
PCNA	Platelet homeostasis Homo sapiens R-HSA-418346	2.70E-12	GUCY1A2;NOS2;PDE1B;PDE1A;PDE3B;PDE2A;ITPR1;ITPR2;ITPR3;PTPN11;SLC8A1;PDE11A;PDE10A;PDE3A;PDE5A;CALM1;PDE9A	Glutamatergic synapse	2.09E-15	GRIA1;GRIA2;ITPR1;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;GRIN2C;GRIN2B;GRIN2D;ADCY5;GRIN1;GRIN2A;GRIN3B;GRIN3A;MAPK1;GRIA3;GRIA4;KCNJ3;MAPK3	Lymphoid cell line	9.11E-07	CD4;CD40LG;MYC;FAS;IL2
HRH1	FCERI mediated MAPK activation Homo sapiens R-HSA-2871796	3.32E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;RAC1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;JUN;MAP2K1;VWF;BRAF;FOS;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Long evity regulating pathway	2.31E-15	ATF2;PRKAB2;PRKAA1;PRKAA2;PRKAG1;PIK3CD;PRKAG2;ADCY2;PIK3CB;ADCY1;PRKAB1;NFKB1;PRKAG3;ADCY5;NRAS;PIK3CA;AKT1;PPARG;KRAS;TP53;ATF4	Submucosa	9.96E-07	PDGFRA;SCN10A;CD4;HTR7;KIT;HTR3A;HBA1;TNF;TP53
PLA2G10	GRB2 events in EGFR signaling Homo sapiens R-HSA-179812	4.93E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	VEGF signaling pathway	2.59E-15	MAP2K1;PIK3CD;PIK3CB;PTGS2;VEGFA;CASP9;MAPK11;NRAS;PIK3CA;KDR;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;MAPK3	Fibroblast	1.63E-06	RET;GABRB3;HSPA5;TNFAIP6;PARP1;PARP2;CACNA1C;IL6;SMPD1;FPGS;CANX;ABL1;ATM;ATF4
TUBA1A	SHC1 events in EGFR signaling Homo sapiens R-HSA-180336	4.93E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Adipocytokine signaling pathway	2.72E-15	CPT1A;PRKAB2;PRKAA1;PRKAA2;STAT3;PRKAG1;PRKAG2;PTPN11;TNF;PRKAB1;PRKAG3;NFKB1;IKBKB;NFKBIA;RXRA;AKT1;JAK2;PPARA	Talus	2.19E-06	CRP;IL6;ACE;IL1B;ALB;SIK1;F2;TNF

				ay					
TUBB4B	SOS-mediated signalling Homo sapiens R-HSA-112412	4.93E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	GnRH signaling pathway	4.42E-15	MAP2K1;JUN;ITPR1;ITPR2;ADCY2;CACNA1D;ITPR3;ADCY1;CACNA1C;ADCY5;MAPK11;NRAS;MAPK7;MAPK1;KRAS;CACNA1S;RAF1;CALM1;ATF4;MAPK3	Granulation tissue	2.46E-06	TGFB1;IL1B;HBA1;TNF;MMP9;VEGFA
FADS1	SHC1 events in ERBB4 signaling Homo sapiens R-HSA-1250347	4.93E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	JAK-STAT signaling pathway	5.99E-15	IFNA1;PIK3CD;PIK3CB;CCND1;MYC;AKT1;JAK2;JAK1;IFNAR2;PDGFRB;IL10;PDGFRA;IFNB1;STAT1;IL13;STAT3;PTPN11;IL2;IL4;IL6;IFNG;PIK3CA;IL7;RAF1;IFNAR1	Germ	4.34E-06	RET;CD4;TGFB1;CD40LG;MYC;KIT;ALB;ATM;KRAS;CALM1;TP53
FADS2	RAF/MAP kinase cascade Homo sapiens R-HSA-5673001	4.93E-12	RET;ITGB3;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;KIT;KRAS;TEK;CALM1;RAF1;FGFR2;FGFR1	Insulin resistance	7.80E-15	CPT1A;PRKAB2;PRKAA1;PRKAA2;STAT3;PRKAG1;PIK3CD;PRKAG2;PTPN11;PIK3CB;TNF;PRKAB1;NFKB1;PRKAG3;NFKBIA;IKBKB;RPS6KA3;IL6;PIK3CA;AKT1;PPARA	Nasal lavage fluid	4.58E-06	IL4;HRH1;IL13;ALB;MPO;TNF
SLC8A1	Import of palmitoyl-CoA into the mitochondrial matrix Homo sapiens R-HSA-200425	5.42E-12	CPT1A;PRKAB2;RXRA;PRKAA2;CPT2;PRKAG2;SLC25A20;PPARD	Regulation of lipolysis in adipocytes	1.46E-14	NPR1;PDE3B;PTGER3;PIK3CD;ADCY2;ADRB1;PIK3CB;ADCY1;ADRB2;PTGS2;ADCY5;PTGS1;ADRB3;PIK3CA;ADORA1;AKT1	Blood plasma	4.74E-06	VWF;F10;PROS1;SERPINE1;HTR2C;F2;TFPI;ORM2;F3;FADS2;F7;F8;PROC;F9;FADS1

PPARA	Opioid Signalling Homo sapiens R-HSA-111885	1.00E-11	PDE1C;PDE1B;PDE4D;PDE1A;PDE4C;ITPR1;ITPR2;ITPR3;ADCY2;OPRM1;ADCY1;ADCY5;PDE4B;PDE4A;MAPK1;CALM1	Neutrophil extracellular trap formation	2.86E-14	NCF1;ITGB3;NCF4;PIK3CD;PIK3CB;MPO;CASP1;RAC2;AKT1;MAPK1;RAC1;ELANE;MAPK3;MAP2K1;VWF;CYBB;CYBA;NFKB1;MAPK11;FCGR2A;PIK3CA;TLR8;TLR7;RAF1;TLR4;TLR2	Resting cell	6.75E-06	NFKBIA;CD4;NCF1;NCF4;IL2
NR1H4	Toll-Like Receptors Cascades Homo sapiens R-HSA-168898	1.39E-11	ATF1;ATF2;MAP2K1;JUN;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;TLR8;MAPK1;TLR7;TLR4;TLR3;TLR2;MAPK3	Endometrial cancer	3.71E-14	MAP2K1;PIK3CD;BRAF;PIK3CB;CASP9;NRAS;CCND1;PIK3CA;MYC;ERBB2;AKT1;MAPK1;KRAS;RAF1;TP53;MAPK3	Sympathetic nervous system	6.75E-06	ACE;ADRB3;ADRB2;ADRA1B;SLC6A2
PPARD	TRAF6 mediated induction of NFkB and MAP kinases upon TLR7/8 or 9 activation Homo sapiens R-HSA-975138	1.49E-11	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;TLR8;MAPK1;TLR7;MAPK3	Renal cell carcinoma	4.60E-14	MAP2K1;JUN;TGFB1;PIK3CD;BRAF;PTPN11;PIK3CB;VEGFA;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAC1;RAF1;MET;MAPK3	Kidney cancer cell	7.97E-06	PARP1;CCND1;CASP3;AKT1;TP53;VEGFA
P	Unblocki	1	GRIA1;GRIA2;GRIN	Th	4	JUN;STAT1;IL13;N	A	1	CRP;NT5E;CD40LG

DE3A	ng of NMDA receptor, glutamate binding and activation Homo sapiens R-HSA-438066	.50E-11	2A;GRIN2C;GRIN2B;GRIA3;GRIN2D;GRIN1;GRIA4	1 and Th2 cell differentiation	.75E-14	FATC1;FOS;IL2;NFKB1;IKBKB;IL4;NFKBIA;MAPK11;CD4;IFNG;MAPK1;JAK2;HLA-DRB1;JAK1;HLA-DQB1;MAPK3	mniotic fluid	.17E-05	;IL1B;KIT;ALB;TNF;F3
GP	Presynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-622323	1.60E-11	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA6	Bladder cancer	5.32E-14	MAP2K1;CXCL8;BRAF;MMP9;VEGFA;NRAS;CCND1;MYC;ERBB2;MAPK1;KRAS;RAF1;TP53;MAPK3	Chronic lymphocytic leukemia cell	1.21E-05	IL4;CD40LG;AKT1;FAS;ATM;TP53;IL2
F9	MyD88-independent TLR3/TLR4 cascade Homo sapiens R-HSA-166166	1.70E-11	ATF1;ATF2;MAP2K1;JUN;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;MAPK3	B cell receptor signaling pathway	5.73E-14	MAP2K1;JUN;PIK3CD;NFATC1;PIK3CB;FOS;NFKB1;IKBKB;NFKBIA;NRAS;PIK3CA;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;MAPK3	g/g	1.21E-05	IL10;IL6;CTLA4;HTR2A;TNF;SLC6A2;TP53
F10	Toll Like Receptor 3 (TLR3) Cascade Homo sapiens R-HSA-	1.70E-1	ATF1;ATF2;MAP2K1;JUN;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;MAPK3	Prolactin signaling pat	5.96E-1	MAP2K1;STAT1;STAT3;PIK3CD;PIK3CB;FOS;NFKB1;MAPK11;NRAS;CCND1;PIK3CA;AKT1;MAPK1;KRAS;JAK2;RAF1;MAPK3	L-929 cell	1.21E-0	DPP4;FCGR2A;IFNA1;IFNB1;TNF;IL2;ICAM1

	168164	1		hway	4			5	
CHRM1	TRIF-mediated TLR3/TLR4 signaling Homo sapiens R-HSA-937061	1.70E-11	ATF1;ATF2;MAP2K1;JUN;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;MAPK3	Parathyroid hormone synthesis, secretion and action	6.30E-14	ATF2;MAP2K1;PDE4D;PDE4C;ITPR1;ITPR2;ITPR3;BRAF;ADCY2;FOS;ADCY1;ADCY5;RXRA;PDE4B;PDE4A;MAPK1;RAF1;ATF4;FGFR1;MAPK3	Venom duct	1.24E-05	GGCX;CHRNA4;CACNA1B;SCN3A
CHRM2	Activated TLR4 signalling Homo sapiens R-HSA-166054	1.96E-11	ATF1;ATF2;MAP2K1;JUN;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;TLR2;MAPK3	Melanoma	9.87E-14	PDGFRB;PDGFRA;MAP2K1;PIK3CD;BRAF;PIK3CB;NRAS;CCND1;PIK3CA;AKT1;MAPK1;KRAS;RAF1;MET;TP53;MAPK3;FGFR1	Leiomyosarcoma cell line	1.24E-05	HRH1;ADORA1;ADRB2;ADRA1B
CHRM3	MyD88 dependent cascade initiated on endosome Homo sapiens R-HSA-975155	2.18E-11	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;TLR8;MAPK1;TLR7;MAPK3	Dilated cardiomyopathy	1.08E-13	RYR2;TGFB1;ITGB3;CACNA2D1;TNNC1;CACNA2D2;ADCY2;ADRB1;CACNA1D;ADCY1;CACNA1C;TNF;SLC8A1;ADCY5;CACNB1;ITGAV;CACNA1S;CACNG1;CACNG2	Fetal membrane	1.32E-05	NT5E;FLT1;IL1B;HBA1;TNF;MMP9
CHR	Toll Like Receptor 7/8	2.1	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFK	Human	1.2	PTGER4;IFNA1;ITGB3;PIK3CD;PIK3CB;PTGS2;TNF;IKBKB;	Bronchi	1.9	IL6;IL1B;CCL5;TNF;ICAM1

M4	(TLR7/8) Cascade Homo sapiens R-HSA-168181	8E-11	BIA;RPS6KA3;MAPK11;MAPK7;TLR8;MAPK1;TLR7;MAPK3	papillomavirus infection	2E-13	NRAS;CCND1;CASP3;AKT1;MAPK1;ITGAV;JAK1;MAPK3;IFNAR2;PDGFRB;MAP2K1;VWF;IFNB1;STAT1;HLA-A;NFKB1;VEGFA;PIK3CA;FAS;ATM;KRAS;RAF1;TP53;TLR3;IFNAR1	alepithelialcell line	8E-05	
CHRM5	Toll Like Receptor 9 (TLR9) Cascade Homo sapiens R-HSA-168138	3.78E-11	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;TLR8;MAPK1;TLR7;MAPK3	Alcoholism	1.56E-13	ATF2;SLC6A3;ADCY5;GRIN2A;NRAS;MAPK1;DRD1;DRD2;MAPK3;MAP2K1;BRAF;GRIN2C;GRIN2B;GRIN2D;GRIN1;GRIN3B;GRIN3A;ADORA2A;ADORA2B;KRAS;RAF1;CALM1;SLC29A1;ATF4;SLC29A2	Fhm	1.98E-05	CACNB1;GABRB2;GABRB1;GABRG1;SCN1A
GLRA1	Ion channel transport Homo sapiens R-HSA-983712	5.27E-11	GABRB3;RYR1;GABRA2;GABRQ;GABRB2;RYR2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;HTR3E;GABRA3;HTR3C;HTR3D;HTR3A;TRPV1;HTR3B;GABRG3;GLRA1;GLRA2;CALM1;RAF1	Pertussis	2.58E-13	IL10;JUN;CXCL8;NOS2;FOS;TNF;NFKB1;IL1A;MAPK11;IL6;CASP3;IL1B;CASP1;MAPK1;CALM1;TLR4;MAPK3	Vasdeferens	2.05EE-05	HRH1;HTR7;PTGER3;OPRL1;ADORA1;OPRM1;ADRA1B
CHRNA4	PLC-gamma1 signalling Homo sapiens R-HSA-167021	5.55E-11	NTRK1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Thyroid cancer	2.81E-13	RET;NTRK1;MAP2K1;BRAF;NRAS;RXRA;CCND1;MYC;MAPK1;KRAS;PPARG;TP53;MAPK3	Promastigote	2.57E-05	IL10;IL4;CD4;IFNG;APOE;TNF
CHRNB	MyD88: Mal cascade initiated on	7.63E	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK	FcepsilonRI	5.63E	MAP2K1;IL13;PIK3CD;PIK3CB;TNF;IL4;MAPK11;NRAS;PIK3CA;RAC2;AKT1;MAPK1;KRAS;RAC	Leukocyte	2.63E	RET;DDR1;IFNA1;PIK3CD;ADRB2;NOD2;MPO;NT5E;IL1B;CCL5;HRH4;CCL3;HLA-

2	plasma membrane Homo sapiens R-HSA-166058	-11	1;TLR4;TLR2;MAPK3	signaling pathway	-13	1;RAF1;MAPK3		-05	DRB1;TRDMT1;TLR2
ADCY1	Toll Like Receptor TLR1:TLR2 Cascade Homo sapiens R-HSA-168179	7.63E-11	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR2;MAPK3	Pathogenic Escherichia coli infection	5.84E-13	CXCL8;TNF;IKBKB;CASP9;TUBA1A;CASP3;ABL1;CASP1;MAPK1;RAC1;MAPK3;JUN;TUBB;PTPN11;FOS;F2;TUBB4B;NFKB1;NFKBIA;MAPK11;IL6;FCGR2A;IL1B;FAS;TLR4	A-431 cell	3.60E-05	JUN;STAT1;CASP3;ERBB2;AKT1
ADCY2	Toll Like Receptor TLR6:TLR2 Cascade Homo sapiens R-HSA-168188	7.63E-11	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR2;MAPK3	Sphingolipid signaling pathway	6.19E-13	OPRD1;MAP2K1;PIK3CD;PIK3CB;TNF;NFKB1;MAPK11;NRAS;PIK3CA;ADORA3;SMPD1;ADORA1;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;TP53;MAPK3	Needle	4.02E-05	RET;CRP;CD4;KIT;ERBB2;KRAS;HBA1;F2;TP53
ADCY5	Toll Like Receptor 2 (TLR2) Cascade Homo sapiens R-HSA-181438	7.63E-11	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR2;MAPK3	Glucagon signaling pathway	8.47E-13	ATF2;CPT1A;PRKAB2;PRKAA1;PRKAA2;PDE3B;ITPR1;PRKAG1;ITPR2;PRKAG2;ITPR3;ADCY2;PRKAB1;PRKAG3;AKT1;SIK1;CALM1;PPARA;ATF4	Myoblast	4.33E-05	JUN;TGFB1;CCND1;MYC;CASP3;AKT1;PPARG;TNF;FGFR1;MAPK3
SLC6A3	Post NMDA receptor activation events Homo	7.95E-	RPS6KA3;GRIN2A;MAPK1;BRAF;ADCY1;GRIN2C;RAF1;CALM1;GRIN2B;GRIN2D;GRIN1	Thyroid hormone	8.57E-	MAP2K1;THRB;THRA;STAT1;ITGB3;PIK3CD;PIK3CB;CASP9;NRAS;RXRA;CCND1;PIK3CA;MYC;AKT1;MAPK1;ITGA	adipose-derived	5.59E-	NT5E;TGFB1;VWF;PPARG;HBA1;VEGFA

	sapiens R-HSA-438064	11		signaling pathway	13	V;KRAS;RAF1;TP53;MAPK3	stem cell	05	
SLC6A4	Toll Like Receptor 4 (TLR4) Cascade Homo sapiens R-HSA-166016	8.56E-11	ATF1;ATF2;MAP2K1;JUN;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;TLR2;MAPK3	Regulation of actin cytoskeleton	8.62E-13	CHRM2;CHRM3;CHRM1;CHRM4;ITGB3;CHRM5;PIK3CD;PIK3CB;NRAS;RAC2;BDKRB1;MAPK1;ITGAV;RAC1;MAPK3;PDGFRB;PDGFRA;MAP2K1;LIMK1;BRAF;F2;PIK3CA;KRAS;RAF1;FGFR2;FGFR1	Chorioallantois	6.08E-05	PTGER3;KDR;AKT1;TEK;MAPK3
SLC6A2	CREB phosphorylation through the activation of Ras Homo sapiens R-HSA-442742	8.98E-11	RPS6KA3;GRIN2A;MAPK1;BRAF;GRIN2C;RAF1;CALM1;GRIN2B;GRIN2D;GRIN1	Insulin signaling pathway	1.05E-12	MAP2K1;PRKAB2;PRKAA1;PRKAA2;PDE3B;PRKAG1;PIK3CD;PRKAG2;BRAF;PIK3CB;PRKAB1;PRKAG3;IKBKB;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAF1;CALM1;MAPK3	Myotube	6.09E-05	RYR1;IL6;CHRNA4;MYC;AKT1;PPARG;CACNA1S;TNF;PPARD;MAPK3
LIG1	Gamma-carboxylation of protein precursors Homo sapiens R-HSA-159740	1.92E-10	F7;PROC;F9;GGCX;F10;PROS1;F2	Long-term depression	1.15E-12	RYR1;GRIA1;GUCY1A2;GRIA2;MAP2K1;ITPR1;ITPR2;ITPR3;BRAF;NRAS;MAPK1;KRAS;RAF1;GRIA3;MAPK3	U2-OS cell	6.67E-05	CCND1;CASP3;AKT1;ATM;MMP9;TP53
LIG3	Activation of PPARGC1A (PGC-1alpha) by phospho	1.92E-1	MAPK11;PRKAB2;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3	HIF-1 signaling pathw	1.20E-1	MAP2K1;FLT1;NOS2;SERPINE1;STAT3;CYBB;PIK3CD;PIK3CB;NFKB1;VEGFA;IL6;IFNG;PIK3CA;ERBB2;AKT1;MAPK1;TEK;TLR4;MAPK	Oral cancer cell	7.73E-0	PARP1;CASP3;AKT1;MMP9;TP53

	rylation Homo sapiens R-HSA-2151209	0		ay	2	3		5	
SCN10A	TRAF6 Mediated Induction of proinflammatory cytokines Homo sapiens R-HSA-168180	2.50E-10	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	Glioma	2.86E-12	PDGFRB;PDGFRA;MAP2K1;PIK3CD;BRAF;PIK3CB;NRAS;CCND1;PIK3CA;AKT1;MAPK1;KRAS;RAF1;CALM1;TP53;MAPK3	ECV-304 cell	8.23E-05	VCAM1;KDR;TNF;VEGFA
PTGER1	MAP kinase activation in TLR cascade Homo sapiens R-HSA-450294	2.63E-10	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	Salmonella infection	3.07E-12	CXCL8;PIK3CD;PIK3CB;TNF;IKBKB;TUBA1A;MYC;CASP3;CASP1;AKT1;MAPK1;RAC1;MAPK3;JUN;MAP2K1;TUBB;FOS;TUBB4B;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;IL1B;RAF1;TLR4;TLR2	Uroepithelium	8.55E-05	CCND1;PIK3CA;ERBB2;AKT1;TRPV1;PTGS2;TP53;VEGFA
OPRM1	Formation of Fibrin Clot (Clotting Cascade) Homo sapiens R-HSA-140877	2.96E-10	F7;PROCR;F8;PROC;F9;VWF;F10;PROS1;TFPI;F2;F3	Phospholipase D signaling pathway	4.89E-12	PDGFRB;PDGFRA;MAP2K1;CXCL8;AVPR2;PIK3CD;ADCY2;PTPN11;PIK3CB;ADCY1;F2;ADCY5;NRAS;PIK3CA;CXCR1;KIT;AKT1;MAPK1;KRAS;RAF1;MAPK3	Frontal gland	8.85E-05	FDPS;WARS;GGPS1
OPRK1	Gamma-carboxylation, transport, and	5.17E	F7;PROC;F9;GGCX;F10;PROS1;F2	Focal adhesion	6.46E	PDGFRB;PDGFRA;JUN;MAP2K1;FLT1;VWF;FLT4;ITGB3;PIK3CD;BRAF;PIK3CB;VEGFA;CCND1;P	tsA-201 cel	8.85E	CACNA1B;OPRL1;SCN4A

	amino-terminal cleavage of proteins Homo sapiens R-HSA-159854	-10			-12	IK3CA;ERBB2;KDR;RAC2;AKT1;MAPK1;ITGAV;RAC1;RAF1;MET;MAPK3	l	-05	
OPRD1	DAG and IP3 signaling Homo sapiens R-HSA-1489509	6.25E-10	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Phagosome	8.26E-12	NCF1;ITGB3;TUBB;NCF4;CYBB;CYBA;HLA-A;TUBB4B;MPO;TUBA1A;FCGR2A;CD209;CANX;ITGAV;CALR;RAC1;TLR4;HLA-DRB1;MBL2;HLA-DQB1;TLR2	Hybridomacell line	8.85E-05	IL6;CD40LG;ALB
OPRL1	Signaling by the B Cell Receptor (BCR) Homo sapiens R-HSA-983705	8.39E-10	PDGFRB;PDGFRA;ITPR1;ITPR2;PIK3CD;ITPR3;PTPN11;PIK3CB;NFKB1;IKBKB;NFKBIA;CASP9;NRAS;PIK3CA;KIT;ERBB2;AKT1;MAPK1;KRAS;CALM1;FGFR2;FGFR1;MAPK3	Platelet activation	1.29E-11	GUCY1A2;VWF;ITGB3;ITPR1;ITPR2;PIK3CD;ITPR3;ADCY2;PIK3CB;ADCY1;F2;ADCY5;PTGS1;MAPK11;FCGR2A;PIK3CA;AKT1;MAPK1;MAPK3	SK-N-SH cell	1.17E-04	CASP3;AKT1;SLC6A2;TP53
GABRA1	PI3K Cascade Homo sapiens R-HSA-109704	9.11E-10	PRKAB2;PRKAA1;PRKAA2;PDE3B;PRKAG1;PRKAG2;PTPN11;PIK3CB;PRKAB1;PRKAG3;PIK3CA;AKT1;FGFR2;FGFR1	Necroptosis	1.99E-11	IFNAR2;IFNA1;PARP1;IFNB1;STAT1;STAT3;CYBB;TNF;IL1A;IFNG;FTH1;SMPD1;IL1B;CASP1;FAS;JAK2;TLR4;TLR3;FTL;IFNAR1;JAK1	Amnion	1.21E-04	IFNA1;IFNB1;ABL1;PTGS2;PTGS1
GABRA2	Transmembrane transport of small molecules Homo sapiens R-HSA-	1.13E-09	GABRB3;RYR1;GABRB2;RYR2;GABRB1;ABCB1;SLC22A5;ADCY2;ADCY1;SLC6A2;SLC6A3;SLC8A1;ADCY5;GLRA1;GLRA2;FTH1;GABRA2;GABRQ;GABRA1	Choline metabolism	2.02E-11	PDGFRB;PDGFRA;MAP2K1;JUN;SLC22A5;PIK3CD;PIK3CB;FOS;NRAS;PIK3CA;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;MAPK3	Middle ear	1.28E-04	PGRMC1;CD40LG;IL1B;ALB;TNF;TLR2

	382551		;SLC15A1;GABRA6;GABRA5;GABRA4;HTR3E;GABRA3;AVPR2;HTR3C;HTR3D;HTR3A;HTR3B;TRPV1;GABRG3;ALB;SLC29A1;CALM1;RAF1;SLC29A2;FTL	cancer					
GABRA3	EGFR interacts with phospholipase C-gamma Homo sapiens R-HSA-212718	1.22E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Breast cancer	3.47E-11	MAP2K1;JUN;FLT4;PIK3CD;BRAF;PIK3CB;FOS;NRAS;CCND1;PIK3CA;MYC;KIT;ERBB2;AKT1;MAPK1;KRAS;RAF1;TP53;FGFR1;MAPK3	Flower	1.48E-04	IL6;ALB;APOE;F2;TNF
GABRA4	PLC beta mediated events Homo sapiens R-HSA-112043	1.23E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;MAPK1;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Gastric cancer	4.46E-11	MAP2K1;ABCB1;TGFB1;PIK3CD;BRAF;PIK3CB;NRAS;RXRA;CCND1;PIK3CA;MYC;ERBB2;AKT1;MAPK1;KRAS;RAF1;TP53;MET;FGFR2;MAPK3	T-98G cell	1.61E-04	CASP9;CASP3;AKT1;TP53
GABRA5	Toll Like Receptor 10 (TLR10) Cascade Homo sapiens R-HSA-168142	1.52E-09	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	Small cell lung cancer	7.63E-11	NOS2;PIK3CD;PIK3CB;PTGS2;NFKB1;CASP9;IKBKB;NFKBIA;RXRA;CCND1;PIK3CA;CASP3;MYC;AKT1;ITGAV;TP53	Gut mucosa	1.61E-04	IL10;CD4;CD40LG;TNF
GABRA6	Toll Like Receptor 5 (TLR5) Cascade Homo sapiens R-HSA-168176	1.52E-09	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	MicroRNAs in cancer	9.64E-11	ABCB1;ITGB3;PIK3CD;PIK3CB;PTGS2;IKBKB;NRAS;MAPK7;CCND1;MYC;CASP3;ERBB2;ABL1;MAPK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;STAT3;MMP9;NFKB1;VEGFA;PIK	2t	1.74E-04	IL4;IFNG;IL2

						3CA;ATM;KRAS;RAF1;TP53;MET			
ADORA1	MyD88 cascade initiated on plasma membrane Homo sapiens R-HSA-975871	1.52E-09	ATF1;ATF2;MAP2K1;JUN;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	Aldosterone synthesis and secretion	2.04E-10	ATF1;ATF2;KCNJ5;NPR1;PDE2A;ITPR1;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;ADCY5;CACNA1S;CALM1;ATF4	T-24 cell	2.16E-04	CASP9;CASP3;AKT1;TP53
PDE4B	G-protein mediated events Homo sapiens R-HSA-112040	1.60E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;MAPK1;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Complement and coagulation cascades	2.42E-10	VWF;F10;PROS1;SERPINE1;F2;TFPI;F3;F7;PROCR;F8;F9;PROC;BDKRB1;CD55;MBL2	Tachyzoite	2.16E-04	IL10;IL4;CD4;IFNG
ADORA2A	Phospholipase C-mediated cascade: FGFR1 Homo sapiens R-HSA-5654219	2.65E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5;FGFR1	ErbB signaling pathway	2.42E-10	MAP2K1;JUN;PIK3CD;BRAF;PIK3CB;NRAS;PIK3CA;MYC;ERBB2;ABL1;AKT1;MAPK1;KRAS;RAF1;MAPK3	Vitreous humor	2.16E-04	IL6;ALB;CCL2;VEGFA
RYR1	Extrinsic Pathway of Fibrin Clot Formation Homo	3.94E-	F7;F9;F10;TFPI;F3	Progesterone-me	2.79E-	MAP2K1;PDE3B;PIK3CD;BRAF;ADCY2;PIK3CB;ADCY1;ADCY5;RPS6KA3;MAPK11;PIK3CA;AKT1;MAPK1;KRAS;RAF	Bladder wall	2.17E-	HTR7;ADRB3;KIT;PDE5A;TRPV1

	sapiens R-HSA-140834	09		diatedoocyte maturation	10	1;MAPK3		04	
PDE1A	Dopamine receptors Homo sapiens R-HSA-390651	3.94E-09	DRD1;DRD2;DRD3;DRD4;DRD5	Viral carcinogenesis	3.31E-10	ATF2;JUN;STAT3;PIK3CD;HLA-A;PIK3CB;NFKB1;NFKBIA;POLB;NRAS;CCND1;PIK3CA;CASP3;MAPK1;KRAS;RAC1;CCR5;TP53;CCR4;ATF4;JAK1;MAPK3	HMEpC cell	2.17E-04	CCND1;MYC;ERBB2;AKT1;TP53
PDE1B	Muscarinic acetylcholine receptors Homo sapiens R-HSA-390648	3.94E-09	CHRM2;CHRM3;CHRM1;CHRM4;CHRM5	Amoebiasis	3.79E-10	IL10;TGFB1;CXCL8;NOS2;PIK3CD;PIK3CB;ADCY1;TNF;NFKB1;IL6;IFNG;PIK3CA;CASP3;IL1B;TLR4;TLR2	Myenteric plexus	2.58E-04	HTR7;KIT;HTR3A;FOS;TRPV1;HTR4
PDE1C	Phospholipase C-mediated cascade; FGFR2 Homo sapiens R-HSA-5654221	4.26E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;FGFR2;ADCY5	Shigellosis	4.55E-10	JUN;CXCL8;IFNB1;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;TNF;NFKB1;IKBKB;NFKBIA;MAPK11;PIK3CA;IL1B;CCL5;CASP1;AKT1;MAPK1;ATM;RAC1;TP53;TLR4;MAPK3	Marrow cell	2.83E-04	SERPINE1;CTLA4;F2;TFPI
PDE10A	Signal transduction by L1 Homo sapiens R-HSA-445144	5.56E-0	MAP2K1;ITGB3;MAPK1;ITGAV;RAC1;L1CAM;MAPK3;FGFR1	Cushing syndrome	6.67E-1	ATF2;MAP2K1;ITPR1;ITPR2;CACNA1D;ITPR3;BRAF;ADCY2;CACNA1C;ADCY1;ADCY5;PDE11A;CCND1;MAPK1;CACNA1S;PDE8B;PD	Femur	3.39E-0	CRP;IL6;TGFB1;AKR1C1;ALB;TNF;VEGFA

		9			0	E8A;ATF4;MAPK3		4	
PDE4A	Transport of gamma-carboxylated protein precursors from the endoplasmic reticulum to the Golgi apparatus Homo sapiens R-HSA-159763	6.50E-09	F7;PROC;F9;F10;PROS1;F2	Cortisol synthesis and secretion	7.61E-10	ATF2;ITPR1;ITPR2;ADCY2;CACNA1D;ITPR3;ADCY1;CACNA1C;ADCY5;CACNA1S;PDE8B;PDE8A;ATF4	RAJI cell	3.64E-04	CD40LG;CD209;MYC;IL2
PDE4C	MAPK targets/ Nuclear events mediated by MAP kinases Homo sapiens R-HSA-450282	6.91E-09	ATF1;ATF2;RPS6KA3;MAPK11;JUN;MAPK7;MAPK1;FOS;MAPK3	Thermogenesis	7.71E-10	ATF2;CPT1A;PRKAB2;PRKAA1;PRKAA2;NPR1;PRKAG1;PRKAG2;ADCY2;ADCY1;PRKAB1;PRKAG3;ADCY5;RPS6KA3;MAPK11;NRAS;SLC25A29;ADRB3;CPT2;PPARG;KRAS;SLC25A20;FGFR1	Saphenous vein	3.64E-04	HTR7;SERPINE1;HTR1B;MMP9
PDE4D	SALM protein interactions at the synapse Homo sapiens R-HSA-8849932	8.58E-09	GRIA1;GRIN2A;GRIN2C;GRIN2B;GRIA3;GRIN2D;GRIN1;GRIA4	Cytokine-cytokine receptor interacti	7.77E-10	IL1RN;CXCL8;IFNA1;TNF;CXCR1;CCL5;CCL3;CCL2;CCR5;CCR4;IL10;IFNAR2;TGFB1;IFNB1;IL13;IL2;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL7;IL1B;FAS;IFNAR1	Corpus cavernosum	3.64E-04	PDE1B;PDE1A;PDE4A;PDE5A

				on					
PDE7B	Integration of energy metabolism Homo sapiens R-HSA-163685	9.82E-09	CHRM3;PRKAB2;PRKAA2;ITPR1;CACNA2D2;ITPR2;PRKAG2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;ADRA2C;ADRA2A;ADCY5	Salivary secretion	9.02E-10	CHRM3;GUCY1A2;ITPR1;ITPR2;ADRA1D;ADCY2;ADRB1;ITPR3;ADCY1;ADRB2;ADRA1B;ADRA1A;ADCY5;ADRB3;CALM1	Trigeminal nerve	4.27E-04	NTRK1;NTRK3;FOS;OPRM1;TRPV1
PDE2A	Removal of aminoterminal propeptides from gamma-carboxylated proteins Homo sapiens R-HSA-159782	1.60E-08	F7;PROC;F9;F10;PROS1;F2	Spinocerebellar ataxia	1.22E-09	GRIA1;RYR1;GRIA2;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;GRIN2C;GRIN2B;GRIN2D;GRIN1;GRIN2A;GRIN3B;GRIN3A;PIK3CA;AKT1;GRIA3	Pollen	4.53E-04	IL10;IL4;HRH1;CD4;CD40LG;IL13;ALB
PDE3B	MAPK3 (ERK1) activation Homo sapiens R-HSA-110056	1.60E-08	IL6;MAP2K1;PTPN11;JAK2;MAPK3;JAK1	African trypanosomiasis	3.08E-09	IL10;IL6;VCAM1;IFNG;IL1B;HBB;FAS;HBA1;TNF;ICAM1	Inferior vena cava	4.60E-04	SERPINE1;ALB;F2;EPHA2
PDE5A	Activation of the AP-1 family of transcription factors Homo sapiens R-HSA-	1.60E-08	MAPK11;ATF2;JUN;MAPK1;FOS;MAPK3	Viral myocarditis	3.45E-09	CASP9;CD40LG;CCND1;CASP3;RAC2;ABL1;RAC1;HLA-A;CD55;HLA-DRB1;ICAM1;HLA-DQB1	Wound fluid	4.73E-04	MMP9;ELANE;VEGFA

	450341								
PDE6C	PI5P, PP2A and IER3 Regulate PI3K/AKT Signaling Homo sapiens R-HSA-6811558	1.74E-08	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;MAPK3;FGFR1	Allograft rejection	4.10E-09	IL10;IL4;CD40LG;IFNG;FAS;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	A7r5 cell	5.73E-04	ITPR1;ITPR3;KCNQ5;CACNA1C
PDE11A	Cellular responses to stress Homo sapiens R-HSA-2262752	1.82E-08	PRKAA1;CXCL8;PRKAA2;PRKAG1;PRKAG2;PRKAG3;RPS6KA3;MAPK7;MAPK1;MAPK3;PRKAB2;JUN;HSPA5;IFNB1;PTGES3;STAT3;CYBB;CYBA;FOS;PRKAB1;NFKB1;VEGFA;IL1A;MAPK11;IL6;ATM;TP53	Thyroid hormone synthesis	4.85E-09	ATF2;HSPA5;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;ASGR2;ADCY5;TPO;CANX;ALB;ATF4	Myometrium	6.98E-04	RYR1;ATF2;RYR2
PDE7A	Phospholipase C-mediated cascade; FGFR3 Homo sapiens R-HSA-5654227	1.92E-08	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Herpes simplex virus 1 infection	6.26E-09	IFNA1;ITGB3;PIK3CD;PIK3CB;TNF;IKBKB;CASP9;CCL5;CASP3;AKT1;CCL2;JAK2;JAK1;IFNAR2;STAT1;IFNB1;DDX58;PTPN11;HLA-A;NFKB1;NFKBIA;IL6;PIK3CA;IFNG;IL1B;FAS;CALR;TP53;HLA-DRB1;TLR3;HLA-DQB1;IFNAR1;TLR2	vx2	6.98E-04	HBA1;F2;VEGFA
PDE8A	Negative feedback regulation of MAPK pathway Homo sapiens	2.32E-08	MAP2K1;MAPK1;BRAF;RAF1;MAPK3	Signaling pathways regula	8.54E-09	MAP2K1;STAT3;PIK3CD;PIK3CB;MAPK11;NRAS;PIK3CA;MYC;AKT1;MAPK1;KRAS;RAF1;JAK2;FGFR2;FGFR1;JAK1;MAPK3	Penis	8.57E-04	TGFB1;PDE5A;HBA1;TP53

	R-HSA-5674499			ting pluripotency of stem cells					
PDE8B	Downstream signaling events of B Cell Receptor (BCR) Homo sapiens R-HSA-1168372	2.41E-08	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;NFKB1;NFKBIA;CASP9;IKBKB;NRAS;PIK3CA;KIT;ERBB2;AKT1;MAPK1;KRAS;FGFR2;FGFR1;MAPK3	Autoimmune thyroid disease	1.03E-08	IL10;IL4;TPO;CD40LG;IFNA1;CTLA4;FAS;HLA-A;IL2;HLA-DRB1;HLA-DQB1	okt8	9.82E-04	CD40LG;HLA-A;IL2
PDE9A	Phospholipase C-mediated cascade; FGFR4 Homo sapiens R-HSA-5654228	3.04E-08	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Graft-versus-host disease	1.18E-08	IL1A;IL6;IFNG;IL1B;FAS;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Peripheral blood stem cell	0.00103	CD4;FLT3;ABL1;IL2
PDE6A	Interleukin-6 signaling Homo sapiens R-HSA-1059683	3.45E-08	IL6;STAT1;STAT3;PTPN11;JAK2;JAK1	Epithelial cell signaling in Helicobacter	2.17E-08	IKBKB;NFKBIA;MAPK11;JUN;CXCL8;CXCR1;CASP3;CCL5;PTPN11;RAC1;MET;NFKB1	Reticulum	0.00103	RYR1;RYR2;ITPR1;SLC8A1

				pylori infection					
PDE6B	Adaptive Immune System Homo sapiens R-HSA-1280218	3.54E-08	NCF1;NCF4;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;ICAM1;IKBKB;CASP9;NRAS;ERBB2;AKT1;CTLA4;MAPK1;ITGAV;RAC1;MAPK3;PDGFRB;PDGFRA;VCAM1;HSPA5;CYBB;PTPN11;CYBA;HLA-A;NFKB1;NFKBIA;CD4;CD40LG;PIK3CA;CANX;KIT;KRAS;CALR;CALM1;RAF1;HLA-DRB1;FGFR2;HLA-DQB1;FGFR1	Legionellosis	2.32E-08	CASP9;NFKBIA;IL6;CXCL8;CASP3;IL1B;CASP1;TNF;TLR4;NFKB1;TLR2	BTO:0001439	0.001119	VWF;CHRNA4;SCN9A;PLA2G10;F2
PRKDC	Phase 2 - plateau phase Homo sapiens R-HSA-5576893	3.90E-08	CACNB1;CACNA2D1;CACNA2D2;CACNA1D;CACNA1C;CACNA1S;CACNG1;CACNG2	Type II diabetes mellitus	3.04E-08	IKBKB;PIK3CA;CACNA1B;PIK3CD;MAPK1;CACNA1D;CACNA1C;PIK3CB;TNF;MAPK3	Phagocyte	0.001226	ITGB3;SERPINE1;CTLA4;F2
PIK3CD	Negative regulation of the PI3K/AKT network Homo sapiens R-HSA-199418	4.74E-08	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;MAPK3;FGFR1	AMPK signaling pathway	3.26E-08	CPT1A;PRKAB2;PRKAA1;PRKAA2;PRKAG1;PIK3CD;PRKAG2;PIK3CB;PRKAB1;ADRA1A;PRKAG3;CCND1;PIK3CA;AKT1;PPARG	Abdominal adipose tissue	0.001316	CRP;ADRB3;SERPINE1;AKT1;PPARG;PPARA
PIK	Phase 1 - inactivation of fast	5.4	CACNB1;CACNA2D1;CACNA2D2;CACNA1D;CACNA1C;C	NF-kapp	3.6	VCAM1;CXCL8;PARP1;DDX58;PTGS2;TNF;NFKB1;ICAM	Pheochr	0.0	NTRK1;FOS;SLC6A2

3CB	Na+ channels Homo sapiens R-HSA-5576894	4E-08	ACNA1S;CACNG1;CACNG2	a B signaling pathway	2E-08	1;NFKBIA;IKBKB;CD40LG;IL1B;ATM;TLR4	omocytomacell	01329	
ITPR1	PI3K/AKT activation Homo sapiens R-HSA-198203	5.69E-08	PDGFRB;NTRK1;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Diabetic cardiomyopathy	5.93E-08	RYR2;ACE;TGFB1;PARP1;NCF1;NCF4;CYBB;PIK3CD;CYBA;PIK3CB;MMP9;NFKB1;MAPK11;CPT2;PIK3CA;RAC2;AKT1;RAC1;PPARA	Rheumatoid arthritis disease specific synovial fibroblast	0.001329	IL6;IL1B;TNF
ITPR2	Mitochondrial biogenesis Homo sapiens R-HSA-1592230	5.80E-08	ATF2;MAPK11;PRKAB2;PRKAA2;RXRA;PRKAG1;PRKAG2;PPARA;PRKAB1;PRKAG3	Arrhythmogenic right ventricular cardiomy	6.57E-08	CACNB1;RYR2;ITGB3;CACNA2D1;CACNA2D2;ITGAV;CACNA1D;CACNA1C;CACNA1S;CACNG1;CACNG2;SLC8A1	MDCK-2 cell	0.001695	ABCB1;ADRA2C;ADRA2B;ADRA2A

				opathy					
ITPR3	MAP2K and MAPK activation Homo sapiens R-HSA-5674135	6.79E-08	NRAS;MAP2K1;VWF;ITGB3;MAPK1;BRAF;KRAS;RAF1;MAPK3	Leukocyte transendothelial migration	1.18E-07	VCAM1;NCF1;NCF4;CYBB;PIK3CD;CYBA;PTPN11;PIK3CB;MMP9;ICAM1;MAPK11;PIK3CA;RAC2;RAC1	Stellate cell	0.001745	PDGFRB;IL6;TGFB1
ATM	Ca-dependent events Homo sapiens R-HSA-111996	7.47E-08	PDE1C;PDE1B;PDE1A;MAPK1;ADCY2;ADCY1;CALM1;ADCY5	Fcgamma R-mediated phagocytosis	1.18E-07	MAP2K1;NCF1;LIMK1;PIK3CD;PIK3CB;FCGR2A;PIK3CA;RAC2;AKT1;MAPK1;RAC1;RAF1;MAPK3	Venule	0.001745	IL1B;ALB;MPO
ADORA2B	PKB-mediated events Homo sapiens R-HSA-109703	1.10E-07	PRKAA1;PRKAB2;PRKAA2;PDE3B;PRKAG1;PRKAG2;AKT1;PRKAB1;PRKAG3	Hematopoietic cell lineage	1.50E-07	FLT3;ITGB3;TNF;IL4;IL1A;IL6;CD4;IL7;IL1B;KIT;HLA-DRB1;CD55;HLA-DQB1	Lymphocyte	0.001909	FLT3;FPGS;OPRL1;CCL3;HBB;CTLA4;ADRA1A
ADORA	G alpha (q) signalling events Homo	1.19E	CHRM3;CHRM1;PTGER1;CHRM5;ITPR1;HTR2B;ITPR2;HTR2C;ITPR3;ADRA1D;HTR2A;ADRA1	mTOR signaling	1.58E	MAP2K1;PRKAA1;PRKAA2;PIK3CD;BRAF;PIK3CB;TNF;IKBKB;RPS6KA3;NRAS;PIK3CA;AKT1;M	Pelvis	0.001	CRP;PGRMC1;AKR1C1;KIT;TP53

3	sapiens R-HSA-416476	-07	B;F2;ADRA1A;EDNRA;HRH1;PIK3CA;BDKRB1	pathway	-07	APK1;KRAS;RAF1;MAPK3		97	
MET	RHO GTPases Activate NADPH Oxidases Homo sapiens R-HSA-5668599	1.24E-07	NCF1;NCF4;RAC2;CYBB;CYBA;RAC1	Type I diabetes mellitus	2.14E-07	IL1A;IFNG;IL1B;FAS;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Yolk sac	0.00197	KIT;ALB;KDR;TEK;VEGFA
rplP	GPVI-mediated activation cascade Homo sapiens R-HSA-114604	1.28E-07	PIK3CA;RAC2;PIK3CD;AKT1;PTPN11;PIK3CB;RAC1;JAK2;IL2;JAK1	Hepatocellular carcinoma	5.22E-07	MAP2K1;TGFB1;PIK3CD;BRAF;PIK3CB;NRAS;CCND1;PIK3CA;MYC;AKT1;MAPK1;KRAS;RAF1;TP53;MET;MAPK3	Brain stem	0.00223	CHRNB3;OPRL1;HTR2A
draA	Cell surface interactions at the vascular wall Homo sapiens R-HSA-202733	1.91E-07	PROS1;ITGB3;PTPN11;PIK3CB;L1CAM;F2;PROCR;NRAS;PROC;PIK3CA;ITGAV;KRAS;TEK	Transcriptional misregulation in cancer	6.50E-07	ATF1;NTRK1;CXCL8;FLT1;FLT3;MPO;MMP9;NFKB1;IL6;RXRA;MYC;ATM;PPARG;TP53;MET;ELANE;GRIA3	Adult T-cell lymphoma cell	0.00223	NFKBIA;CD4;IL2
CD55	Cross-presentation of particulate exogenous antigens (phagoso	2.10E-07	NCF1;NCF4;CYBB;CYBA;ITGAV	Cytosolic DNA-sensing pat	6.94E-07	IKBKB;NFKBIA;IL6;IFNA1;DDX58;IFNB1;IL1B;CCL5;CASP1;NFKB1	Insect labium	0.00223	PROS1;AKR1C1;SIK1

	mes) Homo sapiens R-HSA-1236973			hway					
DRD2	PI3K/AKT Signaling in Cancer Homo sapiens R-HSA-2219528	2.31E-07	CASP9;PDGFRB;PDGFRA;PIK3CA;KIT;ERBB2;PIK3CD;AKT1;PTPN11;PIK3CB;FGFR2;FGFR1	Axon guidance	1.52E-06	LIMK1;PIK3CD;PTPN11;PIK3CB;L1CAM;NRAS;PIK3CA;ABL1;RAC2;MAPK1;KRAS;RAC1;RAF1;MET;EPHA2;MAPK3	HT-1080 cell	0.00275	SERPINE1;AKT1;MMP9;TP53
DRD1	PI-3K cascade: FGFR1 Homo sapiens R-HSA-5654689	2.77E-07	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Insulin secretion	1.79E-06	ATF2;CHRM3;RYR2;ADCY2;CACNA1D;ITPR3;ADCY1;CACNA1C;CACNA1S;ATF4;ADCY5	NCCIT cell	0.00279 8	GABRB1;PCNA;MAPK4
HTR1A	PI-3K cascade: FGFR3 Homo sapiens R-HSA-5654710	2.77E-07	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Cardiac muscle contraction	2.01E-06	CACNB1;RYR2;CACNA2D1;TNNC1;CACNA2D2;CACNA1D;CACNA1C;CACNA1S;CACNG1;CACNG2;SLC8A1	Myeloid progenitor cell	0.00297 9	FLT3;KIT;ABL1;PTPN11
HTR2A	PI3K events in ERBB4 signaling Homo sapiens R-HSA-1250342	2.77E-07	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Asthma	2.87E-06	IL10;IL4;CD40LG;IL13;TNF;HLA-DRB1;HLA-DQB1	PC-12 cell	0.00297 9	CASP9;HSPA5;PARP1;RAF1
ADRA1	PIP3 activates AKT signaling Homo	2.77E	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FG	Circadian rhyth	2.87E	PRKAA1;PRKAB2;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3	Esophageal	0.003	CCND1;CASP3;TP53

A	sapiens R-HSA-1257604	-07	FR1;MAPK3	m	-06		cancer cell line	444	
ADRA1B	PI-3K cascade: FGFR4 Homo sapiens R-HSA-5654720	2.77E-07	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Amyotrophic lateral sclerosis	2.93E-06	GRIA1;GRIA2;HSPA5;NOS2;TUBB;SIGMAR1;ITPR3;GRIN2C;TUBB4B;GRIN2B;TNF;GRIN2D;GRIN1;CASP9;MAPK11;GRIN2A;TUBA1A;CASP3;CASP1;RAC1;ATF6;TP53;ATF4	Human brain microvascular endothelial cell	0.003444	VCAM1;TNF;ICAM1
CNH2	PI-3K cascade: FGFR2 Homo sapiens R-HSA-5654695	2.77E-07	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Base excision repair	4.49E-06	POLB;PARP3;PCNA;LIG1;PARP1;PARP2;LIG3	Alveolar bone	0.003456	IL1A;IL6;TGFB1;IL1B;TNF;MMP9
DRD5	RAF-independent MAPK1/3 activation Homo sapiens R-HSA-112409	3.09E-07	MAP2K1;IL6;MAPK1;PTPN11;JAK2;MAPK3;JAK1	Parkinson disease	5.67E-06	HSPA5;TUBB;ITPR1;ITPR2;ITPR3;TUBB4B;SLC6A3;ADCY5;CASP9;TUBA1A;ADORA2A;CASP3;DRD1;CALM1;DRD2;ATF6;TP53;ATF4	Tibia	0.003711	CRP;IL6;TGFB1;IL1B;TNF;VEGFA
DR	CREB phospho	3.	GRIN2A;GRIN2C;CALM1;GRIN2B;GRI	Interest	6.	IL10;IL4;IL6;TGFB1;CD40LG;IL2;HLA-	Perip	0.	DPP4;NTRK1;LMAN1;CYBB;PTGS2;H

D3	rylation through the activation of CaMKII Homo sapiens R-HSA-442729	48E-07	N2D;GRIN1	inal immune network for IgA production	29E-06	DRB1;HLA-DQB1	heral blood	0040059	LA-DRB1;CES1
DRD4	GAB1 signalosome Homo sapiens R-HSA-180292	3.74E-07	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Autophagy	6.34E-06	MAP2K1;PRKAA1;PRKAA2;ITPR1;PIK3CD;PIK3CB;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAF1;MAPK3	CEM cell	0.004173	CD4;FAS;SLC29A1
HTR2C	MAPK1 (ERK2) activation Homo sapiens R-HSA-112411	4.63E-07	IL6;MAPK1;PTPN11;JAK2;JAK1	Viral protein interaction with cytokine and cytokine receptor	7.96E-06	IL10;IL6;CXCL8;CXCR1;CCL5;CCL3;CCL2;CCR5;TNF;CCR4;IL2	Amastigote	0.004805	IL10;CD4;APOE;TNF

HTR2B	Prostanoid ligand receptors Homo sapiens R-HSA-391908	4.63E-07	PTGER4;PTGER1;PTGDR2;PTGER2;PTGER3	Melanogenesis	8.77E-06	MAP2K1;NRAS;KIT;MAPK1;ADCY2;KRAS;ADCY1;RAF1;CALM1;ADCY5;MAPK3	Aerial part	0.004989	CHRM2;NOS2;TNF
ADRA1D	Constitutive Signaling by Aberrant PI3K in Cancer Homo sapiens R-HSA-2219530	5.08E-07	PDGFRB;PDGFRA;PIK3CA;KIT;ERBB2;PIK3CD;PTPN11;PIK3CB;FGFR2;FGFR1	Pancreatic secretion	9.65E-06	CHRM3;RYR2;PLA2G10;PLA2G2A;ITPR1;ITPR2;ITPR3;ADCY2;RAC1;ADCY1;ADCY5	WEHI-231 cell	0.004989	NFKBIA;CD40LG;MYC
ADRA2A	Senescence-Associated Secretory Phenotype (SASP) Homo sapiens R-HSA-2559582	5.78E-07	RPS6KA3;IL1A;JUN;IL6;CXCL8;MAPK7;STAT3;MAPK1;FOS;NFKB1;MAPK3	Tight junction	1.36E-05	PRKAB2;JUN;PRKAA1;PCNA;PRKAA2;PRKAG1;PRKAG2;CACNA1D;PRKAB1;PRKAG3;TUBA1A;CCND1;ERBB2;RAC1	Jugular vein	0.004989	HTR7;ALB;F2
ADRA2B	Regulation of IFNA signaling Homo sapiens R-HSA-912694	5.84E-07	IFNAR2;IFNA1;STAT1;IFNB1;PTPN11;JAK1;IFNAR1	RIG-I-like receptor signaling pathway	1.50E-05	IKBKB;NFKBIA;MAPK11;CXCL8;IFNA1;DDX58;IFNB1;TNF;NFKB1	Umbilical vein	0.005358	FLT1;NCF1;KDR;FGFR1
A	CaM	7	PDE1C;PDE1B;PDE	Oo	1	RPS6KA3;MAPK11;	Ce	0	CRP;PGRMC1;AVP

DRA2C	pathway Homo sapiens R-HSA-111997	.85E-07	1A;ADCY2;ADCY1;CALM1;ADCY5	cyte meiosis	.76E-05	MAP2K1;ITPR1;ITPR2;MAPK1;ITPR3;ADCY2;ADCY1;CALM1;ADCY5;MAPK3	rvical spine	.00535 8	R2;CD55
SMPD1	Calmodulin induced events Homo sapiens R-HSA-111933	7.85E-07	PDE1C;PDE1B;PDE1A;ADCY2;ADCY1;CALM1;ADCY5	Gastric acid secretion	2.94E-05	CHRM3;HRH2;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;CALM1;ADCY5	ae3	0.00536 7	PTGER4;KIT;ERBB2;HBA1;TP53
CALM1	Ras activation uopn Ca2+ infux through NMDA receptor Homo sapiens R-HSA-442982	8.30E-07	GRIN2A;GRIN2C;CALM1;GRIN2B;GRIN2D;GRIN1	Antigen processing and presentation	3.63E-05	CD4;IFNG;HSPA5;CANX;HLA-A;CALR;TNF;HLA-DRB1;HLA-DQB1	Bladder	0.00599 4	CRP;WARS;PCNA;GGPS1;STAT1;PTGES3;AKR1C1;AKR1C3;FOS;HLA-A;FTH1;ALB;CANX;ITGAV;CALR;RAC1;HLA-DQB1;FTL
ORM1	Nuclear Receptor transcription pathway Homo sapiens R-HSA-383280	9.96E-07	THRB;RXRA;THRA;NR1I3;NR1I2;NR1H4;PPARG;PPARA;PPARD	Aldosterone-regulated sodium reabsorption	1.09E-04	PIK3CA;PIK3CD;MAPK1;KRAS;PIK3CB;MAPK3	Porcine aortic endothelial cell	0.00621 1	FLT1;KDR
O	mTOR	1	PRKAA1;PRKAB2;P	Sys	5	IL10;GRIN2A;CD40	Re	0	ALB;F2

RM2	signalling Homo sapiens R-HSA-165159	.21E-06	RKAA2;PRKAG1;PRKAG2;AKT1;PRKAB1;PRKAG3	temic lupus erythematosus	.63E-04	LG;FCGR2A;IFNG;TNF;GRIN2B;ELANE;HLA-DRB1;HLA-DQB1	nalvein	.0062111	
HTR6	Tie2 Signaling Homo sapiens R-HSA-210993	1.22E-06	NRAS;PIK3CA;PTPN11;KRAS;PIK3CB;TEK	Adherens junction	7.07E-04	ERBB2;RAC2;MAPK1;RAC1;MET;MAPK3;FGFR1	U-373 MG cell	0.0062111	IL1B;TP53
HTR7	Energy dependent regulation of mTOR by LKB1-AMPK Homo sapiens R-HSA-380972	1.36E-06	PRKAA1;PRKAB2;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3	p53 signaling pathway	8.35E-04	CASP9;CCND1;CASP3;SERPINE1;FAS;ATM;TP53	Vesicular gland	0.0062111	PROS1;PTGS2
HRH4	Cellular Senescence Homo sapiens R-HSA-2559583	1.56E-06	JUN;CXCL8;IFNB1;STAT3;FOS;NFKB1;RPS6KA3;IL1A;MAPK11;IL6;MAPK7;MAPK1;ATM;TP53;MAPK3	PPAR signaling pathway	9.06E-04	FADS2;CPT1A;RXRA;CPT2;PPARG;PPARA;PPARD	Genital mucosa	0.0062111	CD4;CCR5
dacA	CLEC7A (Dectin-1) induces NFAT activatio	1.64E-	ITPR1;ITPR2;ITPR3;NFATC1;CALM1	Cell adhesion mo	0.00111	CD4;VCAM1;CD40LG;CTLA4;ITGAV;HLA-A;L1CAM;HLA-DRB1;ICAM1;HLA-DQB1	Oocyst	0.00668	CD4;CD40LG;IFNG

	n Homo sapiens R-HSA-5607763	06		lecules	45			93	
pbpX	C-type lectin receptors (CLRs) Homo sapiens R-HSA-5621481	1.90E-06	ITPR1;ITPR2;ITPR3;NFATC1;NFKB1;NFKBIA;IKBKB;NRAS;CD209;IL1B;KRAS;RAF1;CALM1	Ferroptosis	0.001587	PRNP;FTH1;CYBB;TP53;FTL	Gastrointestinal stromal tumor cell	0.006893	PDGFRB;PDGFRA;KIT
pbpA	Platelet degranulation Homo sapiens R-HSA-114608	2.06E-06	ORM1;F8;TGFB1;HSPA5;VWF;PROS1;ITGB3;SERPINE1;ALB;CALM1;ORM2;VEGFA	Arachidonic acid metabolism	0.001713	PTGES3;PLA2G10;PLA2G2A;AKR1C3;PTGS2;PTGS1	Keratinocyte	0.008324	DDR1;CHRNA3;WARS;CHRNA7;ITGB3;CHRM5;CANX;CALR
TFPI	Response to elevated platelet cytosolic Ca2+ Homo sapiens R-HSA-76005	3.37E-06	ORM1;F8;TGFB1;HSPA5;VWF;PROS1;ITGB3;SERPINE1;ALB;CALM1;ORM2;VEGFA	Huntingtondisease	0.002123	GRIA1;GRIA2;TUBB;CACNA1B;ITPR1;TUBB4B;GRIN2B;GRIN1;CASP9;TUBA1A;CASP3;PPARG;TP53;GRIA3;GRIA4	Abductor	0.008576	AKR1C1;PDE8B
GGCX	Interferon Signaling Homo sapiens	4.02E	IFNAR2;VCAM1;IFNA1;STAT1;IFNB1;DDX58;PTPN11;HLA-A;ICAM1;IFNG;JAK	Carbohydrate	0.002	PIK3CA;PIK3CD;AKT1;CACNA1D;PIK3CB	Adductor	0.008	AKR1C1;PDE8B

	R-HSA-913531	-06	2;HLA-DRB1;JAK1;HLA-DQB1;IFNAR1;MAPK3	digestion and absorption	933			576	
F7	Translocation of GLUT4 to the plasma membrane Homo sapiens R-HSA-1445148	4.10E-06	PRKAB2;PRKAA2;PRKAG1;PRKAG2;AKT1;RAC1;CALM1;PRKAB1;PRKAG3	Ovarian steroidogenesis	0.004195	AKR1C3;ADCY2;ADCY1;PTGS2;ADCY5	Chromaffin cell	0.008576	SCN9A;CACNA1C
MAP2K1	Disease Homo sapiens R-HSA-1643685	4.38E-06	PIK3CD;PIK3CB;IKBKB;CASP9;NRAS;MYC;ERBB2;AKT1;RAC1;CCR5;PDGFRB;PDGFRA;MAP2K1;TGFB1;LIG1;STAT1;STAT3;AVPR2;PTPN11;HLA-A;NFKB1;NFKBIA;CD4;PIK3CA;ALB;CANX;KIT;KRAS;CALR;CALM1;TLR4;TLR3;FGFR2;TLR2;FGFR1	Phosphatidylinositol signaling system	0.004298	PIK3CA;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;CALM1	Neural crest	0.008679	RET;NTRK1;PDGFRA;EDNRA;TGFB1;NTRK3;KIT;FGFR1
ABCB1	Depolarization of the Presynaptic Terminal Triggers the Opening of Calcium	4.41E-06	CACNB1;CACNA2D1;CACNA1B;CACNA2D2;CACNG2	Cell cycle	0.004627	TGFB1;PCNA;CCND1;PRKDC;MYC;ABL1;ATM;TP53	non-neuronal cell	0.008756	NTRK1;CHRNA4;NTRK3;TRPV1

	Channels Homo sapiens R-HSA-112308								
NR1I2	Common Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140875	4.58E-06	PROCR;F8;PROC;F10;PROS1;F2	Bile secretion	0.01116	ABCB1;RXRA;NR1H4;ADCY2;ADCY1;ADCY5	Cyst	0.009591	CD40LG;AVPR2;KRAS;TP53;CES1
POLB	Intrinsic Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140837	4.58E-06	F8;PROC;F9;VWF;F10;F2	Mitophagy	0.01396 3	NRAS;JUN;KRAS;TP53;ATF4	Sporozoite	0.010459	CD4;IFNG;IL2
BRAF	POLB-Dependent Long Patch Base Excision Repair Homo sapiens R-HSA-110362	6.32E-06	POLB;LIG1;PARP1;PARP2	TGF-beta signaling pathway	0.01415 8	TGFB1;IFNG;MYC;MAPK1;TNF;MAPK3	HEp-2 cell	0.010459	CASP9;IFNB1;CASP3
RAF1	Interleukin-1 processing Homo sapiens R-HSA-448706	6.32E-06	IL1A;IL1B;CASP1;NFKB1	Staphylococcus aureus infection	0.01485 4	IL10;FCGR2A;HLA-DRB1;ICAM1;MBL2;HLA-DQB1	Neural stem cell	0.011157	CCND1;MYC;CASP3;STAT3;AKT1;TP53;VEGFA

SIK1	Highly sodium permeable acetylcholine nicotinic receptors Homo sapiens R-HSA-629587	6.32E-06	CHRNB2;CHRNA3;CHRNB4;CHRNA4	alpha-Linolenic acid metabolism	0.014915	FADS2;PLA2G2A;PLA2G10	Rat-2 cell	0.011277	FOS;TFPI
NEK11	Regulation of insulin secretion Homo sapiens R-HSA-422356	6.52E-06	CHRM3;ITPR1;CACNA2D2;ITPR2;ITPR3;CACNA1D;CACNA1C;ADRA2C;ADRA2A;ADCY5	Phototransduction	0.020289	PDE6B;PDE6A;CALM1	Rhizome	0.011277	CASP3;TNF
LIMK1	Regulation of IFNG signaling Homo sapiens R-HSA-877312	6.75E-06	IFNG;STAT1;PTPN11;JAK2;JAK1	Bacterial invasion of epithelial cells	0.022754	PIK3CA;PIK3CD;PIK3CB;RAC1;MET	C6 glioma cell	0.011277	AKT1;TP53
F8	Diseases associated with the TLR signaling cascade Homo sapiens R-HSA-5602358	7.97E-06	IKBKB;NFKBIA;TLR4;NFKB1;TLR3;TLR2	Wnt signaling pathway	0.023964	JUN;CCND1;MYC;RAC2;NFATC1;RAC1;TP53;PPARD	Thymoma cell	0.011277	IL1A;CD4
AV	Diseases of	7.	IKBKB;NFKBIA;TLR4;NFKB1;TLR3;TLR	Peroxi	0.	PHYH;NOS2;CROT;XDH;CRAT	Mon	0.	ITGB3;SERPINE1;CTLA4;F2

PR2	Immune System Homo sapiens R-HSA-5260271	97E-06	2	some	0289904		oncuclear cell	0113466	
SIGMAR1	Nuclear Events (kinase and transcription factor activation) Homo sapiens R-HSA-198725	7.97E-06	ATF1;MAPK11;RPS6KA3;MAPK7;MAPK1;MAPK3	Terpenoid backbone biosynthesis	0.076809	FDPS;GGPS1	Biofilm	0.011346	IL6;IL1B;TNF;TLR2
CHRNA2	Role of LAT2/NTAL/LAB on calcium mobilization Homo sapiens R-HSA-2730905	8.36E-06	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;CASP9;PIK3CA;KIT;ERBB2;AKT1;MAPK1;FGFR2;FGFR1;MAPK3	Synaptic vesicle cycle	0.081139	CACNA1B;SLC6A2;SLC6A3;SLC6A4	Cancellous bone	0.011346	IL6;TGFB1;NFATC1;PPARG
GRIN3A	Eicosanoid ligand-binding receptors Homo sapiens R-HSA-391903	9.95E-06	PTGER4;PTGER1;PTGDR2;PTGER2;PTGER3	Mismatch repair	0.082996	PCNA;LIG1	Dental pulp	0.011346	NT5E;TGFB1;TRPV1;VEGFA
PGRMC1	Platelet Aggregation (Plug Formation) Homo sapiens R-HSA-	1.01E-0	VWF;ITGB3;AKT1;F2;ADRA2C;ADRA2B;ADRA2A	Folate biosynthesis	0.10244	FPGS;AKR1C3	F-9 cell	0.011184	JUN;FOS;JDP2

	76009	5						4	
CHRNA3	Metabolism of lipids and lipoproteins Homo sapiens R-HSA-556833	1.01E-05	ACHE;PRKAA2;PRKAG2;PIK3CD;PIK3CB;CROT;PTGS2;PTGS1;FADS2;RXRA;CPT2;SMPD1;SLC25A20;APOE;FADS1;FDPS;PRKAB2;CPT1A;PHYH;GGPS1;PTGES3;AKR1C1;PLA2G2A;NR1H4;AKR1C3;PIK3CA;ALB;PLA2G10;PPARG;PPARA;CRAT;PPARD	Biosynthesis of unsaturated fatty acids	0.10912	FADS2;FADS1	Cerebrospinal fluid	0.013332	ORM1;APOE;F2;ORM2
CHRNB4	RAF activation Homo sapiens R-HSA-5673000	1.03E-05	NRAS;MAP2K1;BRAF;KRAS;JAK2;RAF1	Caffeine metabolism	0.119311	XDH	Rosette	0.013332	CD4;CD40LG;ALB;IL2
CHRNA7	VEGF ligand-receptor interactions Homo sapiens R-HSA-194313	1.24E-05	FLT1;FLT4;KDR;VEGFA	Linoleic acid metabolism	0.122891	PLA2G2A;PLA2G10	Portal vein	0.013329	IL6;ALB;F2
CYBB	VEGF binds to VEGFR leading to receptor dimerization Homo sapiens R-HSA-195399	1.24E-05	FLT1;FLT4;KDR;VEGFA	Mineral absorption	0.131055	FTH1;SLC8A1;FTL	Mesothelioma cell line	0.014299	CASP3;AKT1

CYBA	Peptide ligand-binding receptors Homo sapiens R-HSA-375276	1.45E-05	OPRD1;CXCL8;AVPR2;OPRL1;OPRK1;OPRM1;F2;EDNRA;CXCR1;CCL5;CCL3;BDKRB1;CCL2;CCR5;CCR4	Protein processing in endoplasmic reticulum	0.150561	LMAN1;HSPA5;CANX;CALR;ATF6;ATF4	U-251MG cell	0.014299	AKT1;TP53
NCF1	Gamma carboxylation, hypusine formation and arylsulfatase activation Homo sapiens R-HSA-163841	1.45E-05	F7;PROC;F9;F10;GGCX;PROS1;F2	DNA replication	0.173815	PCNA;LIG1	Laryngeal cell line	0.014299	CD40LG;TP53
NCF4	GABA B receptor activation Homo sapiens R-HSA-977444	1.45E-05	KCNJ5;KCNJ6;KCNJ9;ADCY2;ADCY1;ADCY5;KCNJ3	Primary immunodeficiency	0.188932	CD4;CD40LG	Urine	0.016604	ALB;F2;CD55
RAC1	Activation of GABAB receptors Homo sapiens	1.45E-	KCNJ5;KCNJ6;KCNJ9;ADCY2;ADCY1;ADCY5;KCNJ3	Inositol phosph	0.19770	PIK3CA;PIK3CD;PIK3CB	Mature cell	0.01766	CD4;KIT

	R-HSA-991365	05		ate metabolism	44			29	
RAC2	Interleukin-6 family signaling Homo sapiens R-HSA-6783589	1.66E-05	IL6;STAT1;STAT3;PTPN11;JAK2;JAK1	Ubiquinone and other terpenoid-quinone biosynthesis	0.207812	GGCX	Foreskin fibroblast cell line	0.017629	TUBB;FGFR1
pbpC	Regulation of TP53 Activity through Phosphorylation Homo sapiens R-HSA-6804756	1.70E-05	MAPK11;PRKAB2;PRKAA1;PRKAA2;PRKAG1;PRKAG2;ATM;PRKAB1;TP53;PRKAG3	Fat digestion and absorption	0.227379	PLA2G2A;PLA2G10	SK-N-MC cell	0.017629	CASP3;ADRA1A
pbp1b	Negative regulation of MAPK pathway Homo sapiens R-HSA-5675221	1.73E-05	NRAS;MAP2K1;MAPK1;BRAF;KRAS;RAF1;MAPK3	Fatty acid degradation	0.227379	CPT1A;CPT2	Calyx	0.017629	CHRM3;CACNA1B
p	PERK	2	CXCL8;HSPA5;CCL	No	0	PRKDC	En	0	PRNP;KIT

bp2a	regulates gene expression Homo sapiens R-HSA-381042	.08E-05	2;ATF6;ATF3;ATF4	n-homologous end-joining	.240676		teric nervous system	.017629	
pbp3	Adrenaline,noradrenaline inhibits insulin secretion Homo sapiens R-HSA-400042	2.08E-05	CACNA2D2;CACNA1D;CACNA1C;ADRA2C;ADRA2A;ADCY5	Nucleotide excision repair	0.258504	PCNA;LIG1	IMR-32 cell	0.017629	CHRNA4;TP53
penA	Interferon gamma signaling Homo sapiens R-HSA-877300	2.51E-05	VCAM1;IFNG;STAT1;PTPN11;HLA-A;JAK2;HLA-DRB1;ICAM1;JAK1;HLA-DQB1	Ether lipid metabolism	0.274099	PLA2G10;PLA2G2A	N1E-115 cell	0.018395	HTR7;HTR3A;CALM1
NR1I3	Interleukin-1 signaling Homo sapiens R-HSA-446652	3.31E-05	IKBKB;IL1A;IL1RN;MAP2K1;IL1B;NOD2;NFKB1	ECM-receptor interaction	0.280514	VWF;ITGB3;ITGAV	Seminiferous tubule	0.018395	CASP3;KIT;TP53
BDKRB1	ATF6-alpha activates chaperone genes Homo	3.61E-	HSPA5;CALR;ATF6;ATF4	Cholesterol metab	0.28188	LRP1;APOE	Periodontal lig	0.01911	IL6;TGFB1;IL1B;TNF

	sapiens R-HSA-381183	05		olism	93		ament	69	
ADRB1	Diseases of signal transduction Homo sapiens R-HSA-5663202	4.03E-05	PDGFRB;PDGFRA;TGFB1;STAT1;STAT3;PIK3CD;PTPN11;PIK3CB;CASP9;NRAS;PIK3CA;MYC;KIT;ERBB2;AKT1;KRAS;FGFR2;FGFR1	Pyrimidine metabolism	0.32844	NT5E;TYMS	Syncytium	0.020289	CD4;CCL5;CCR5
ADRB2	Fcgamma receptor (FCGR) dependent phagocytosis Homo sapiens R-HSA-2029480	4.49E-05	FCGR2A;PIK3CA;LIMK1;ITPR1;ABL1;ITPR2;MAPK1;ITPR3;PIK3CB;RAC1;MAPK3	Glycerophospholipid metabolism	0.337856	ACHE;PLA2G10;PLA2G2A	Ureter	0.020289	CHRM3;TGFB1;CHRM4
botA	G beta:gamma signalling through PI3Kgamma Homo sapiens R-HSA-392451	5.91E-05	PIK3CA;PIK3CD;AKT1;PIK3CB;JAK2;IL2;JAK1	One carbon pool by folate	0.345355	TYMS	Schwann cell	0.020554	NTRK1;JUN;NTRK3;ERBB2;ATF3
botB	ERK/MAPK targets Homo sapiens R-HSA-198753	6.08E-05	MAPK11;RPS6KA3;MAPK7;MAPK1;MAPK3	Protein digestion and absorp	0.366501	DPP4;SLC15A1;SLC8A1	Myeloma cell	0.021251	IFNAR2;IFNAR1

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botD	CD209 (DC-SIGN) signaling Homo sapiens R-HSA-5621575	6.08E-05	NRAS;CD209;KRAS;RAF1;NFKB1	Steroid hormone biosynthesis	0.3665 28	AKR1C1;AKR1C3	Fetal serum	0.02125 1	CD40LG;ALB
botF	TP53 Regulates Metabolic Genes Homo sapiens R-HSA-5628897	6.56E-05	PRKAB2;PRKAA1;PRKAA2;PRKAG1;PRKAG2;AKT1;PRKAB1;TP53;PRKAG3	Arginine biosynthesis	0.3725 2	NOS2	el2	0.02125 1	CHRM5;OPRL1
botG	Resolution of AP sites via the multiple-nucleotide patch replacement pathway Homo sapiens R-HSA-110373	7.73E-05	POLB;PCNA;LIG1;PARP1;PARP2	Protein export	0.3856 8	HSPA5	p95	0.02125 1	ERBB2;ATM
NPR1	Base Excision Repair Homo sapiens R-HSA-73884	7.91E-05	POLB;PCNA;LIG1;PARP1;PARP2;LIG3	Renin-angiotensin syste	0.3856 8	ACE	Myoepithelium	0.02228 7	ERBB2;KIT;TP53

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NPR2	Resolution of Abasic Sites (AP sites) Homo sapiens R-HSA-73933	7.91E-05	POLB;PCNA;LIG1;PARP1;PARP2;LIG3	Drug metabolism	0.394493	MPO;XDH;CES1	Vagus nerve	0.022287	CHRNA4;HTR1A;FOS
GLRA2	ATF6-alpha activates chaperones Homo sapiens R-HSA-381033	8.23E-05	HSPA5;CALR;ATF6;ATF4	Hippo signaling pathway	0.446197	TGFB1;CCND1;MYC;SERPINE1	Vascular tissue	0.024387	VWF;APOE;VEGFA
CACNB1	Interferon alpha/beta signaling Homo sapiens R-HSA-909733	8.55E-05	IFNAR2;IFNA1;STAT1;IFNB1;PTPN11;HLA-A;JAK1;IFNAR1	Nicotinate and nicotinamide metabolism	0.523685	NT5E	Intervertebral disc	0.024832	IL6;TGFB1;CASP3;TNF
HTR3A	G-protein beta:gamma signalling Homo sapiens R-HSA-397795	8.80E-05	PIK3CA;PIK3CD;AKT1;PIK3CB;JAK2;IL2;JAK1	Tyrosine metabolism	0.533681	TPO	Medulloblastoma cell line	0.025152	MYC;TP53

CHRNA10	Ion homeostasis Homo sapiens R-HSA-5578775	8.80E-05	RYR1;RYR2;ITPR1;ITPR2;ITPR3;CALM1;SLC8A1	Homologous recombination	0.580609	ATM	Nerve plexus	0.025152	RET;HTR7
CACNA1C	Growth hormone receptor signaling Homo sapiens R-HSA-982772	1.21E-04	STAT1;STAT3;MAPK1;JAK2;MAPK3	Vasopressin-regulated water reabsorption	0.606473	AVPR2	Monocytic leukemia cell	0.025152	SCN8A;MMP9
GRIA1	DARPP-32 events Homo sapiens R-HSA-180024	1.21E-04	PDE4D;PDE4C;PDE4B;PDE4A;CALM1	Endocytosis	0.610657	PDGFRA;CXCR1;HLA-A;CCR5;FGFR2	Preadipocyte cell line	0.025152	THRA;PPARG
CACNG1	Signaling by FGFR1 in disease Homo sapiens R-HSA-5655302	1.28E-04	NRAS;PIK3CA;STAT1;STAT3;KRAS;FGFR1	ABC transporters	0.614735	ABCB1	Ampulla	0.025152	KRAS;TP53
GRI	Costimulation by the CD28	1.2	CD4;PIK3CA;AKT1;CTLA4;PTPN11;RAC1;HLA-DRB1;HLA-	Proteaso	0.6	IFNG	b12	0.0	CD4;CCR5

A2	family Homo sapiens R-HSA-388841	9E-04	DQB1	me	228225			251522	
GRIA4	ATF4 activates genes Homo sapiens R-HSA-380994	1.48E-04	CXCL8;CCL2;ATF6;ATF3;ATF4	Pyruvate metabolism	0.630745	GLO1	Osteoclast	0.026399	FDPS;GGPS1;ITGAV;NFATC1
GRIA3	Binding and Uptake of Ligands by Scavenger Receptors Homo sapiens R-HSA-2173782	1.56E-04	LRP1;FTH1;ALB;HBB;HBA1;APOE;CALR;FTL	Sphingolipid metabolism	0.646099	SMPD1	Neuro-2a cell	0.026591	PRNP;CASP3;AKT1
P43681	Synthesis of Prostaglandins (PG) and Thromboxanes (TX) Homo sapiens R-HSA-2162123	1.61E-04	PTGES3;AKR1C3;PTGS2;PTGS1	Arginine and proline metabolism	0.653523	NOS2	Macrophage	0.026591	IL1B;CASP1;CES1
KCNJ3	Chemokine receptors bind chemokines	1.61E-	CXCL8;CXCR1;CCL5;CCL3;CCL2;CCR5;CCR4	Endocrine and	0.67488	SLC8A1	Neutrophil	0.02665	RAC2;MMP9;ELANE

	Homo sapiens R-HSA-380108	04		other factor-regulated calcium reabsorption	99			91	
KCNJ6	Synthesis of bile acids and bile salts via 27-hydroxycholesterol Homo sapiens R-HSA-193807	2.16E-04	RXRA;AKR1C1;NR1H4;AKR1C3	Hedgehog signaling pathway	0.69496	CCND1	Ring stage	0.026591	ERBB2;KRAS;TP53
VCAM1	Caspase activation via extrinsic apoptotic signalig pathway Homo sapiens R-HSA-5357769	2.17E-04	CASP9;CASP3;FAS;TLR4;TLR3	Basal cell carcinoma	0.737095	TP53	High endothelial venule	0.028898	CD4;VCAM1;ICAM1
SLC29A	Sema4D in semaphorin signaling Homo	2.17E-	ERBB2;LIMK1;RAC2;RAC1;MET	Aminoacyl-tRNA	0.7533	WARS2	Nasopharyngeal	0.0293	CASP3;TP53

1	sapiens R-HSA-400685	04		biosynthesis	25		carcinomacell line	19	
KCNJ5	Platelet calcium homeostasis Homo sapiens R-HSA-418360	2.17E-04	ITPR1;ITPR2;ITPR3;CALM1;SLC8A1	Metabolism of xenobiotics by cytochrome P450	0.800545	AKR1C1	Ankle joint	0.029319	IL1B;TNF
CHRNA9	CLEC7A (Dectin-1) signaling Homo sapiens R-HSA-5607764	2.34E-04	NFKBIA;IKBKB;IL1B;ITPR1;ITPR2;ITPR3;NFATC1;CALM1;NFKB1	Olfactory transduction	0.90199	PDE1C;PDE1B;PDE1A;PDE2A;CALM1;SLC8A1	SK-N-BE(2)C cell	0.029319	CHRNB3;OPRL1
GABRB1	Ca2+ pathway Homo sapiens R-HSA-4086398	2.77E-04	ITPR1;ITPR2;ITPR3;PDE6B;NFATC1;PDE6A;CALM1	Lysosome	0.934046	SMPD1	Subcutaneous tissue	0.029319	ALB;HBA1
GAB	Spry regulation of FGF	2.8	MAPK1;PTPN11;BRAF;MAPK3				Endome	0.0	CCND1;AKT1

RB3	signaling Homo sapiens R-HSA-1295596	3E-04					trial cancer cell line	29319	
GABRB2	Nucleotide-like (purinergic) receptors Homo sapiens R-HSA-418038	2.83E-04	ADORA2A;ADORA2B;ADORA3;ADORA1				Frontal lobe	0.030426	ATF1;ATF2;ICAM1;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2B;GRIN2D;GRIN3A;CALY;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;WARS;PARP1;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;CANX;KIT;TLR7;SLC29A1;TLR4

									;JDP2;PPARD;SLC29A2;DDR2;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;GABRD;XDH;CD55;GABRA2;GABRA1;GABRA6;STAT1;GABRA5;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;GABRA3;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;CHRM2;CHRM3;CHRM1;NCF1;NCF4;MPO;SLC8A1;FADS2;CCND1;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;SCN8A;S100A4;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA5;CHRNA4;GLO1;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH2;ABL1;DRD1;DRD2;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;HSPA5;HTR1F;HTR1B;NFKB1;IL4;NFKBIA;IL6;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;T

									HRA;FLT3;FLT4;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;PDE4B;PDE4A;ITGAV;SCN5A;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3C;ADRA2B;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;OPRL1;SLC25A29;MAPK7;ERBB2;MAPK1;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;MAPK4;KCNJ3;MAPK3;NTRK1;KCNJ9;NTRK3;LIMK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;PDE7A
CACNA1S	IkBA variant leads to EDA-ID Homo sapiens R-HSA-5603029	3.00E-04	IKBKB;NFKBIA;NFKB1				Merozoite	0.031307	TPO;CD4;CD40LG
CACNA1D	Signaling by FGFR in disease Homo sapiens R-HSA-1226099	3.39E-04	NRAS;PIK3CA;STAT1;STAT3;KRAS;FGFR2;FGFR1				NCI-H226 Brcell	0.031307	DPP4;FCGR2A;ICAM1
CHR	Circadian Clock Homo	3.3	ATF2;F7;CPT1A;RXRA;SERPINE1;SIK1;PPARA				Thyroid	0.0	RET;NRAS;PPARG

NA5	sapiens R-HSA-400253	9E-04					nodule	31307	
CHRNA6	Regulation of TP53 Activity Homo sapiens R-HSA-5633007	3.49E-04	MAPK11;PRKAB2;PRKAA1;PRKAA2;PRKAG1;AKT1;PRKAG2;ATM;PRKAB1;TP53;PRKAG3				Lumbar spine	0.03140 6	CRP;IL6;ALB;HBB
CHRNB3	Trafficking of GluR2-containing AMPA receptors Homo sapiens R-HSA-416993	3.64E-04	GRIA1;GRIA2;GRIA3;GRIA4				Bone	0.03312 4	PCNA;LRP1;PRKDC;GLO1;SERPINE1;HBB;ITPR3;TYMS;TFPI;PGRMC1;TUBA1A;CCND1;SMPD1;FTH1;MAPK1;ITGAV;PDE6B;APOE;RAC1;FADS1;JAK1;MAPK3;PDGFRB;FDPS;JUN;WARS;TGFB1;HSPA5;PTGES3;AKR1C3;FOS;CANX;CALR;CALM1;RAF1;ATF4;FTL;DDR2;FGFR1
GABRG1	G alpha (z) signalling events Homo sapiens R-HSA-418597	3.76E-04	ADCY2;ADCY1;ADRA2C;ADRA2B;ADRA2A;ADCY5				Gastric cancer cell	0.03373 9	CASP9;FGFR2
GABRG3	Trafficking of AMPA receptors Homo sapiens R-HSA-399719	4.27E-04	GRIA1;GRIA2;CACNG2;GRIA3;GRIA4				Preosteoclast	0.03373 9	NFATC1;MMP9

GABRE	Glutamate Binding, Activation of AMPA Receptors and Synaptic Plasticity Homo sapiens R-HSA-399721	4.27E-04	GRIA1;GRIA2;CACNG2;GRIA3;GRIA4				HOS cell	0.033739	CCR5;MET
GABRP	NOD1/2 Signaling Pathway Homo sapiens R-HSA-168638	4.27E-04	IKBKB;CASP9;MAPK11;CASP1;NOD2				Conceptus	0.033818	IFNA1;AKR1C3;PTGS2
GABRQ	AMPK inhibits chREBP transcriptional activation activity Homo sapiens R-HSA-163680	4.73E-04	PRKAB2;PRKAA2;PRKAG2				T-lymphocyte	0.034627	IL10;CASP9;RPS6KA3;PGRMC1;MAP2K1;PTGES3;CASP3;ITPR1;CCL3;NFATC1;PTPN11
GABRD	IKBKG deficiency causes anhidrotic ectodermal dysplasia with immunodeficienc	4.73E-04	IKBKB;NFKBIA;NFKB1				Temporal lobe	0.036349	ATF1;ATF2;RPS6KA3;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;ATF4;EPHA2;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;JUN;PDE2A;

	y (EDA-ID) (via TLR) Homo sapiens R-HSA-5603027								BRAF;NFATC1;L1CAM;GRIN2C;GRIN2B;GRIN2D;GRIN3A;ATM;CALR;SCN2A;GABRB3;DDR1;GABRB2;RYR2;GABRB1;PRKAG1;PRKAG2;HBB;CROT;IKBKB;SMPD1;RAC1;JAK2;JAK1;WARS;PARP1;FOS;F3;PTGR2;CANX;KIT;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;RXRA;GABRA2;GABRA1;GABRA6;STAT1;GABRA5;GABRA4;PTGES3;AKR1C1;STAT3;VEGFA;GRIN1;CRAT;CHRM3;CHRM1;SLC8A1;FADS2;CCND1;FPGS;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;SCN8A;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA4;GLO1;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;HRH1;HRH2;ABL1;DRD1;GRIA3;DRD5;GRIA4;PRNP;FDPS

									;TGFB1;HSPA5;HTR1A;HTR1B;NFKB1;NFKBIA;IL6;GGCX;FGFR2;MCFD2;FLT1;THRB;THRA;PIK3CB;HTR2A;ADRA1A;CASP9;CPT2;PDE4B;PDE4A;ITGAV;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3C;ADRA2B;ADRA2A;PIK3CA;SCN4A;MET;PRKAA1;PRKAA2;LRP1;OPRL1;MAPK7;MAPK1;PDE6B;PDE6A;CACNG2;MAPK6;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;MAPK15;CD4;KRAS;PDE7B;TEK;PDE7A
SLC29A2	Macroautophagy Homo sapiens R-HSA-1632852	4.96E-04	PRKAB2;PRKAA1;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3				Amyloid plaque	0.036431	PRNP;IL1B;APOE
HTR3E	Signaling by PTK6 Homo sapiens R-HSA-8848021	4.96E-04	NRAS;CCND1;ERBB2;STAT3;AKT1;KRAS;RAC1				Trypomastigote	0.03844	CALR;TLR2
HTR3B	Negative regulation of FGFR1 signaling Homo	4.98E-	MAPK1;PTPN11;BRAF;MAPK3;FGFR1				NCI-H1299 cel	0.04432	GABRE;TP53

	sapiens R-HSA-5654726	04					l	9	
HTR3D	Scavenging by Class A Receptors Homo sapiens R-HSA-3000480	5.73E-04	FTH1;APOE;CALR;FTL				Immature cell	0.043299	CD4;KIT
HTR3C	Negative regulation of FGFR2 signaling Homo sapiens R-HSA-5654727	6.64E-04	MAPK1;PTPN11;BRAF;FGFR2;MAPK3				Breast cancer cell	0.043834	DDR1;LMAN1;HSPA5;GABRA5;TUBB;CHRNA7;SIGMAR1;AVPR2;ERBB2
CACNG2	ROS, RNS production in response to bacteria Homo sapiens R-HSA-1222556	6.64E-04	NCF1;NOS2;NCF4;CYBB;CYBA				Blood platelet	0.044918	NCF1;PROS1;SERPINE1;MPO;RPS6KA3;HTR6;FTH1;KDR;AKT1;PDE8B;PDGFRB;PDGFRA;PRKAB2;MAP2K1;SLC15A1;CPT1A;CYBB;CYBA;HLA-A;PRKAB1;S100A4;RAF1;FTL;EPHA2;ABCB1;GLO1;ITPR1;ITPR2;ITPR3;CACNA1C;APOE;ELANE;GRIA3;PRNP;FDPS;ACE;TGFB1;VCAM1;HSPA5;PDE2A;BRAF;NFKB1;IL7;ALB;PDE3A;CALR;CALM1;FGFR2;FGFR1;RYR1;RYR2;MCFD2;ORM1;FLT1;FLT3;FLT4;PDE3B;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;S

									LC6A2;ORM2;PRKAG3;SLC6A3;SLC6A4;IKBKB;POLB;CASP9;TUBA1A;CPT2;CASP3;RAC2;CASP1;ITGAV;RAC1;SCN5A;JAK2;JAK1;WARS;VWF;GGPS1;PARP1;TUBB;PDE4D;SIGMAR1;PDE4C;HBA1;F2;MMP9;ADRA2A;PIK3CA;IFNG;CANX;KIT;TLR7;PDE5A;SLC29A1;MET;TLR4;PRKAA1;PRKAA2;PCNA;ADCY2;PTGS2;TFPI;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;CCL5;MAPK1;SLC25A20;GABRE;MAPK6;XDH;CD55;MAPK4;MAPK3;STAT1;PTGES3;STAT3;PTPN11;TUBB4B;MAPK15;FCGR2A;CD40LG;KRAS;CRAT;FRK
KCNJ9	Vesicle-mediated transport Homo sapiens R-HSA-5653656	7.54E-04	GRIA1;PRKAB2;MCFD2;PRKAA2;LRP1;PRKAG1;PRKAG2;HBB;HBA1;PRKAB1;PRKAG3;LMAN1;F8;FTH1;ALB;AKT1;APOE;CALR;RAC1;CALM1;CD55;FTL				Satellite cell	0.047878	TGFB1;MET;ATF3
L1CAM	Bile acid and bile salt metabolism Homo sapiens R-HSA-	7.62E-04	RXRA;AKR1C1;ALB;NR1H4;AKR1C3				Fibrosarcoma cell	0.048397	NRAS;MMP9

	194068								
RXRA	RIP-mediated NFkB activation via ZBP1 Homo sapiens R-HSA-1810476	8.57E-04	IKBKB;NFKBIA;NFKB1;TLR3				Stalk cell	0.048397	FLT4;VEGFA
FTL	EPH-Ephrin signaling Homo sapiens R-HSA-2682334	8.61E-04	LIMK1;KDR;RAC1;MMP9;GRIN2B;EPHA2;GRIN1;VEGFA				Tear gland	0.048397	CD4;CD40LG
FTH1	HDR through MMEJ (alt-NHEJ) Homo sapiens R-HSA-5685939	9.82E-04	PARP1;PARP2;LIG3				Granulosa cell	0.048397	TNFAIP6;PTGER2
HBA1	Signaling by FGFR3 fusions in cancer Homo sapiens R-HSA-8853334	9.82E-04	NRAS;PIK3CA;KRAS				Muscle	0.048505	RYR1;HBB;ICAM1;RPS6KA3;TUBA1A;FTH1;AKT1;ITGAV;RAC1;WARS;PARP1;LIG1;TNNC1;FOS;HLA-A;HBA1;CACNB1;POR;PIK3CA;CANX;ATF5;PPARA;SLC29A1;ATF4;FTL;DDR2;PRKAA1;PRKAA2;PCNA;LRP1;PRKDC;RXRA;MAPK7;ERBB2;ABL1;CACNG1;CACNA1S;PDE6A;CD55;PRNP;FDPS;

									HSPA5;PTGES3;AKR1C1;NFKBIA;ALB;CALR;CALM1;HLA-DRB1
HBB	Adenylate cyclase activating pathway Homo sapiens R-HSA-170660	9.82E-04	ADCY2;ADCY1;ADCY5				Spindle cell	0.049604	PDGFRA;KIT;HBA1;TP53
CACNA2D1	NCAM1 interactions Homo sapiens R-HSA-419037	9.89E-04	CACNB1;PRNP;CACNA1D;CACNA1C;CACNA1S				Prostate gland epithelium	0.052995	RET;PRNP;PLA2G2A;AKR1C3;ADRA1D;LIG3;ADRB2;F3;ADRA1A;DPP4;PDE11A;S100A4;PDE5A;PDE9A;TLR2
CACNA2D2	Downstream TCR signaling Homo sapiens R-HSA-202424	0.001128	NFKBIA;IKBKB;CD4;PIK3CA;PIK3CB;NFKB1;HLA-DRB1;HLA-DQB1				Bile	0.053071	ORM1;ORM2
CACNA1B	Transcriptional Regulation by TP53 Homo sapiens R-HSA-3700989	0.001147	ATF2;PRKAB2;JUN;PRKAA1;PCNA;PRKAA2;PRKAG1;PRKAG2;FOS;PRKAB1;PRKAG3;MAPK11;CASP1;AKT1;FAS;ATM;TP53				Lens epithelium	0.053071	HRH1;CHRM5
KCNQ	Signaling by FGFR4 in disease	0.000	NRAS;PIK3CA;KRAS				Style	0.05	CRP;ACE

3	Homo sapiens R-HSA-5655291	13291						371	
KCNQ5	TRAF6 mediated NF-kB activation Homo sapiens R-HSA-933542	0.00147	IKBKB;NFKBIA;DDX58;NFKB1				Venom gland	0.05371	PLA2G2A;F2
ACHE	Sema4D induced cell migration and growth-cone collapse Homo sapiens R-HSA-416572	0.00147	LIMK1;ERBB2;RAC2;RAC1				Pancreatic beta cell	0.05429	DPP4;PDE3B;ATF6;HLA-DQB1
TLR7	Synthesis of bile acids and bile salts via 7alpha-hydroxycholesterol Homo sapiens R-HSA-193368	0.00147	RXRA;AKR1C1;NR1H4;AKR1C3				Connective tissue	0.05434	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;APOE;SCN3A;JUN;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;RET;RYR2;GABRB1;ORM1;PRKAG2

									;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP1;PARP2;IL13;FOS;HBA1;F2;F7;IL1A;F8;CANX;PPARG;SLC29A1;TLR4;PPARD;SLC29A2;PTGER4;PCNA;ADCY2;ADCY1;TYMS;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;CD55;GABRA2;GABRQ;GABRP;STAT1;IFNB1;PTGES3;AKR1C1;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;CHRM4;PROS1;NCF4;FADS2;ADORA3;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CACNB1;PLA2G10;S100A4;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA4;NPR1;GLO1;CHRNA7;CACNA1B;ITPR2;CACNA1C;HRH4;ABL1;GRIA3;PRNP;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;T

									NFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;BDKRB1;ITGAV;VWF;DDX58;PDE4D;AVPR2;SIGMAR1;MMP9;PIK3CA;IFNG;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;PDE11A;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
TLR8	Role of phospholipids in phagocytosis Homo sapiens R-HSA-2029485	0.001572	FCGR2A;PIK3CA;ITPR1;ITPR2;ITPR3;PIK3CB				Blastocyst	0.054387	TGFB1;MYC;CASP3;ALB;STAT3;FGFR2
PLA2G2A	Antigen processing-Cross presentation Homo sapiens R-HSA-1236975	0.001666	NCF1;NCF4;CYBB;ITGAV;CYBA;HLA-A;CALR				Vascular system	0.058062	MCFD2;GLO1;SERPINE1;PTGS2;PTGS1;NT5E;TUBA1A;CCND1;FTH1;CD55;PRNP;WARS;VWF;PTGES3;FOS;HLA-A;PIK3CA;IL1B;CANX;SLC29A1;CALM1;ATF6;TP53;ATF4;FTL;DDR2
PT	Antigen Presenta	0.	HSPA5;CANX;HLA-A;CALR				Mes	0.	KIT;KDR

GR2	tion: Folding, assembly and peptide loading of class I MHC Homo sapiens R-HSA-983170	0.001695					onephron	0.059217	
PPARG	Activation of G protein gated Potassium channels Homo sapiens R-HSA-1296041	0.001695	KCNJ5;KCNJ6;KCNJ9;KCNJ3				NG-108-15 cell	0.059217	HTR3A;ADRA2B
GLO1	Inhibition of voltage gated Ca2+ channels via Gbeta/gamma subunits Homo sapiens R-HSA-997272	0.001695	KCNJ5;KCNJ6;KCNJ9;KCNJ3				Tropho zoite	0.059217	CHRM2;CD40LG
PTGDR2	G protein gated Potassium channels Homo sapiens	0.001695	KCNJ5;KCNJ6;KCNJ9;KCNJ3				dr9	0.059217	HLA-A;HLA-DRB1

	R-HSA-1296059	5						7	
AKR1C3	TP53 Regulates Transcription of Caspase Activators and Caspases Homo sapiens R-HSA-6803207	0.001745	CASP1;ATM;TP53				Bone matrix	0.064348	TGFB1;NFATC1;MMP9
GUCY1A2	ERKs are inactivated Homo sapiens R-HSA-202670	0.001745	MAPK7;MAPK1;MAPK3				Adult liver stem cell	0.064491	KIT;ALB
PROC	PECAM1 interactions Homo sapiens R-HSA-210990	0.001745	ITGB3;PTPN11;ITGAV				Hairy root	0.064491	FDPS;GGPS1
PROS1	Non-integrin membrane-ECM interactions Homo sapiens R-HSA-3000171	0.001771	DDR1;TGFB1;ITGB3;ITGAV;DDR2				Lung cancer cell	0.065481	NRAS;AVPR2;CACNA1D;KRAS;TP53
CXC	BMAL1:CLOCK,NPAS2	0.	F7;RXRA;SERPINE1;SIK1;PPARA				Lung fib	0.0	CACNA1B;CACNA1C;PTGS1

R1	activates circadian gene expression Homo sapiens R-HSA-1368108	0.017711					robla st	6.79177	
Q9H015	PD-1 signaling Homo sapiens R-HSA-389948	0.001997	CD4;PTPN11;HLA-DRB1;HLA-DQB1				Fascicle	0.070777	KIT;HBA1
SLC22A5	SHC-mediated cascade: FGFR2 Homo sapiens R-HSA-5654699	0.001997	NRAS;PTPN11;KRAS;FGFR2				Glandular epithelium	0.070777	PTGS2;VEGFA
CRAT	ZBP1(DAI) mediated induction of type I IFNs Homo sapiens R-HSA-1606322	0.001997	IKBKB;NFKBIA;NFKB1;TLR3				Scolopidium	0.071574	GRIA1;PDE6B;GRIA4
SLC25A29	TAK1 activates NFkB by phosphorylation and activation of IKKs	0.001997	IKBKB;NFKBIA;NOD2;NFKB1				Astrocytoma cell	0.075318	PRKAG1;CCL2;TP53

	complex Homo sapiens R-HSA-445989								
SLC25A20	Fatty acid, triacylglycerol, and ketone body metabolism Homo sapiens R-HSA-535734	0.00216 7	PRKAB2;CPT1A;RXRA;PRKAA2;CPT2;NR1H4;PRKAG2;PPARG;SLC25A20;PPARA;FADS1;PPARD				Umbilical vein endothelial cell	0.075318	ACE;VWF;PDE4D
CROT	Unfolded Protein Response (UPR) Homo sapiens R-HSA-381119	0.00218 5	CXCL8;HSPA5;CCL2;CALR;ATF6;ATF3;ATF4				Myeloid cell line	0.076809	MYC;ABL1
CPT2	NF-kB is activated and signals survival Homo sapiens R-HSA-209560	0.00223 3	IKBKB;NFKBIA;NFKB1				Ec	0.076809	HTR7;HTR3A
CPT1A	p38MAPK events Homo sapiens R-HSA-171007	0.00223 3	MAPK11;NRAS;KRAS				g2	0.076809	ATM;TP53
X	Traffickin	0	TLR8;TLR7;TLR3				Tra	0	DDR1;MCFD2;PRK

DH	g and processing of endosomal TLR Homo sapiens R-HSA-1679131	.002233					chea	.07883	AA1;PROS1;DPP4;LMAN1;NT5E;PDE4B;MAPK1;CD55;GABRP;WARS;PARP1;STAT1;AKR1C1;PDE4D;STAT3;FOS;F3;CANX;CALM1;RAF1;MET;DDR2;FGFR1
CES1	Synthesis of bile acids and bile salts Homo sapiens R-HSA-192105	0.002275	RXRA;AKR1C1;NR1H4;AKR1C3				Colonic adenocarcinomacell	0.081139	NOS2;FTH1;TUBB;TYMS
MPO	Signaling by ERBB2 Homo sapiens R-HSA-1227986	0.002417	NRAS;PIK3CA;ERBB2;AKT1;KRAS				Spiralorgan	0.082996	CHRNA4;NTRK3
THRA	Metabolism Homo sapiens R-HSA-1430728	0.002505	ACHE;CHRM3;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;FADS2;CPT2;SMPD1;FPGS;AKT1;FADS1;PRKAB2;CPT1A;PHYH;GGPS1;CACNA2D2;HBA1;ADRA2C;ADRA2A;POR;PIK3CA;PLA2G10;PPARG;PPARA;PPARD;CES1;ABCB1;PRKAA2;LRP1;GLO1;ITPR1;ITPR2;ADCY2;ITPR3;CACNA1D;ADCY1;CACNA1C;PTGS				Hepa-RGcell	0.082996	NR1I3;NR1I2

			2;TYMS;PTGS1;ADCY5;TPO;NT5E;RXRA;SLC25A20;APOE;XDH;FDPS;PTGES3;AKR1C1;PLA2G2A;NR1H4;AKR1C3;ALB;CALM1;CRAT						
THRB	Early Phase of HIV Life Cycle Homo sapiens R-HSA-162594	0.002798	CD4;LIG1;CCR5				Nasal cavity	0.089329	AVPR2;FOS
ITGAV	Inhibition of adenylate cyclase pathway Homo sapiens R-HSA-997269	0.002798	ADCY2;ADCY1;ADCY5				Female pudendum	0.09558	PDE5A;TP53
ERBB2	Adenylate cyclase inhibitory pathway Homo sapiens R-HSA-170670	0.002798	ADCY2;ADCY1;ADCY5				Mantle cell lymphoma cell	0.09558	CCND1;AKT1
GRIN1	Nucleotide-binding domain, leucine rich repeat containin	0.002933	IKBKB;CASP9;MAPK11;CASP1;NOD2				Hypothalamus	0.098243	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-

	g receptor (NLR) signaling pathways Homo sapiens R-HSA-168643								A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2B;GRIN2D;GRIN3A;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F3;PTGR2;F7;F8;IL1B;CANX;KIT;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;TLR2;DDR2;PTGER4;PCNA;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;GABRE;GABRD;CD55;GABRA2;GABRQ;GABRA1;STAT1;GABRA5;GABRA4;PTGES

									3;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;CHRM4;PROS1;CHRM5;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CACNB1;PROCR;SCN8A;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;HRH1;HRH2;ABL1;DRD1;DRD2;GRIA3;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1A;NFKB1;NFKBIA;IL6;GGCX;IL7;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;PDE3B;HTR2C;ADRA1D;PIK3CB;HTR2A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;HTR3B;OP

									RM1;ADRA2C;ADRA2A;PIK3CA;ADORA2A;PDE5A;MET;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;PDE11A;CCL5;ERBB2;CCL2;MAPK1;SCN7A;PDE6B;SLC25A20;CACNG2;MAPK6;MAPK4;KCNJ3;MAPK3;KCNJ5;KCNJ6;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
GRIN2A	Antigen activates B Cell Receptor (BCR) leading to generation of second messengers Homo sapiens R-HSA-983695	0.002933	ITPR1;ITPR2;PIK3CD;ITPR3;CALM1				Nucleus accumbens	0.100461	ADCY5
GRIN2B	Surfactant metabolism Homo sapiens R-HSA-5683826	0.002979	ADORA2A;ADORA2B;ADRA2C;ADRA2A				Glial cell	0.100461	TP53
GR	Negative regulatio	0.	MAPK1;PTPN11;BRAF;MAPK3				Inner	0.	CHRNA10

IN2C	n of FGFR3 signaling Homo sapiens R-HSA-5654732	0.002979					ear	1.00461	
GRIN2D	Oxidative Stress Induced Senescence Homo sapiens R-HSA-2559580	0.003012	MAPK11;JUN;IFNB1;MAPK1;FOS;TP53;MAPK3				PC-12D cell	0.10046 1	FRK
GRIN3B	Beta-catenin independent WNT signaling Homo sapiens R-HSA-3858494	0.003381	ITPR1;RAC2;ITPR2;ITPR3;NFATC1;PDE6B;RAC1;PDE6A;CALM1				PC3-MM2 cell	0.10046 1	RPS6KA3
HRH2	TCR signaling Homo sapiens R-HSA-202403	0.003424	NFKBIA;IKBKB;CD4;PIK3CA;PIK3CB;NFKB1;HLA-DRB1;HLA-DQB1				PLC-PRF-5 cell	0.10046 1	ASGR2
TPO	Signaling by EGFRvIII in Cancer Homo sapiens R-HSA-5637812	0.003444	NRAS;PIK3CA;KRAS				PanIN cell	0.10046 1	KRAS
mrdA	Constitutive Signaling by	0.000	NRAS;PIK3CA;KRAS				Pancreatic	0.10	ADCY2

	EGFRvIII Homo sapiens R-HSA-5637810	344					ductal adenocarcinoma cell	0461	
NOD2	Elevation of cytosolic Ca2+ levels Homo sapiens R-HSA-139853	0.00344	ITPR1;ITPR2;ITPR3				Pedal ganglion	0.10046 1	POR
PTGER3	Recycling of bile acids and salts Homo sapiens R-HSA-159418	0.00344	RXRA;ALB;NR1H4				22Rv-1 cell	0.10046 1	GABRE
PTGER2	Generic Transcription Pathway Homo sapiens R-HSA-212436	0.00381 8	ATF2;PRKAA1;PRKAA2;PCNA;THRB;THRA;NR1I3;SERPINE1;NR1I2;PRKAG1;PRKAG2;PRKAG3;RXRA;MYC;CASP1;AKT1;PRKAB2;JUN;PARP1;NR1H4;FOS;PRKAB1;MAPK11;FAS;PPARG;ATM;PPARA;TP53;PPARD				3t6	0.10046 1	FCGR2A
PTGE	Negative regulation of FGFR4	0.00	MAPK1;PTPN11;BRAF;MAPK3				Promyelo	0.10	MYC

R4	signaling Homo sapiens R-HSA-5654733	3818					cytic leukemia cell line	04611	
CCR4	FGFR1 mutant receptor activation Homo sapiens R-HSA-1839124	0.003818	PIK3CA;STAT1;STAT3;FGFR1				RL95-2 cell	0.100461	TUBB4B
PHYH	Inwardly rectifying K+ channels Homo sapiens R-HSA-1296065	0.003818	KCNJ5;KCNJ6;KCNJ9;KCNJ3				SET-2 cell	0.100461	JAK2
ASGR2	p75NTR signals via NF-kB Homo sapiens R-HSA-193639	0.004173	IKBKB;NFKBIA;NFKB1				CAD cell	0.100461	SCN3A
CALR	GRB2 events in ERBB2 signaling Homo sapiens R-HSA-1963640	0.004173	NRAS;ERBB2;KRAS				Spinal root	0.100461	FTH1
CA	MAP3K8 (TPL2)-	0.	IKBKB;MAP2K1;NFKB1				Chola	0.	STAT3

NX	dependent MAPK1/3 activation Homo sapiens R-HSA-5684264	0.041773					ngiocarcinomacell	1.00461	
LMAN1	PKA activation Homo sapiens R-HSA-163615	0.0.041773	ADCY2;ADCY1;ADCY5				EC-9706cell	0.1.00461	SIK1
LRP1	Activation of RAS in B cells Homo sapiens R-HSA-1169092	0.0.041999	NRAS;KRAS				FL83Bcell	0.1.00461	CPT1A
MCFD2	NGF-independant TRKA activation Homo sapiens R-HSA-187024	0.0.041999	NTRK1;ADORA2A				ac2	0.1.00461	ADCY2
VWF	SMAC binds to IAPs Homo sapiens R-HSA-111463	0.0.041999	CASP9;CASP3				Gastroduodenalmucosa	0.1.00461	HRH2
pa	SMAC-mediate	0.	CASP9;CASP3				gk1.5	0.	CD4

b	d dissociation of IAP:caspase complexes Homo sapiens R-HSA-111464	0.041999						1.004061	
pol	SMAC-mediated apoptotic response Homo sapiens R-HSA-111469	0.004199	CASP9;CASP3				Hairy cell leukemia cell	0.1004061	IFNA1
por	Cytochrome c-mediated apoptotic response Homo sapiens R-HSA-111461	0.004199	CASP9;CASP3				Inflammatory cell	0.1004061	F3
PARP1	Activation of caspases through apoptosome-mediated cleavage Homo sapiens R-HSA-111459	0.004199	CASP9;CASP3				Ischial spine	0.1004061	AKR1C1

PARP2	Visual phototransduction Homo sapiens R-HSA-2187338	0.00429	LRP1;AKR1C1;AKR1C3;PDE6B;APOE;PDE6A;CALM1				Peripheral blood lymphocyte	0.10244	FAS;NFATC1
PARP3	Cargo concentration in the ER Homo sapiens R-HSA-5694530	0.00485	GRIA1;LMAN1;MCFD2;F8				Erythroid progenitor cell	0.10244	KIT;JAK2
NA	Potassium Channels Homo sapiens R-HSA-1296071	0.00488	KCNH2;KCNJ5;KCNJ6;KCNJ9;KCNQ3;KCNQ5;KCNJ3				Germ cell	0.10460 4	CASP9;TGFB1;MYC;CASP3;KIT;AKT1;ATM;CALM1;TP53
FDPS	G alpha (12/13) signalling events Homo sapiens R-HSA-416482	0.00486	PIK3CA;RAC2;ADRA1D;RAC1;ADRA1B;ADRA1A				Endothelial cell	0.10817 4	PROCR;VCAM1;PTGS2
GGPS1	Ligand-dependent caspase activation Homo sapiens R-HSA-	0.00489	FAS;TLR4;TLR3				Embryoid body	0.10817 4	KIT;KDR;VEGFA

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CASP9	PKA-mediated phosphorylation of CREB Homo sapiens R-HSA-111931	0.00489	ADCY2;ADCY1;ADCY5				Meniscus	0.10912	PGRMC1;IL1B
ADRB3	PKA activation in glucagon signalling Homo sapiens R-HSA-164378	0.00489	ADCY2;ADCY1;ADCY5				Neurofibrillary tangle	0.10912	PRNP;APOE
HTR1B	Signaling by cytosolic FGFR1 fusion mutants Homo sapiens R-HSA-1839117	0.00589	PIK3CA;STAT1;STAT3				Electric organ	0.10912	CHRNA4;CALM1
HTR1D	SHC1 events in ERBB2 signaling Homo sapiens R-HSA-1250196	0.00589	NRAS;ERBB2;KRAS				Vestibular hair cell	0.10912	CHRNA4;CHRNA9
HTR1E	Activation of IRF3/IRF7 mediated by	0.0058	PTPN11;TLR4;TLR3				SAOS-2 cell	0.11559	CASP3;TP53

	TBK1/IKK epsilon Homo sapiens R-HSA-936964	95						53	
HTR1F	Regulation of signaling by CBL Homo sapiens R-HSA-912631	0.005895	PIK3CA;PIK3CD;PIK3CB				Swiss-3T3 cell	0.115953	MYC;FOS
HTR4	RSK activation Homo sapiens R-HSA-444257	0.006211	RPS6KA3;MAPK1				Choroid	0.115953	KDR;VEGFA
IFNAR2	Activation of TRKA receptors Homo sapiens R-HSA-187015	0.006211	NTRK1;ADORA2A				Mantle	0.115953	CD40LG;CCND1
IFNAR1	CLEC7A/inflammasome pathway Homo sapiens R-HSA-5660668	0.006211	IL1B;NFKB1				NHDF cell	0.119311	RAC1
TRDMT1	RIG-I/MDA5 mediated induction of IFN-	0.0062	IKBKB;NFKBIA;IFNA1;DDX58;IFNB1;NFKB1				Cornea	0.1193	FGFR2

	alpha/beta pathways Homo sapiens R-HSA-168928	66						11	
NT5E	Transcriptional regulation of white adipocyte differentiation Homo sapiens R-HSA-381340	0.006266	RXRA;TGFB1;PPARG;PPARA;TNF;NFKB1				Eosinophil	0.119311	PDGFRA
mecA	RHO GTPases Activate WASPs and WAVEs Homo sapiens R-HSA-5663213	0.006586	ABL1;MAPK1;RAC1;MAPK3				Osteoclast stem cell	0.119311	NFATC1
dacB	PCNA-Dependent Long Patch Base Excision Repair Homo sapiens R-HSA-5651801	0.006893	POLB;PCNA;LIG1				Acute megakaryoblastic leukemia	0.119311	TUBB

							cell line		
SLC15A1	Constitutive Signaling by Ligand-Responsive EGFR Cancer Variants Homo sapiens R-HSA-1236382	0.006893	NRAS;PIK3CA;KRAS				RAMOS cell	0.119311	CD40LG
RET	Signaling by Ligand-Responsive EGFR Variants in Cancer Homo sapiens R-HSA-5637815	0.006893	NRAS;PIK3CA;KRAS				Anaplastic large cell lymphoma cell line	0.119311	STAT3
DDR1	Signaling by EGFR in Cancer Homo sapiens R-HSA-1643713	0.006893	NRAS;PIK3CA;KRAS				Retinal ganglion cell line	0.119311	CASP3

NTRK3	Syndecan interactions Homo sapiens R-HSA-3000170	0.007985	TGFB1;ITGB3;ITGAV				Buccal mass	0.119311	POR
FLT3	Transport of nucleosides and free purine and pyrimidine bases across the plasma membrane Homo sapiens R-HSA-83936	0.008576	SLC29A1;SLC29A2				CCRF-CEM cell	0.119311	FPGS
JAK1	SLC transporter disorders Homo sapiens R-HSA-5619102	0.008576	AVPR2;ALB				Cecum	0.119311	PROCR
NTRK1	APEX1-Independent Resolution of AP Sites via the Single Nucleotide Replace	0.008576	POLB;LIG3				Cerebrovascular system	0.119311	LRP1

	ment Pathway Homo sapiens R-HSA-5649702								
KDR	CREB phosphorylation Homo sapiens R-HSA-199920	0.008576	ATF1;RPS6KA3				TSA cell	0.119311	KCNQ3
PDGFRB	Apoptotic factor-mediated response Homo sapiens R-HSA-111471	0.008576	CASP9;CASP3				Companion cell	0.119311	FRK
FGFR1	TP53 Regulates Transcription of DNA Repair Genes Homo sapiens R-HSA-6796648	0.008968	ATF2;JUN;ATM;FOS;TP53				Tongue cancer cell line	0.119311	MMP9
FGFR2	Translocation of ZAP-70 to Immunological synapse Homo sapiens	0.009173	CD4;HLA-DRB1;HLA-DQB1				Uterine serous carcino	0.119311	ERBB2

	R-HSA-202430						macell		
NFATC1	SHC-mediated cascade: FGFR1 Homo sapiens R-HSA-5654688	0.009173	NRAS;KRAS;FGFR1				Epidermal cell line	0.119311	JUN
NFKB1	RHO GTPases activate PAKs Homo sapiens R-HSA-5627123	0.009173	LIMK1;RAC1;CALM1				FLK cell	0.119311	POR
ATF1	FCERI mediated Ca+2 mobilization Homo sapiens R-HSA-2871809	0.009591	ITPR1;ITPR2;ITPR3;NFATC1;CALM1				at1 cell	0.119311	KCNH2
ATF2	PPARA activates gene expression Homo sapiens R-HSA-1989781	0.009742	CPT1A;RXRA;CPT2;NR1H4;PPARG;PPARA;FADS1				brl1	0.119311	PDE7A
ATF3	CTLA4 inhibitory signaling Homo sapiens R-HSA-	0.010045	AKT1;CTLA4;PTPN11				foreign-body giant	0.119311	IL4

	389513	9					cell	1	
ATF4	Signaling by FGFR3 point mutants in cancer Homo sapiens R-HSA-8853338	0.010459	NRAS;PIK3CA;KRAS				HS-68 cell	0.119311	CALY
ATF5	Signaling by FGFR3 in disease Homo sapiens R-HSA-5655332	0.010459	NRAS;PIK3CA;KRAS				r2c	0.119311	GRIN1
ATF6	Regulation of lipid metabolism by Peroxisome proliferator-activated receptor alpha (PPARalpha) Homo sapiens R-HSA-400206	0.011157	CPT1A;RXRA;CPT2;NR1H4;PPARG;PPARA;FADS1				x63ag8.653	0.119311	TRDMT1
ATF7	Erythrocytes take up oxygen and release carbon dioxide	0.011277	HBB;HBA1				Hi-5 cell	0.119311	SLC8A1

	Homo sapiens R-HSA-1247673								
JDP2	Neurotransmitter Clearance In The Synaptic Cleft Homo sapiens R-HSA-112311	0.011277	ACHE;SLC6A3				Human lens epithelial cell line	0.119311	ELANE
FOS	Sema4D mediated inhibition of cell attachment and migration Homo sapiens R-HSA-416550	0.011277	RAC1;MET				Liposarcoma cell	0.119311	PPARG
JUN	Linoleic acid (LA) metabolism Homo sapiens R-HSA-2046105	0.011277	FADS2;FADS1				Keloid	0.122891	TGFB1;SERPINE1
fas	Signaling by Retinoic Acid Homo sapiens R-HSA-	0.011134	CPT1A;RXRA;AKR1C3;PPARD				Larynx	0.125338	RYR1;CCND1;FTH1;ITPR3;CALR;CES1;ATF4;JAK1;FTL

	5362517	6							
TYMS	Retinoid metabolism and transport Homo sapiens R-HSA-975634	0.01134 6	LRP1;AKR1C1;AKR1C3;APOE				Urethra	0.129927	HTR7;PDE5A
FPGS	Intrinsic Pathway for Apoptosis Homo sapiens R-HSA-109606	0.01134 6	CASP9;CASP3;AKT1;TP53				Gastric juice	0.129927	HRH2;ALB
FLT1	EPHB-mediated forward signaling Homo sapiens R-HSA-3928662	0.01134 6	LIMK1;RAC1;GRIN2B;GRIN1				Preosteoblast	0.137054	TGFB1;FGFR2
FLT4	Glucagon-like Peptide-1 (GLP1) regulates insulin secretion Homo sapiens R-HSA-381676	0.01134 6	ITPR1;ITPR2;ITPR3;ADCY5				Endochondral bone	0.137054	TGFB1;VEGFA
KIT	Activation of gene expression by SREBF (SREBP) Homo	0.01134	FDPS;RXRA;GGPS1;PPARA				Mat-Ly-Lu cell	0.13776	SCN7A

	sapiens R-HSA-2426168	6						7	
PDGFRA	DNA Double-Strand Break Repair Homo sapiens R-HSA-5693532	0.011497	PCNA;PARP1;PRKDC;PARP2;ABL1;LIG3;ATM;TP53				Messa	0.137767	ABCB1
TEK	Gap-filling DNA repair synthesis and ligation in GG-NER Homo sapiens R-HSA-5696397	0.011844	PCNA;LIG1;LIG3				NCI-H1944 cell	0.137767	CPT2
DDR2	SHC-mediated cascade: FGFR4 Homo sapiens R-HSA-5654719	0.011844	NRAS;PTPN11;KRAS				Osteoclastoma cell	0.137767	ITGB3
EPHA2	TP53 Regulates Transcription of Cell Death Genes Homo sapiens	0.012308	CASP1;FAS;ATM;TP53				Urinary bladder cancer cel	0.137767	TGFB1

	R-HSA-5633008						l		
MAPK11	Signaling by FGFR2 in disease Homo sapiens R-HSA-5655253	0.01230 8	NRAS;PIK3CA;KRAS;FGFR2				RT-4 cell	0.13776 7	TP53
FRK	Vasopressin regulates renal water homeostasis via Aquaporins Homo sapiens R-HSA-432040	0.01230 8	AVPR2;ADCY2;ADCY1;ADCY5				Retinal pigment epithelium cell line	0.13776 7	VEGFA
ABL1	Cytosolic sensors of pathogen-associated DNA Homo sapiens R-HSA-1834949	0.01238 1	IKBKB;NFKBIA;PRKDC;TLR3;NFKB1				BA/F3 cell	0.13776 7	JAK2
rpoB	Integrin cell surface interactions Homo sapiens R-HSA-	0.01315 6	VCAM1;ITGB3;KDR;ITGAV;ICAM1				BEL-7402 cell	0.13776 7	CASP3

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rpoA	Semaphorin interactions Homo sapiens R-HSA-373755	0.013156	ERBB2;LIMK1;RAC2;RAC1;MET				Bm	0.137767	IL7
rpoC	Phosphorylation of CD3 and TCR zeta chains Homo sapiens R-HSA-202427	0.013329	CD4;HLA-DRB1;HLA-DQB1				Bronchoalveolar stem cell	0.137767	KRAS
rplC	IKK complex recruitment mediated by RIP1 Homo sapiens R-HSA-937041	0.013329	IKBKB;TLR4;TLR3				Sinus node	0.137767	CACNA1D
RYR2	EGFR Transactivation by Gastrin Homo sapiens R-HSA-2179392	0.014299	NRAS;KRAS				Skin carcinoma cell line	0.137767	PTGER3
SCN1	SHC-related events triggered	0.01	NRAS;KRAS				Sprout	0.13	PTGER2

A	by IGF1R Homo sapiens R-HSA-2428933	4299						77677	
SCN11A	Scavenging of heme from plasma Homo sapiens R-HSA-2168880	0.0155	LRP1;ALB;HBB;HBA1				Daphnid	0.137767	TRDMT1
SCN2A	Membrane Trafficking Homo sapiens R-HSA-199991	0.016239	GRIA1;PRKAB2;MCFD2;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3;LMAN1;F8;FTH1;AKT1;RAC1;CALM1;CD55;FTL				hf1	0.137767	CHRM5
SCN3A	Regulation of actin dynamics for phagocytic cup formation Homo sapiens R-HSA-2029482	0.016317	FCGR2A;LIMK1;ABL1;MAPK1;RAC1;MAPK3				Glutealmuscle	0.137767	AKR1C1
SCN4A	Recycling pathway of L1 Homo sapiens R-HSA-437239	0.016604	RPS6KA3;MAPK1;L1CAM				mp10	0.137767	PDE10A
SCN	PTK6 Regulates RHO	0.0	NRAS;KRAS;RAC1				pg13	0.1	TP53

5A	GTPases, RAS GTPase and MAP kinases Homo sapiens R-HSA-8849471	16604						377677	
SCN7A	Extracellular matrix organization Homo sapiens R-HSA-1474244	0.016686	DDR1;TGFB1;VCAM1;ITGB3;CASP3;SERPINE1;KDR;ITGAV;MMP9;ELANE;ICAM1;DDR2				qt6	0.137767	THRA
SCN8A	Signal attenuation Homo sapiens R-HSA-74749	0.017629	MAPK1;MAPK3				Cuticle	0.140646	F10;F2;F3
SCN9A	TRIF-mediated programmed cell death Homo sapiens R-HSA-2562578	0.017629	TLR4;TLR3				Olfactory epithelium	0.144265	PDE1C;ATF5
rpsG	GP1b-IX-V activation signalling Homo sapiens R-HSA-	0.017629	VWF;RAF1				Tadpole	0.144265	THRB;THRA

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rpsN	eNOS activation Homo sapiens R-HSA-203615	0.017629	AKT1;CALM1				MELcell	0.144265	MYC;HBB
rpsC	Tetrahydrobiopterin (BH4) synthesis, recycling, salvage and regulation Homo sapiens R-HSA-1474151	0.017629	AKT1;CALM1				Lymph	0.150029	FDPS;WARS;NCF1;PARP1;PTGES3;SIGMAR1;HLA-A;TYMS;TUBA1A;FTH1;FPGS;RAC2;AKT1;CALR;RAC1;ATF5;HLA-DRB1;ATF4;HLA-DQB1;FTL;MAPK3
rpsH	Ligand-independent caspase activation via DCC Homo sapiens R-HSA-418889	0.017629	CASP9;CASP3				Braincortexcell line	0.155735	TUBA1A;PCNA;HSPA5;TUBB;ALB;CALR;CALM1
rpsS	Beta-oxidation of pristanoyl-CoA Homo sapiens R-HSA-389887	0.017629	CROT;CRAT				Mesenchymal epithelium	0.155837	TGFB1

mdfA	Purine catabolism Homo sapiens R-HSA-74259	0.017629	NT5E;XDH				Metacyclic form	0.155837	APOE
PROCR	Metabolism of proteins Homo sapiens R-HSA-392499	0.018206	GRIA1;ACHE;MCFD2;PCNA;CXCL8;PROS1;DPP4;LMAN1;TUBA1A;CCL2;CD55;ACE;F10;PARP1;HSPA5;STAT3;F2;TUBB4B;ADRA2C;ADRA2A;F7;F8;F9;PROC;GGCX;ADORA2A;ADORA2B;CANX;CALR;ATF6;TP53;ATF3;ATF4				Jejunum	0.155837	SLC29A1
CALY	VEGFR2 mediated vascular permeability Homo sapiens R-HSA-5218920	0.018395	AKT1;RAC1;CALM1				Mucoepidermoid carcinoma cell	0.155837	LIMK1
TNNC1	Integrin alphaIIb beta3 signaling Homo sapiens R-HSA-354192	0.018395	VWF;ITGB3;AKT1				Umbilical cord	0.155837	PTPN11
S10	Effects of PIP2 hydrolysi	0.0	ITPR1;ITPR2;ITPR3				Pleom	0.1	ERBB2

0A4	s Homo sapiens R-HSA-114508	1839 5					orphic adenomacell	55837	
folA	Peroxisomal lipid metabolism Homo sapiens R-HSA-390918	0.01839 5	PHYH;CROT;CRAT				7d4	0.15583 7	IL2
WARS2	RORA activates gene expression Homo sapiens R-HSA-1368082	0.01839 5	CPT1A;RXRA;PPARA				A-172 cell	0.15583 7	TP53
trpS	Pyruvate metabolism Homo sapiens R-HSA-70268	0.01839 5	RXRA;GLO1;PPARD				Soft tissue sarcomacell line	0.15583 7	FPGS
WARS	RHO GTPase Effectors Homo sapiens R-HSA-195258	0.01910	NCF1;NCF4;LIMK1;RAC2;ABL1;CYBB;MAPK1;CYBA;RAC1;CALM1;MAPK3				Digestivecell	0.15583	WARS2

		8						7	
DPP4	The role of Nef in HIV-1 replication and disease pathogenesis Homo sapiens R-HSA-164952	0.020289	CD4;RAC1;HLA-A				Embryonic neural stem cell	0.155837	ATF5
TUBB	Organelle biogenesis and maintenance Homo sapiens R-HSA-1852241	0.020058	ATF2;PRKAB2;PRKAA2;TUBB;PRKAG1;PRKAG2;TUBB4B;PRKAB1;PRKAG3;MAPK11;TUBA1A;RXRA;PPARA				Empyema fluid	0.155837	CRP
	Uptake and function of anthrax toxins Homo sapiens R-HSA-5210891	0.021251	MAP2K1;CALM1				Epithelial lining fluid	0.155837	ELANE
	Processive synthesis on the C-strand of the telomere Homo sapiens R-HSA-174414	0.021251	PCNA;LIG1				a11	0.155837	PARP3

	DSCAM interactions Homo sapiens R-HSA-376172	0.021251	MAPK11;RAC1				Floret	0.155837	CALM1
	MyD88 deficiency (TLR2/4) Homo sapiens R-HSA-5602498	0.021251	TLR4;TLR2				gh1	0.155837	CACNG1
	IRAK4 deficiency (TLR2/4) Homo sapiens R-HSA-5603041	0.021251	TLR4;TLR2				Larval integument	0.155837	XDH
	TRAF6 mediated IRF7 activation in TLR7/8 or 9 signaling Homo sapiens R-HSA-975110	0.021251	TLR8;TLR7				MDCK-MDR1 cell	0.155837	ABCB1
	RHO GTPases activate IQGAPs Homo sapiens R-HSA-5626467	0.021251	RAC1;CALM1				Pharynx	0.166157	FDPS;WARS;PRKDC;HBB;HLA-A;HBA1;MMP9;TUBA1A;CCL5;FTH1;CALR;RAC1;HLA-DRB1;FTL;CES1

	Interleukin-7 signaling Homo sapiens R-HSA-1266695	0.021251	IL7;JAK1				Secretory cell	0.166334	ATF6;ELANE
	Activation of the phototransduction cascade Homo sapiens R-HSA-2485179	0.021251	PDE6B;PDE6A				Ascites	0.168383	KCNH2;JUN;WARS;PCNA;HSPA5;GLO1;PTGES3;AKR1C1;HLA-A;NFKB1;NFKBIA;CCND1;FTH1;AKT1;S100A4;CALR;RAC1;CALM1;RAF1;MET;FGFR2;ATF4;FTL
	Sodium/Calcium exchangers Homo sapiens R-HSA-425561	0.021251	CALM1;SLC8A1				Parietal lobe	0.170186	ATF1;ATF2;ICAM1;RPS6KA3;HTR6;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;PRKAB1;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;ATF4;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;JUN;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2B;GRIN2D;GRIN3A;CALY;ATM;CALR;CALM1;SCN2A;GABRB3;RYR1;DDR1;GABRB2;RYR2;GABRB1;PRKAG1;PRKAG2;CROT;IKBKB;TUBA1A;SMPD1;RAC1;JAK2;JAK1;WARS;PARP1;TUBB;FOS;F3;PTGR2;C

									ANX;KIT;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRA2;GABRA1;GABRA6;STAT1;GABRA5;GABRA4;PTGES3;AKR1C1;STAT3;VEGFA;GRIN1;CRAT;CHRM3;CHRM1;CHRM5;SLC8A1;FADS2;CCND1;FPGS;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CACNB1;SCN8A;S100A4;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA4;NPR1;GLO1;NPR2;ITPR1;ITPR2;ADRB1;CACNA1D;ADRB2;CACNA1C;HRH1;HRH2;ABL1;DRD1;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;HTR1E;HSPA5;HTR1F;HTR1A;HTR1B;NFKB1;NFKBIA;IL6;GGCX;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;ADRA1D;PIK3CB;HTR2A;ADRA1B;ADRA1A;POLB;CASP9;CPT2;CASP3;PDE4B;PDE

									4A;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3C;HTR3B;ADRA2C;ADRA2B;ADRA2A;PIK3CA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;OPRL1;SLC25A29;MAPK7;MAPK1;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;CD4;KRAS;PDE7B;TEK;PDE7A
	Metabolism of fat-soluble vitamins Homo sapiens R-HSA-6806667	0.02188	LRP1;AKR1C1;AKR1C3;APOE				Bud	0.170247	TGFB1;MET;FGFR2;FGFR1
	Aquaporin-mediated transport Homo sapiens R-HSA-445717	0.02188	AVPR2;ADCY2;ADCY1;ADCY5				Leukemia cell	0.170721	PHYH;NRAS;MPO
	Molecules associated with elastic fibres Homo sapiens R-HSA-	0.02438	TGFB1;ITGB3;ITGAV				Mesenteric vein	0.17353	ALB

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	Arachidonic acid metabolism Homo sapiens R-HSA-2142753	0.02483 2	PTGES3;AKR1C3;PTGS2;PTGS1				Articular cartilage	0.17353	HSPA5
	Erythrocytes take up carbon dioxide and release oxygen Homo sapiens R-HSA-1237044	0.02515 2	HBB;HBA1				Histiocytic lymphomacell	0.17353	IL1B
	O2/CO2 exchange in erythrocytes Homo sapiens R-HSA-1480926	0.02515 2	HBB;HBA1				Oxyntic cell	0.17353	TPO
	TP53 Regulates Transcription of Death Receptors and Ligands Homo sapiens R-HSA-6803211	0.02515 2	FAS;TP53				PNT-1A cell	0.17353	GABRE

	NF-kB activation through FADD/RIP-1 pathway mediated by caspase-8 and -10 Homo sapiens R-HSA-933543	0.025152	IKBKB;DDX58				RGC-5 cell	0.17353	SIGMAR1
	Reduction of cytosolic Ca++ levels Homo sapiens R-HSA-418359	0.025152	CALM1;SLC8A1				BLM cell	0.17353	LIG1
	Physiological factors Homo sapiens R-HSA-5578768	0.025152	NPR1;NPR2				SGC-7901 cell	0.17353	CASP3
	ECM proteoglycans Homo sapiens R-HSA-3000178	0.028004	TGFB1;ITGB3;SERPINE1;ITGAV				Bile duct	0.17353	CHRM3
	Regulation of cholesterol	0.02	FDPS;RXRA;GGPS1;PPARA				Bone marro	0.17	IL7

	biosynthesis by SREBP (SREBF) Homo sapiens R-HSA-1655829	8004					wstromal cell line	353	
	Oncogene Induced Senescence Homo sapiens R-HSA-2559585	0.028898	MAPK1;TP53;MAPK3				Bone marrow-derived macrophage	0.173533	NFATC1
	TRAF6 mediated IRF7 activation Homo sapiens R-HSA-933541	0.028898	IFNA1;DDX58;IFNB1				C6/36 cell	0.173533	CD40LG
	Thrombin signalling through proteinase activated receptors (PARs) Homo sapiens R-HSA-456926	0.028898	MAPK1;F2;MAPK3				Ebl	0.173533	TUBB4B
	Global	0	PCNA;LIG1;PARP1;				Eh	0	ACE

	Genome Nucleotide Excision Repair (GG-NER) Homo sapiens R-HSA-5696399	.02890 4	PARP2;LIG3				t	.17353	
	Factors involved in megakaryocyte development and platelet production Homo sapiens R-HSA-983231	0.02919 7	IFNA1;IFNB1;ABL1;HBB;RAC1;JAK2;TP53				Uvealmelanomacell	0.17353	MET
	AKT phosphorylates targets in the cytosol Homo sapiens R-HSA-198323	0.02931 9	CASP9;AKT1				GaMGcell	0.17353	TP53
	Downregulation of ERBB2:ERBB3 signaling Homo sapiens R-HSA-1358803	0.02931 9	ERBB2;AKT1				MV4-11cell	0.17353	FLT3

	Advanced glycosylation endproduct receptor signaling Homo sapiens R-HSA-879415	0.029319	MAPK1;MAPK3				Ovary cell line	0.173815	KCNH2;HSPA5
	alpha-linolenic (omega3) and linoleic (omega6) acid metabolism Homo sapiens R-HSA-2046104	0.029319	FADS2;FADS1				Palate	0.175903	GABRB3;TGFB1;FGFR1
	alpha-linolenic acid (ALA) metabolism Homo sapiens R-HSA-2046106	0.029319	FADS2;FADS1				Corpus callosum	0.177191	ATF1;ATF2;SERPINE1;ICAM1;RPS6KA3;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;JUN;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2B;GRIN2D;GRIN3A;ATM;CALR;SCN2A;GABRB3;RYR1;DDR1;GABRB2;RYR2

									;GABRB1;PRKAG1;HBB;CROT;IKBKB;SMPD1;RAC1;JAK2;JAK1;WARS;PARP1;TNNC1;FOS;F3;PTGR2;CANX;KIT;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;RXRA;GABRA2;GABRA1;GABRA6;STAT1;GABRA5;GABRA4;PTGES3;AKR1C1;STAT3;VEGFA;GRIN1;CRAT;CHRM3;CHRM1;SLC8A1;FADS2;CCND1;ADORA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;SCN8A;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA4;GLO1;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;ABL1;DRD1;DRD4;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;HSPA5;NFKB1;NFKBIA;IL6;GGCX;FGFR2;MCFD2;FLT1;THRB;THRA;FLT3;PIK3CD;HTR2C;PIK3CB;A

									DRA1A;CASP9;CPT2;CASP3;PDE4B;PDE4A;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3C;ADRA2B;PIK3CA;PDE5A;PRKAA1;PRKAA2;LRP1;SLC25A29;MAPK7;CCL2;MAPK1;PDE6B;PDE6A;MAPK6;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;MAPK15;CD4;FCGR2A;KRAS;PDE7A
	p75 NTR receptor-mediated signalling Homo sapiens R-HSA-193704	0.030248	IKBKB;NFKBIA;CASP3;RAC1;NFKB1				Outer hair cell	0.181355	KCNQ5;CALM1
	CD28 co-stimulation Homo sapiens R-HSA-389356	0.031307	PIK3CA;AKT1;RAC1				Inner hair cell	0.181355	CHRNA10;CACNA1D
	Glucagon signaling in metabolic regulation Homo sapiens R-HSA-163359	0.031307	ADCY2;ADCY1;ADCY5				Substantia nigra	0.186394	CHRNB3;PDE4C;CHRNA6
	Inactivati	0	PDE6B;PDE6A;CAL				M	0	CCL2

	on, recovery and regulation of the phototransduction cascade Homo sapiens R-HSA-2514859	.03130 7	M1				astcell line	.190852	
	Regulation of TP53 Activity through Association with Co-factors Homo sapiens R-HSA-6804759	0.03373 9	AKT1;TP53				NS20Y cell	0.190852	OPRM1
	Mismatch repair (MMR) directed by MSH2:MSH3 (MutSbeta) Homo sapiens R-HSA-5358606	0.03373 9	PCNA;LIG1				Pterygium	0.190852	TP53
	Mismatch repair (MMR) directed by MSH2:MSH6	0.03373	PCNA;LIG1				Retinoblastomacel	0.190885	TP53

	(MutSalpha) Homo sapiens R-HSA-5358565	9					line	2	
	TRAF3-dependent IRF activation pathway Homo sapiens R-HSA-918233	0.033739	DDX58;IFNB1				BJ AB cell	0.190852	FAS
	Golgi Cisternae Pericentriolar Stack Reorganization Homo sapiens R-HSA-162658	0.033739	MAPK1;MAPK3				Blast cell	0.190852	ITGB3
	Synthesis of bile acids and bile salts via 24-hydroxycholesterol Homo sapiens R-HSA-193775	0.033739	AKR1C1;AKR1C3				Sapling	0.190852	CHRM2
	Regulation of pyruvate dehydrogenase (PDH)	0.0337	RXRA;PPARD				Colonocyte	0.1908	PTGS2

	complex Homo sapiens R-HSA-204174	39						52	
	EPHA-mediated growth cone collapse Homo sapiens R-HSA-3928663	0.033818	KDR;VEGFA;EPHA2				Tail fin	0.190852	THRB
	The phototransduction cascade Homo sapiens R-HSA-2514856	0.033818	PDE6B;PDE6A;CALM1				Thoracic spine	0.190852	CRP
	Synthesis of PIPs at the plasma membrane Homo sapiens R-HSA-1660499	0.033818	PIK3CA;PIK3CD;PIK3CB				FM3A cell	0.190852	LIG1
	Generation of second messenger molecules Homo sapiens R-HSA-202433	0.036431	CD4;HLA-DRB1;HLA-DQB1				Glioblastoma multiforme cell	0.190852	TP53

	Regulation of TP53 Degradation Homo sapiens R-HSA-6804757	0.036431	AKT1;ATM;TP53				p1	0.190852	JAK2
	Homology Directed Repair Homo sapiens R-HSA-5693538	0.037976	PCNA;PARP1;PARP2;ABL1;LIG3;ATM				Head and neck cancer cell	0.190852	TP53
	Disorders of transmembrane transporters Homo sapiens R-HSA-5619115	0.0384	AVPR2;ALB				Hypopharynx	0.190852	TP53
	Calnexin/calreticulin cycle Homo sapiens R-HSA-901042	0.0384	CANX;CALR				IMCD cell	0.190852	AVPR2
	Mismatch Repair Homo sapiens R-HSA-5358508	0.0384	PCNA;LIG1				Mammary epitheli	0.190855	TGFB1

							al cell line	2	
	Processive synthesis on the lagging strand Homo sapiens R-HSA-69183	0.0384	PCNA;LIG1				Seedling	0.191091	CHRM2;TPO;GLO1;CALM1
	Prolactin receptor signaling Homo sapiens R-HSA-1170546	0.0384	PTPN11;JAK2				Ear	0.196344	TUBA1A;PIK3CA;FTH1;SCN7A;RAC1;FOS
	GRB2:SOS provides linkage to MAPK signaling for Integrins Homo sapiens R-HSA-354194	0.0384	VWF;ITGB3				Somatic cell	0.203967	MYC;ALB;ATM;TP53
	p130Cas linkage to MAPK signaling for integrins Homo sapiens R-HSA-	0.0384	VWF;ITGB3				Meconium	0.207812	ALB

	372708								
	Regulation of TP53 Expression and Degradation Homo sapiens R-HSA-6806003	0.039144	AKT1;ATM;TP53				Myoepithelial cell	0.207812	S100A4
	TRAF6 mediated induction of TAK1 complex Homo sapiens R-HSA-937072	0.043299	TLR4;TLR3				Nervecord	0.207812	HTR7
	PI3K events in ERBB2 signaling Homo sapiens R-HSA-1963642	0.043299	PIK3CA;ERBB2				Oropharynx	0.207812	TP53
	Sema3A PAK dependent Axon repulsion Homo sapiens R-HSA-399954	0.043299	LIMK1;RAC1				Pyloric cecum	0.207812	SLC15A1
	Acyl chain remodelling of PI Homo sapiens	0.043299	PLA2G2A;PLA2G10				BTO:0000491	0.2078	ALB

	R-HSA-1482922	9						12	
	MAPK6/MAPK4 signaling Homo sapiens R-HSA-5687128	0.044113	JUN;MYC;RAC1;MAPK6;MAPK4				Bodywall muscle	0.207812	PTGES3
	Phase 1 - Functionalization of compounds Homo sapiens R-HSA-211945	0.044113	POR;RXRA;NR1H4;CES1;PTGS1				Cardinal vein	0.207812	FLT4
	Transport of vitamins, nucleosides, and related molecules Homo sapiens R-HSA-425397	0.044869	ALB;SLC29A1;SLC29A2				Chondrocyte cell line	0.207812	IL1B
	Signaling by Wnt Homo sapiens R-HSA-195721	0.047362	MYC;RAC2;ITPR1;AKT1;ITPR2;NFATC1;ITPR3;PDE6B;RAC1;PDE6A;CALM1				TE-671 cell	0.207812	CHRNA4
	Dual Incision in GG-NER Homo sapiens	0.04778	PCNA;PARP1;PARP2				Temporomandi	0.2078	DDR2

	R-HSA-5696400	78					bular joint	12	
	N-glycan trimming in the ER and Calnexin/Calreticulin cycle Homo sapiens R-HSA-532668	0.048397	CANX;CALR				Tropho blast cell line	0.207812	MMP9
	KSRP (KHSRP) binds and destabilizes mRNA Homo sapiens R-HSA-450604	0.048397	MAPK11;AKT1				Elementary body	0.207812	CD40LG
	G1/S-Specific Transcription Homo sapiens R-HSA-69205	0.048397	PCNA;TYMS				Venous system	0.207812	PGRMC1
	activated TAK1 mediates p38 MAPK activation Homo sapiens R-HSA-450302	0.048397	MAPK11;NOD2				Epiphysis	0.207812	AKR1C1
	Acyl	0	PLA2G2A;PLA2G1				Bla	0	TGFB1;ALB

	chain remodelling of PG Homo sapiens R-HSA-1482925	.04839 7	0				stomere	.21963 4	
	Acyl chain remodelling of PS Homo sapiens R-HSA-1482801	0.04839 7	PLA2G2A;PLA2G10				Callus	0.21963 4	TGFB1;VEGFA
	Post-translational protein modification Homo sapiens R-HSA-597592	0.04863	GRIA1;MCFD2;PCNA;F10;PARP1;PROS1;F2;F7;LMAN1;F8;F9;PROC;GGCX;CANX;CALR;TP53;CD55				Tastebud	0.21963 4	ITPR3;TRPV1
	Transcriptional activation of mitochondrial biogenesis Homo sapiens R-HSA-2151201	0.05098 4	ATF2;RXRA;PPARA				Osteophyte	0.22441 7	TGFB1
	Cellular response to heat stress Homo sapiens R-HSA-3371556	0.05131 6	HSPA5;PTGES3;MAPK1;ATM;MAPK3				RKO cell	0.22441 7	TP53

	TP53 Regulates Transcription of Genes Involved in G2 Cell Cycle Arrest Homo sapiens R-HSA-6804114	0.05371	PCNA;TP53				B-50 cell	0.22441 7	CALM1
	SHC-mediated cascade: FGFR3 Homo sapiens R-HSA-5654704	0.05371	NRAS;KRAS				Sternum	0.22441 7	CRP
	Elastic fibre formation Homo sapiens R-HSA-1566948	0.05418 6	TGFB1;ITGB3;ITGAV				Cornsilk	0.22441 7	VEGFA
	Pre-NOTCH Transcription and Translation Homo sapiens R-HSA-1912408	0.05418 6	JUN;CCND1;TP53				Y-79 cell	0.22441 7	PDE6A
	COPII (Coat Protein 2)	0.05	GRIA1;LMAN1;MCFD2;F8				pro-B-ly	0.22	IL7

	Mediated Vesicle Transport Homo sapiens R-HSA-204005	429					mphocytecell line	44417	
	Apoptosis Homo sapiens R-HSA-109581	0.056186	CASP9;CASP3;AKT1;FAS;TP53;TLR4;TLR3				MKN-45 cell	0.224417	MET
	Stimuli-sensing channels Homo sapiens R-HSA-2672351	0.059168	RYR1;RYR2;TRPV1;RAF1;CALM1				Osteocyte	0.227379	NT5E;TGFB1
	Na+/Cl-dependent neurotransmitter transporters Homo sapiens R-HSA-442660	0.059217	SLC6A2;SLC6A3				Nerve	0.234924	JUN;TUBA1A;FTH1;HLA-A
	TP53 Regulates Transcription of Genes Involved in Cytochro	0.059217	ATM;TP53				NAMALWA cell	0.240676	IFNA1

	me C Release Homo sapiens R-HSA-6803204								
	Regulation of TP53 Activity through Methylation Homo sapiens R-HSA-6804760	0.059217	ATM;TP53				Ruminal fluid	0.240676	PDE4D
	HDL-mediated lipid transport Homo sapiens R-HSA-194223	0.059217	ALB;APOE				Basophil	0.240676	PTGDR2
	Programmed Cell Death Homo sapiens R-HSA-5357801	0.060768	CASP9;CASP3;AKT1;FAS;TP53;TLR4;TLR3				Bone marrow stem cell	0.240676	VEGFA
	Voltage gated Potassium channels Homo sapiens R-HSA-1296072	0.060869	KCNH2;KCNQ3;KCNQ5				Sebum	0.240676	FADS2
	Transcriptional	0.	PARP1;MYC;SERPINE1				Corp	0.	PDE10A

	activity of SMAD2/SMAD3:SMAD4 heterotrimer Homo sapiens R-HSA-2173793	0.0643488					us striatum	2.40676	
	ISG15 antiviral mechanism Homo sapiens R-HSA-1169408	0.0643555	DDX58;STAT1;JAK1;MAPK3				Foam cell	0.240676	F3
	Antiviral mechanism by IFN-stimulated genes Homo sapiens R-HSA-1169410	0.0643555	DDX58;STAT1;JAK1;MAPK3				jf1	0.240676	GABRG1
	Lagging Strand Synthesis Homo sapiens R-HSA-69186	0.0649191	PCNA;LIG1				Spinal cord	0.252005	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG1;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;ELANE;JU

									N;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;GRIN3A;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR1;DDR1;RYR2;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;WARS;PARP1;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;F9;IL1B;CANX;KIT;TLR7;SLC29A1;TLR4;JDP2;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER1;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;XDH;CD55;GABRA2;GABRP;F10;GABRA6;STAT1;GABRA5;IFNB1;PTGES3;AKR1C1;STAT3;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;NEK11;CHRM1;NCF1;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;PDGFRB;PDGFRA;MAP2K1;PHYH;LIG1;CYBB

									;LIG3;CYBA;CACNB1;PROCR;SCN8A;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA4;GLO1;NPR2;ITPR1;ITPR2;ITPR3;ADRB2;HRH1;ABL1;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HSPA5;NFKB1;NFKBIA;IL6;PROC;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;TNFAIP6;THRA;FLT3;FLT4;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;ADRA2B;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;PDE6B;SLC25A20;PDE6A;MAPK6;MAPK4;KCNJ3;MAPK3;KCNJ9;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;CD4;FCGR2A;KRAS;PDE7B;PDE7A
	IL-6-type cytokine receptor ligand interactions	0.0649	JAK2;JAK1				PA-1 cell	0.2565	NRAS

	Homo sapiens R-HSA-6788467	1						94	
	eNOS activation and regulation Homo sapiens R-HSA-203765	0.064911	AKT1;CALM1				Spermatozoon	0.256594	WARS
	Metabolism of nitric oxide Homo sapiens R-HSA-202131	0.064911	AKT1;CALM1				Allantois	0.256594	KDR
	Signaling by TGF-beta Receptor Complex Homo sapiens R-HSA-170834	0.067013	TGFB1;PARP1;MYC;SERPINE1				SW-1353 cell	0.256594	IL1B
	Nef-mediates down modulation of cell surface receptors by recruiting them to clathrin adapters Homo sapiens	0.070777	CD4;HLA-A				Corpus allatum	0.256594	PROCR

	R-HSA-164938								
	Nucleotide Excision Repair Homo sapiens R-HSA-5696398	0.076807	PCNA;LIG1;PARP1;PARP2;LIG3				Flagellate	0.256594	CALM1
	CD28 dependent PI3K/Akt signaling Homo sapiens R-HSA-389357	0.076809	PIK3CA;AKT1				em2	0.256594	OPRM1
	Telomere C-strand (Lagging Strand) Synthesis Homo sapiens R-HSA-174417	0.076809	PCNA;LIG1				Gastroesophagealjunction	0.256594	ERBB2
	Nephrin interactions Homo sapiens R-HSA-373753	0.076809	PIK3CA;PIK3CB				Gastrointestinalmucosa	0.256594	PTGS2
	Post-chaperonin tubulin folding pathway	0.076	TUBA1A;TUBB4B				rt1	0.256	CD4

	Homo sapiens R-HSA-389977	809						594	
	DNA Repair Homo sapiens R-HSA-73894	0.078283	POLB;PCNA;PARP1;LIG1;PRKDC;PARP2;ABL1;ATM;LIG3;TP53				Leukemic stem cell	0.256594	FLT3
	Death Receptor Signalling Homo sapiens R-HSA-73887	0.079146	IKBKB;FAS;TNF				Hypophysis	0.257684	KCNJ5;THRB;GGPS1;PTGES3
	EPH-ephrin mediated repulsion of cells Homo sapiens R-HSA-3928665	0.079146	RAC1;MMP9;EPHA2				HeLa cell	0.257684	NFKBIA;SLC15A1;PRKDC;ATM
	Pyruvate metabolism and Citric Acid (TCA) cycle Homo sapiens R-HSA-71406	0.079146	RXRA;GLO1;PPARD				Meristem	0.266302	PARP3;PCNA
	Regulation of TP53 Activity	0.0	AKT1;TP53				Neurobl	0.2	NTRK1;NTRK3

	through Acetylation Homo sapiens R-HSA-6804758	8299 6					ast	66302	
	Acyl chain remodelling of PE Homo sapiens R-HSA-1482839	0.08299 6	PLA2G2A;PLA2G10				Myelocyte	0.27217 9	MPO
	Cholesterol biosynthesis Homo sapiens R-HSA-191273	0.08299 6	FDPS;GGPS1				Ookinete	0.27217 9	VWF
	Regulation of HSF1-mediated heat shock response Homo sapiens R-HSA-3371453	0.08716 9	HSPA5;MAPK1;ATM;MAPK3				Oral squamous cell carcinoma cell	0.27217 9	CCND1
	Complement cascade Homo sapiens R-HSA-166658	0.08716	CRP;PROS1;CD55;MBL2				Superior vena ca	0.27217	ALB

		9					va	9	
	Endogenous sterols Homo sapiens R-HSA-211976	0.089329	RXRA;NR1H4				L-1210 cell	0.272179	TYMS
	Pyrimidine metabolism Homo sapiens R-HSA-73848	0.089329	NT5E;TYMS				Prepuce	0.274099	PDGFRA;AKT1
	Metabolism of vitamins and cofactors Homo sapiens R-HSA-196854	0.091468	LRP1;AKR1C1;FPGS;AKR1C3;APOE;PTGS2				Occipital lobe	0.274912	ATF1;ATF2;ICAM1;RPS6KA3;HTR6;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;PRKAB1;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;ATF4;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2B;GRIN2D;GRIN3A;CALY;ATM;CALR;CALM1;SCN2A;GABRB3;RYR1;DDR1;GABRB2;RYR2;GABRB1;PRKAG1;PRKAG2;HBB;CROT;IKBKB;TUBA1A;SMPD1;RAC1;JAK2;JAK1;WARS;PARP1;PARP2;TUBB;FOS;F3;PTGR

									2;CANX;KIT;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2;OPRD1;PCNA;PTGER1;NR1I3;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRD;GABRA2;GABRA1;GABRA6;STAT1;GABRA5;GABRA4;PTGES3;AKR1C1;STAT3;VEGFA;GRIN1;CRAT;CHRM3;CHRM1;SLC8A1;FADS2;CCND1;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CACNB1;SCN8A;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA4;NPR1;GLO1;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;HRH1;HRH2;ABL1;DRD1;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;HSPA5;HTR1F;HTR1A;HTR1B;NFKB1;NFKBIA;GGCX;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;PDE4B;PDE4A;IT

									GAV;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;HTR3C;ADRA2C;ADRA2B;ADRA2A;PIK3CA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;OPRL1;SLC25A29;MAPK7;MAPK1;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;CD4;KRAS;PDE7B;PDE7A
	Constitutive Signaling by AKT1 E17K in Cancer Homo sapiens R-HSA-5674400	0.0958	CASP9;AKT1				Prostate cancer cell line	0.286224	PGRMC1;PTGES3;TNF
	Formation of tubulin folding intermediates by CCT/TriC Homo sapiens R-HSA-389960	0.0958	TUBA1A;TUBB4B				Olfactory organ	0.287438	AVPR2
	Acyl chain remodelling of PC Homo sapiens R-HSA-	0.0958	PLA2G2A;PLA2G10				Renal proximal tu	0.287443	WARS2

	1482788						bule	8	
	Abacavir transmembrane transport Homo sapiens R-HSA-2161517	0.100461	ABCB1				Pulmonary vein	0.287438	PIK3CD
	GRB7 events in ERBB2 signaling Homo sapiens R-HSA-1306955	0.100461	ERBB2				Regio parietalis capitis	0.287438	APOE
	FasL/ CD95L signaling Homo sapiens R-HSA-75157	0.100461	FAS				Biliary epithelial cell	0.287438	S100A4
	Alpha-oxidation of phytanate Homo sapiens R-HSA-389599	0.100461	PHYH				Chondroblast	0.287438	NT5E
	TNFR1-induced NFkappaB signaling pathway Homo sapiens R-HSA-	0.1024	IKBKB;TNF				Corpus cardiacum	0.287438	PROCR

	5357956								
	Regulation of Complement cascade Homo sapiens R-HSA-977606	0.10244	PROS1;CD55				Groin	0.287438	SCN10A
	Uptake and actions of bacterial toxins Homo sapiens R-HSA-5339562	0.10912	MAP2K1;CALM1				Endoderm	0.291943	TGFB1;ALB;KDR
	Prefoldin mediated transfer of substrate to CCT/TriC Homo sapiens R-HSA-389957	0.10912	TUBA1A;TUBB4B				Hair cell	0.297669	CASP3;CHRNA9;CACNA1D
	SLC-mediated transmembrane transport Homo sapiens R-HSA-425407	0.11917	SLC15A1;SLC22A5;ALB;CALM1;SLC29A1;SLC6A2;SLC6A3;SLC8A1;SLC29A2				Megakaryocyte cell line	0.302378	ITGB3
	Extension of	0.	PCNA;LIG1				Np	0.	IL1B

	Telomeres Homo sapiens R-HSA-180786	1159533						3023778	
	Synthesis of PA Homo sapiens R-HSA-1483166	0.1159533	PLA2G2A;PLA2G10				Phrenic nerve	0.3023778	HTR1A
	Pre-NOTCH Expression and Processing Homo sapiens R-HSA-1912422	0.1171299	JUN;CCND1;TP53				Stoma	0.3023778	ALB
	Vasopressin-like receptors Homo sapiens R-HSA-388479	0.1193111	AVPR2				Cervical mucus	0.3023778	CD40LG
	Sensing of DNA Double Strand Breaks Homo sapiens R-HSA-5693548	0.1193111	ATM				TZM-bl cell	0.3023778	CCR5
	PTK6 Regulates Cell Cycle	0.111	CCND1				Cpa	0.30	TRDMT1

	Homo sapiens R-HSA-8849470	9.311						2.378	
	FGFR1b ligand binding and activation Homo sapiens R-HSA-190370	0.11931	FGFR1				Wes	0.30237	ATF7
	TNFR1-mediated ceramide production Homo sapiens R-HSA-5626978	0.11931	TNF				b21	0.30237	HLA-A
	Lectin pathway of complement activation Homo sapiens R-HSA-166662	0.11931	MBL2				mbl2	0.30237	MBL2
	Scavenging by Class F Receptors Homo sapiens R-HSA-3000484	0.11931	CALR				Molaris	0.305219	FDPS;IL1B
	NADE modulates death signalling	0.11	CASP3				Leydig cel	0.30	IL1A;PDE8A

	Homo sapiens R-HSA-205025	9311					l	52199	
	SMAD2/3 Phosphorylation Motif Mutants in Cancer Homo sapiens R-HSA-3304356	0.119311	TGFB1				Endosperm	0.3129966	ALB;ORM2
	Beta-oxidation of very long chain fatty acids Homo sapiens R-HSA-390247	0.119311	CRAT				Molting gland	0.3170006	CALM1
	Synthesis of 15-eicosatetraenoic acid derivatives Homo sapiens R-HSA-2142770	0.119311	PTGS2				Chondrocyte	0.3170006	NOS2
	Pyrimidine biosynthesis Homo sapiens R-HSA-500753	0.119311	TYMS				Epidermal stem cell	0.3170006	MYC

	Recruitment and ATM-mediated phosphorylation of repair and signaling proteins at DNA double strand breaks Homo sapiens R-HSA-5693565	0.12170707	ABL1;ATM;TP53				Zygote	0.3170006	ALB
	Activation of BH3-only proteins Homo sapiens R-HSA-114452	0.12289101	AKT1;TP53				GH4-C1 cell	0.3170006	THRA
	Myogenesis Homo sapiens R-HSA-525793	0.12289101	MAPK11;ABL1				Jaw	0.3170006	FDPS
	CDO in myogenesis Homo sapiens R-HSA-375170	0.12289101	MAPK11;ABL1				Malpighian tubule	0.3170006	HTR7
	YAP1-	0	RXRA;PPARA				Ect	0	TGFB1;TP53;FGFR

	and WWTR1 (TAZ)-stimulated gene expression Homo sapiens R-HSA-2032785	.122891					oderm	.3185225	2;FGFR1
	Phospholipid metabolism Homo sapiens R-HSA-1483257	0.1230071	ACHE;PIK3CA;PLA2G10;PLA2G2A;PIK3CD;PIK3CB				Melanocyte	0.3313328	DDR1
	DNA Double Strand Break Response Homo sapiens R-HSA-5693606	0.1263535	ABL1;ATM;TP53				Platlet	0.3313328	TPO
	Amine compound SLC transporters Homo sapiens R-HSA-425428	0.1299277	SLC6A2;SLC6A3				Tropho blast stem cell	0.3313328	PRKAA1
	PI Metabolism Homo sapiens R-HSA-1483255	0.131055	PIK3CA;PIK3CD;PIK3CB				Hallux	0.3313328	FGFR2

	Regulation of TNFR1 signaling Homo sapiens R-HSA-5357905	0.137054	IKBKB;TNF				Long bone	0.336083	TGFB1;FGFR2
	Binding of TCF/LEF:CTNNB1 to target gene promoters Homo sapiens R-HSA-4411364	0.137767	MYC				Saliva	0.343739	ORM1;MPO
	CREB phosphorylation through the activation of Adenylate Cyclase Homo sapiens R-HSA-442720	0.137767	ADCY1				Nymph	0.345335	SCN8A
	Phase 3 - rapid repolarisation Homo sapiens R-HSA-5576890	0.137767	KCNH2				Hepatoblastomacell	0.345335	ATF5
	Loss of Function of TGFBR1	0.13	TGFB1				Egg yolk	0.34	APOE

	in Cancer Homo sapiens R-HSA-3656534	7767						535	
	TGFBR1 KD Mutants in Cancer Homo sapiens R-HSA-3656532	0.137767	TGFB1				Exoskeleton	0.34535	PDE6A
	Loss of Function of SMAD2/3 in Cancer Homo sapiens R-HSA-3304349	0.137767	TGFB1				af1	0.34535	JDP2
	SMAD2/3 MH2 Domain Mutants in Cancer Homo sapiens R-HSA-3315487	0.137767	TGFB1				wc1	0.34535	TUBA1A
	Chaperonin-mediated protein folding Homo sapiens R-HSA-390466	0.138743	TUBA1A;STAT3;TUBB4B;TP53				Large intestine	0.34535	PIK3CA
	Gap-filling DNA	0.1	PCNA;LIG1;LIG3				Synoviu	0.3	MCFD2;NCF1;S100A4;PTGS2

	repair synthesis and ligation in TC-NER Homo sapiens R-HSA-6782210	4.06466					m	5.65558	
	Cytochrome P450 - arranged by substrate type Homo sapiens R-HSA-211897	0.140646	POR;RXRA;NR1H4				Pancreatic beta cell line	0.359078	CASP3
	ER to Golgi Anterograde Transport Homo sapiens R-HSA-199977	0.141104	GRIA1;LMAN1;MCFD2;F8;CD55				SF-9 cell	0.359078	HRH4
	Cell-Cell communication Homo sapiens R-HSA-1500931	0.141104	MAPK11;PIK3CA;PTPN11;PIK3CB;RAC1				Spikelet	0.359078	PCNA
	Activation of Matrix Metalloproteinases Homo	0.14442	MMP9;ELANE				Fer	0.3590	OPRM1

	sapiens R-HSA-1592389	65						78	
	DNA strand elongation Homo sapiens R-HSA-69190	0.14426 5	PCNA;LIG1				GH3 cell	0.35907 8	THRA
	SMAD2/SMAD3:SMAD4 heterotrimer regulates transcription Homo sapiens R-HSA-2173796	0.14426 5	MYC;SERPINE1				Gizzard	0.35907 8	CALM1
	Signaling by Robo receptor Homo sapiens R-HSA-376176	0.14426 5	ABL1;RAC1				nuc1	0.35907 8	PPARA
	Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding Homo sapiens R-HSA-389958	0.14426 5	TUBA1A;TUBB4B				HeLa-S3 cell	0.35907 8	NEK11

	Signaling by Rho GTPases Homo sapiens R-HSA-194315	0.150242	NCF1;NCF4;LIMK1;RAC2;ABL1;CYBB;MAPK1;CYBA;RAC1;CALM1;MAPK3				Primordium	0.372209	TGFB1;KIT;AKT1
	E2F mediated regulation of DNA replication Homo sapiens R-HSA-113510	0.151552	PCNA;TYMS				Glioblastoma cell	0.372552	NOS2
	Detoxification of Reactive Oxygen Species Homo sapiens R-HSA-3299685	0.151552	CYBB;CYBA				Retinal pigment epithelium	0.372552	VCAM1
	Insulin-like Growth Factor-2 mRNA Binding Proteins (IGF2BPs/IMPs/VICKZs) bind RNA Homo sapiens R-HSA-428359	0.155837	MYC				Tubercle	0.372552	ALB

	Activation of PUMA and translocation to mitochondria Homo sapiens R-HSA-139915	0.155837	TP53				Vero cell	0.372552	LMAN1
	Nef and signal transduction Homo sapiens R-HSA-164944	0.155837	RAC1				Plant embryo	0.374057	TPO;CALM1
	Signaling by TGF-beta Receptor Complex in Cancer Homo sapiens R-HSA-3304351	0.155837	TGFB1				Interstitial cell of Cajal	0.383889	TUBA1A;HSPA5;TUBB;CALR;CALM1
	Nicotinamide salvaging Homo sapiens R-HSA-197264	0.155837	PTGS2				Skin fibroblast	0.385668	AKR1C1
	Lipoprotein metabolism Homo sapiens	0.1589	ALB;APOE				Tear	0.3856	HBB

	R-HSA-174824	11						8	
	Purine metabolism Homo sapiens R-HSA-73847	0.158911	NT5E;XDH				Bewocell	0.385568	SLC22A5
	Activation of NF-kappaB in B cells Homo sapiens R-HSA-1169091	0.160495	IKBKB;NFKBIA;NFKB1				Bipolarcell	0.385568	GLRA2
	Protein folding Homo sapiens R-HSA-391251	0.162145	TUBA1A;STAT3;TUBB4B;TP53				Bulb	0.385568	PIK3CA
	Organic cation transport Homo sapiens R-HSA-549127	0.173533	SLC22A5				Epimastigote	0.385568	CALM1
	Alpha-defensins Homo sapiens R-HSA-1462054	0.173533	CD4				Fascia	0.385568	F2
	Nef Mediated CD4	0.1	CD4				Hepato	0.3	SLC25A29;MAPK7;NR1I2;BRAF;MET;MAPK3

	Down-regulation Homo sapiens R-HSA-167590	7353					ma cell	92744	
	AKT phosphorylates targets in the nucleus Homo sapiens R-HSA-198693	0.173533	AKT1				Cerebellar Purkinje cell	0.398565	CACNA2D2
	PTK6 Regulates RTKs and Their Effectors AKT1 and DOK1 Homo sapiens R-HSA-8849469	0.173533	AKT1				ZR-75-30 cell	0.398565	OPRD1
	Role of Abl in Robo-Slit signaling Homo sapiens R-HSA-428890	0.173533	ABL1				Hindgut	0.398565	RET
	Inactivation of Cdc42 and Rac Homo sapiens R-HSA-428543	0.173533	RAC1				CL-48 cell	0.400493	DDR1;WARS;ALB;PRKAG1;TLR4
	Loss of	0	TUBA1A;TUBB;TU				Epi	0	EPHA2

	Nlp from mitotic centrosomes Homo sapiens R-HSA-380259	.175903	BB4B				thelium	.411118	
	Loss of proteins required for interphase microtubule organization?from the centrosome Homo sapiens R-HSA-380284	0.175903	TUBA1A;TUBB;TUBB4B				Erythrocyte	0.411118	GLO1
	HDR through Single Strand Annealing (SSA) Homo sapiens R-HSA-5685938	0.181355	ABL1;ATM				Panicle	0.411118	CHRM2
	DNA Damage Recognition in GG-NER Homo sapiens R-HSA-5696394	0.188932	PARP1;PARP2				Hippocampus	0.412451	ATF1;ATF2;SERPINE1;HTR4;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;SIK1;KCNQ5;

									ATF5;ATF6;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;APOE;SCN3A;JUN;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;ATM;CALR;CALM1;SCN2A;RET;GABRB2;RYR2;GABRB1;IFNA1;PRKAG2;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP1;PARP2;IL13;FOS;HBA1;F2;PTGR2;F7;IL1A;F8;CANX;PPARG;TLR7;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;OPRD1;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRD;CD55;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;SLC8A1;FADS2;CCND1;SCN9A;PDE8A;FADS1;KCNH2;PDGFRB;G

									UCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PLA2G10;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ADRB1;HRH1;HRH4;ABL1;DRD1;DRD2;PRNP;FDPS;VCAM1;HTR1E;HSPA5;HTR1D;NFKBIA;PROC;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;GGPS1;PDE4D;SIGMAR1;PDE4C;HTR3B;PIK3CA;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;PDE7B;TEK;PDE7A
	Abacavir transport and	0.1	ABCB1				Retina	0.4	ATF1;ATF2;ICAM1;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT

	metabolism Homo sapiens R-HSA-2161522	90852						171157	1;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;SCN10A;POR;SIK1;ATF5;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1A;APOE;ELANE;JUN;ACE;PDE2A;BRAF;L1CAM;GRIN2D;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;WARS;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;F7;F9;CANX;KIT;PPARG;TLR7;SLC29A1;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;PCNA;ADCY2;ADCY1;PTGS2;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;XDH;CD55;GABRA2;GABRA1;F10;STAT1;IFNB1;PTGES3;AKR1C1;STAT3;GABRA3;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;PRO

									S1;MPO;SLC8A1;FADS2;CCND1;FPGS;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;S100A4;RAF1;PDE9A;FTL;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;ADRB2;HRH1;ABL1;DRD4;GRIA3;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HSPA5;NFKB1;NFKBIA;IL6;PROC;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRA;FLT3;FLT4;PIK3CD;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;ADRA2C;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PDE6C;SCN7A;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;MAPK4;MAPK3;KCNJ5;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK

									15;WARS2;MAPK11;KRAS
	Nef mediated downregulation of MHC class I complex cell surface expression Homo sapiens R-HSA-164940	0.190852	HLA-A				Insulinomacell	0.423531	KCNJ6
	Activation of Ca-permeable Kainate Receptor Homo sapiens R-HSA-451308	0.190852	CALM1				Carcass	0.423531	HLA-A
	Ionotropic activity of Kainate Receptors Homo sapiens R-HSA-451306	0.190852	CALM1				Lymphoblast	0.432836	SIGMAR1;HLA-DRB1
	Removal of the Flap Intermediate from the C-strand Homo	0.190852	PCNA				Vegetative cell	0.434128	ATM;CALM1;TP53

	sapiens R-HSA-174437								
	Regulated proteolysis of p75NTR Homo sapiens R-HSA-193692	0.190852	NFKB1				Neuron	0.435624	TLR3
	Regulation of gene expression by Hypoxia-inducible Factor Homo sapiens R-HSA-1234158	0.190852	VEGFA				Barrett's esophagus	0.435624	TP53
	FGFR2b ligand binding and activation Homo sapiens R-HSA-190377	0.190852	FGFR2				Hypodermal seamcell	0.435624	ATF7
	IRAK1 recruits IKK complex Homo sapiens R-HSA-937039	0.190852	IKBKB				Lateral ventricle	0.443385	ATF1;ATF2;SERPINE1;HTR4;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D2;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B

									;PDE1A;APOE;SCN3A;JUN;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;RET;GABRB2;RYR2;GABRB1;PRKAG2;CROT;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;JAK2;CCR4;JAK1;IL10;PARP1;PARP2;IL13;FOS;HBA1;F2;PTGR2;F7;IL1A;F8;CANX;PPARG;TLR7;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;OPRD1;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CHRNA10;GABRE;GABRD;CD55;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;SLC8A1;FADS2;CCND1;ADORA3;SCN9A;PDE8B;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CYBA;CACNB1;PR

									OCR;PLA2G10;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ADRB1;TPO;HRH1;HRH4;ABL1;DRD1;DRD2;GRIA3;PRNP;FDPS;VCAM1;HTR1E;HSPA5;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;PROC;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;PDE4D;SIGMAR1;PDE4C;HTR3B;PIK3CA;PDE5A;SCN4A;MET;CRP;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;PDE10A;PDE7B;TEK;PDE7A
	IRAK1 recruits IKK	0.1	IKBKB				Sertoli	0.4	IL1A;TGFB1

	complex upon TLR7/8 or 9 stimulation Homo sapiens R-HSA-975144	90852					cell	47073	
	Netrin mediated repulsion signals Homo sapiens R-HSA-418886	0.190852	PTPN11				Dentin	0.447073	TGFB1;MMP9
	Acetylcholine regulates insulin secretion Homo sapiens R-HSA-399997	0.190852	CHRM3				Perichondrium	0.447463	TGFB1
	Thyroxine biosynthesis Homo sapiens R-HSA-209968	0.190852	TPO				Subcutaneous adipose tissue	0.459055	ADRB3
	AURKA Activation by TPX2 Homo	0.191	TUBA1A;TUBB;TUBB4B				Sweat	0.459	AVPR2

	sapiens R-HSA-8854518	701						055	
	Class I MHC mediated antigen processing & presentation Homo sapiens R-HSA-983169	0.192051	NCF1;HSPA5;CANX;NCF4;CYBB;CYBA;ITGAV;HLA-A;CALR				Aortaendothelium	0.470404	ITGAV
	Infectious disease Homo sapiens R-HSA-5663205	0.196484	MAP2K1;CD4;TGFB1;LIG1;CANX;HLA-A;CALR;RAC1;CALM1;CCR5				Supportingcell	0.470404	CASP3
	Collagen degradation Homo sapiens R-HSA-1442490	0.196557	MMP9;ELANE				Fatbody	0.470404	FTH1
	Nuclear signaling by ERBB4 Homo sapiens R-HSA-1251985	0.196557	PTPN11;JAK2				BTO:0000868	0.481516	XDH
	Association of TriC/CCT with target	0.196	STAT3;TP53				Animalcap	0.481	TGFB1

	proteins during biosynthesis Homo sapiens R-HSA-390471	557						516	
	Transport of organic anions Homo sapiens R-HSA-879518	0.207812	ALB				Ascidian	0.4815516	MBL2
	FGFR1c ligand binding and activation Homo sapiens R-HSA-190373	0.207812	FGFR1				Chorioc arcinoma cell	0.4923955	SIGMAR1
	Signaling by activated point mutants of FGFR1 Homo sapiens R-HSA-1839122	0.207812	FGFR1				Hair follicle	0.4923955	DDR2
	CASP8 activity is inhibited Homo sapiens R-HSA-5218900	0.207812	FAS				Renal epithelium	0.4923955	FADS1
	Regulatio	0	FAS				Na	0	IL2

	n by c-FLIP Homo sapiens R-HSA-3371378	.20781 2					tural killer cell line	.50304 6	
	Dimerization of procaspase-8 Homo sapiens R-HSA-69416	0.20781 2	FAS				Pancreatic juice	0.50304 6	KRAS
	RHO GTPases activate KTN1 Homo sapiens R-HSA-5625970	0.20781 2	RAC1				Pancreatic cancer cell line	0.50304 6	KRAS
	Apoptotic cleavage of cell adhesion proteins Homo sapiens R-HSA-351906	0.20781 2	CASP3				Semicircular canal	0.50304 6	PGRMC1
	G1/S Transition Homo sapiens R-HSA-69206	0.20831	PCNA;CCND1;MYC;TYMS				Epiphyseal growth	0.50304	VEGFA

		4					plate	6	
	TNF signaling Homo sapiens R-HSA-75893	0.211913	IKBKB;TNF				Filopodium	0.503046	AKT1
	Transcription-Coupled Nucleotide Excision Repair (TC-NER) Homo sapiens R-HSA-6781827	0.213283	PCNA;LIG1;LIG3				B-lymphocyte cell line	0.510343	JUN;PARP3;STAT1;NFATC1;MMP9;HLA-DRB1
	Netrin-1 signaling Homo sapiens R-HSA-373752	0.219634	PTPN11;RAC1				Decidua	0.513475	FLT1
	tRNA Aminoacylation Homo sapiens R-HSA-379724	0.219634	WARS;WARS2				Colonic cancer cell	0.517026	PDGFRA;WARS;PARP1;HSPA5;ALB;BRAF;PDE5A;KRAS;CALR;CALM1;MAPK15;JAK1
	Endosomal/Vacuolar pathway Homo sapiens	0.22444	HLA-A				Ureteric bud	0.52336	RET

	R-HSA-1236977	17						85	
	CD28 dependent Vav1 pathway Homo sapiens R-HSA-389359	0.224417	RAC1				Enteroendocrine cell	0.523685	DPP4
	Caspase-mediated cleavage of cytoskeletal proteins Homo sapiens R-HSA-264870	0.224417	CASP3				Rectal cancer cell	0.533681	NFKB1
	The NLRP3 inflammasome Homo sapiens R-HSA-844456	0.224417	CASP1				lat1	0.533681	SLC15A1
	Pyrimidine catabolism Homo sapiens R-HSA-73621	0.224417	NT5E				Cochlear hair cell	0.543468	CACNA1D
	Formation of Incision Complex in GG-NER	0.2273	PARP1;PARP2				Oral mucosa	0.5451	ATF1;ATF2;IL1RN;SERPINE1;HTR4;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;PR

	Homo sapiens R-HSA-5696395	79						08	KAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;PDE1C;PDE1B;PDE1A;APOE;SCN3A;JUN;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG2;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;JAK2;CCR4;JAK1;PARP1;PARP2;TNNC1;IL13;FOS;HBA1;F2;F3;IL1A;F8;CANX;KIT;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CHRNA10;GABRE;CD55;GABRA2;GABRQ;GABRP;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CRAT;CHRM2;CHRM3;PROS1;CHRM5;SLC8A1;FADS2;CCND1;ADORA3;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1

									;LIG3;CACNB1;PLA2G10;S100A4;RAF1;FTL;IFNAR1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR3;CACNA1C;ABL1;DRD1;GRIA3;DRD5;FDPS;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;HTR2C;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;DDX58;PDE4D;AVPR2;SIGMAR1;ADRA2C;PIK3CA;IFNG;PDE5A;MET;CRP;PRKAA1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;KRAS;TEK
	Iron uptake and transport Homo sapiens R-HSA-2737	0.227	FTH1;FTL				Notochord	0.553055	TGFB1

	917937	9							
	Centrosome maturation Homo sapiens R-HSA-380287	0.229796	TUBA1A;TUBB;TUBB4B				Neuroblastomacell	0.553063	SCN11A;CACNA2D1;CACNA1D;FADS1
	Recruitment of mitotic centrosome proteins and complexes Homo sapiens R-HSA-380270	0.229796	TUBA1A;TUBB;TUBB4B				Small intestine	0.556313	ATF1;ATF2;CHRM3;PROS1;ICAM1;FADS2;RPS6KA3;HTR6;EDNRA;CCND1;MYC;ADORA3;FTH1;FPGS;KDR;AKT1;PDE8A;FADS1;KCNH2;CHRNB2;PDGFRB;PDGFRA;SLC15A1;CPT1A;PHYH;CYBA;PROCR;SCN10A;POR;S100A4;SIK1;RAF1;ATF4;IFNAR1;CHRNA3;ABCB1;SLC22A5;PRKDC;NPR1;GLO1;ADRB2;ABL1;GRIA3;GRIA4;PRNP;FDPS;JUN;ACE;TGFB1;VCAM1;HSPA5;NFKBIA;ALB;CALR;CALM1;FGFR1;RET;RYR1;DDR1;MCFD2;ORM1;PRKAG1;PRKAG2;HTR2C;HBB;HTR2A;CROT;SLC6A4;POLB;CASP9;TUBA1A;CASP3;RAC2;CASP1;ITGAV;RAC1;JAK1;MBL2;WARS;VWF;GGPS1;PARP1;DDX58;TNNC1;TUBB;SIGMAR1;FOS;HBA1;F2;ADRA2C;F3;CANX;KIT;TLR

									4;HLA-DQB1;PTGER4;PCNA;LRP1;PTGER3;TYMS;TFPI;ADCY5;LMAN1;SLC25A29;PGRMC1;RXRA;CCL5;CCL2;PDE6B;SLC25A20;MAPK6;XDH;KCNJ3;GABRA2;GABRA1;KCNJ5;STAT1;PTGES3;STAT3;PLA2G2A;AKR1C3;PTPN11;TUBB4B;VEGFA;GRIN1;KRAS;TEK;CRAT
	Dissolution of Fibrin Clot Homo sapiens R-HSA-75205	0.240676	SERPINE1				Procyclic form	0.562432	PTGER1
	Retrograde neurotrophin signalling Homo sapiens R-HSA-177504	0.240676	NTRK1				Colorectum	0.562432	PIK3CA
	TP53 Regulates Transcription of Genes Involved in G1 Cell Cycle Arrest Homo sapiens	0.240676	TP53				Photoreceptor cell	0.571617	GUCY1A2

	R-HSA-6804116								
	IRF3-mediated induction of type I IFN Homo sapiens R-HSA-3270619	0.240676	PRKDC				Mouth	0.573136	DDR1;GABRP;IL1RN;LRP1;PARP1;AKR1C1;STAT3;AKR1C3;FOS;NFKB1;ICAM1;POR;FCGR2A;GGCX;MYC;CANX;ERBB2;MAPK1;CALM1;RAF1;ATF6;TP53
	Activation of DNA fragmentation factor Homo sapiens R-HSA-211227	0.240676	CASP3				Brain	0.577146	ATF1;ATF2;SERPINE1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;L1CAM;GRIN2C;GRIN3A;CALY;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;PARP3;WARS;PARP1;PARP2

									;TUBB;FOS;HBA1;F2;F3;PTGR2;F7;F8;ADRB3;IL1B;CANX;KIT;PPARA;SLC29A1;TLR4;JDP2;HLA-DQB1;PPARD;SLC29A2;DDR2;PCNA;NR1I3;ADCY2;ADCY1;TYMS;PTGS1;ADCY5;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRA1;GABRA6;STAT1;GABRA5;GABRA4;PTGES3;AKR1C1;STAT3;GABRA3;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;CHRNB4;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;SCN8A;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CHRNA9;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;HRH1;ABL1;DR

									D2;GRIA3;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HSPA5;HTR1A;NFKB1;NFKBIA;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;FLT4;PDE3B;PIK3CD;HTR2C;PIK3CB;HTR2A;POLB;CASP9;CPT2;CASP3;PDE4B;PDE4A;ITGAV;SCN5A;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3B;OPRM1;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;OPRL1;TFPI;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PDE6C;PDE6B;SLC25A20;CACNG2;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;KCNJ9;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;TEK;PDE7A
	Apoptosis induced DNA fragmentation Homo sapiens R-HSA-140342	0.240676	CASP3				Orbit	0.580609	F2
	POU5F1	0	STAT3				Ca	0	TGFB1

	(OCT4), SOX2, NANOG activate genes related to proliferation Homo sapiens R-HSA-2892247	.240676					rcinomacell	.589413	
	p75NTR recruits signalling complexes Homo sapiens R-HSA-209543	0.240676	IKBKB				Ileal mucosa	0.589413	PLA2G2A
	FGFR2c ligand binding and activation Homo sapiens R-HSA-190375	0.240676	FGFR2				Osteosarcomacell	0.606473	CALM1
	ERBB2 Activates PTK6 Signaling Homo sapiens R-HSA-8847993	0.240676	ERBB2				Parathyroid gland	0.614488	ATF1;ATF2;HTR4;RPS6KA3;EDNRA;HTR7;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;PRKAB1;POR;KCNQ3;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;PDE1C;PDE1B;PDE1A;SCN3A;JUN;ACE;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;PDE3A;ATM;CAL

									R;CALM1;RET;RYR2;GABRB1;ORM1;IFNA1;PRKAG2;HBB;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;JAK2;JAK1;IL10;PARP1;IL13;FOS;HBA1;F2;F3;PTGR2;F7;F8;CANX;SLC29A1;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;LMAN1;NRAS;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;CD55;GABRA2;GABRP;GABRA6;IFNB1;GABRA4;PTGES3;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;CHRM2;CHRM3;PROS1;NCF4;ADORA3;SCN9A;PDE8A;FADS1;KCNH2;PDGFRB;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CACNB1;PLA2G10;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;CACNA1D;ADRB2;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;FDPS;VCAM1;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;P

									ROC;IL7;ALB;FGFR2;FGFR1;MCFD2;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;HTR2C;ADRA1D;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4A;BDKRB1;ITGAV;MBL2;VWF;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3B;PIK3CA;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;KCNJ5;KCNJ6;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	DEx/H-box helicases activate type I IFN and inflammatory cytokines production Homo sapiens R-HSA-3134963	0.240676	NFKB1				Motoneuron	0.622825	GRIN3B
	TNFR1-induced proapoptotic signaling	0.2400	TNF				Gastroesoph	0.622	MAPK6

	Homo sapiens R-HSA-5357786	676					ageal cancer cell	825	
	Signal regulatory protein (SIRP) family interactions Homo sapiens R-HSA-391160	0.240676	PTPN11				Stratified epithelium	0.638499	TP53
	Platelet Adhesion to exposed collagen Homo sapiens R-HSA-75892	0.240676	VWF				Root tip	0.667924	CALM1
	Synthesis, secretion, and inactivation of Glucose-dependent Insulinotropic Polypeptide (GIP) Homo sapiens R-HSA-400511	0.240676	DPP4				Lymphoma cell	0.688414	CALM1

									ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;HLA-A;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;PDE1C;PDE1B;PDE1A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;ATM;CALR;CALM1;RET;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;WARS;PARP1;PARP2;TNNC1;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;TLR8;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;CD55;GABRA2;GABRQ;GABRP;GABRA6;IFNB1;GABRA4;PTGES3;AKR
	Peptide hormone metabolism Homo sapiens R-HSA-2980736	0.240933	DPP4;ACHE;ACE				Uterine cervix	0.693039	

									1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CACNB1;PROCR;PLA2G10;S100A4;RAF1;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR2;ITPR3;ADRB2;CACNA1C;HRH4;ABL1;DRD1;GRIA3;FDPS;VCAM1;HTR1E;HSPA5;HTR1D;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;HTR2C;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;BDKRB1;ITGAV;VWF;DDX58;PDE4D;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;IFNG;PDE5A;MET;CRP;PRKAA1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;MAPK6;MAPK4;TRDMT1;

									MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;TEK
	RMTs methylate histone arginines Homo sapiens R-HSA-3214858	0.24292	CCND1;JAK2				Optic nerve	0.701368	CASP3
	Transport to the Golgi and subsequent modification Homo sapiens R-HSA-948021	0.2533	GRIA1;LMAN1;MCFD2;F8;CD55				Somite	0.707642	FGFR1
	Signaling by NOTCH Homo sapiens R-HSA-157118	0.25309 5	JUN;CCND1;MYC;TP53				Lymphoid tissue	0.719799	FRK
	LGI-ADAM interactions Homo sapiens R-HSA-5682910	0.25659 4	CACNG2				Tooth enamel	0.731451	ALB
	Organic cation/anion/zwit	0.2	SLC22A5				Blood	0.7	ATF1;ATF2;IL1RN;NCF1;NCF4;TNF;MPO;ICAM1;RPS6KA

	terion transport Homo sapiens R-HSA-549132	56594						503979	3;HTR6;MYC;FTH1;FPGS;AKT1;IFNAR2;CHRNB2;MAP2K1;CPT1A;LIG1;CYBB;CYBA;HLA-A;SCN10A;POR;S100A4;ATF5;RAF1;TP53;ATF3;ATF4;FTL;CES1;PRKDC;NPR1;GLO1;ADRB2;CACNA1S;ELANE;PRNP;FDPS;JUN;TGFB1;HSPA5;L1CAM;NFKB1;IL2;NFKBIA;ALB;ATM;CALR;CALM1;HLA-DRB1;DDR1;MCFD2;ORM1;TNFAIP6;ITGB3;PRKAG1;PIK3CD;HBB;PIK3CB;CROT;IKBKB;POLB;CASP9;TUBA1A;CASP3;RAC2;CASP1;PDE4B;ITGAV;RAC1;JAK2;JAK1;MBL2;WARS;GGPS1;PARP1;DDX58;TUBB;SIGMAR1;FOS;HBA1;MMP9;IL1B;CANX;TLR8;SLC29A1;TLR4;HLA-DQB1;TLR2;PTGER4;PCNA;LRP1;PTGER2;NOD2;PTGS2;PTGS1;ADCY5;SLC25A29;PGRMC1;RXRA;CXCR1;CCL5;CCL3;CCL2;MAPK1;SLC25A20;MAPK6;CD55;MAPK3;STAT1;PTGES3;STAT3;PTPN11;CD4;FCGR2A;FAS;KRAS;CRAT
	SUMOyla	0	TP53				Gu	0	ATF1;ATF2;CHRM

	tion of transcription factors Homo sapiens R-HSA-3232118	.25659 4					t	.76188 6	3;PROS1;SERPINE1;NCF4;MPO;ICAM1;RPS6KA3;HTR6;FTH1;KDR;AKT1;PDE8B;PDGFRB;GUCY1A2;PDGFRA;PRKAB2;MAP2K1;SLC15A1;CPT1A;PHYH;LIG1;CACNA2D1;CACNA2D2;CYBB;LIG3;CYBA;HLA-A;PRKAB1;PROCR;POR;ATF7;S100A4;RAF1;FTL;CES1;EPHA2;ABCB1;PDE1B;GLO1;ITPR1;ITPR2;ITPR3;CACNA1C;DPP4;ABL1;APOE;ELANE;PRNP;FDPS;ACE;VCAM1;HSPA5;BRAF;L1CAM;NFKB1;GGCX;CD209;IL7;ALB;PDE3A;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;RET;RYR1;MCFD2;ORM1;FLT1;FLT3;FLT4;PDE3B;PRKAG1;PRKAG2;HBB;ADRA1D;CROT;ORM2;IKBKB;POLB;TUBA1A;CPT2;SMPD1;CASP3;RAC2;CASP1;PDE4B;PDE4A;ITGAV;RAC1;JAK2;WARS;VWF;GGPS1;PARP1;PARP2;DDX58;TUBB;PDE4D;SIGMAR1;HBA1;F2;PTGR2;ADRA2B;F8;PIK3CA;ADORA2A;IFNG;CANX;KIT;TLR7;PDE5A;SLC

									29A1;MET;HLA-DQB1;CRP;PRKAA1;PRKAA2;PCNA;LRP1;NR1I3;ADCY2;PTGS1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;ERBB2;MAPK1;SCN7A;SLC25A20;GABRE;MAPK6;XDH;CD55;MAPK4;MAPK3;GABRP;F10;STAT1;PTGES3;AKR1C1;STAT3;AKR1C3;PTPN11;TUBB4B;MAPK15;WARS2;PDE10A;KRAS;CRAT;FRK
	TP53 regulates transcription of several additional cell death genes whose specific roles in p53-dependent apoptosis remain uncertain Homo sapiens R-HSA-6803205	0.256594	TP53				B-cell lymphoma cell	0.788233	CANX;NFATC1
	Polymerase switching on the C-strand of	0.2556	PCNA				Cerebellum	0.7933	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;S

	the telomere Homo sapiens R-HSA-174411	594						642	CN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;GABRB3;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;WARS;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;DDR2;PTGER4;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;TYMS;PTGS1;ADCY5;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRA1;GABRP;GA

									BRA6;STAT1;GABRA5;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;GABRA3;NR1H4;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;SCN8A;PLA2G10;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;HRH1;ABL1;DRD1;CACNA1S;DRD4;GRIA3;DRD5;GRIA4;PRNP;FDPS;VCAM1;HTR1E;HSPA5;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1A;POLB;

									CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3C;HTR3B;OPRM1;ADRA2C;ADRA2B;ADRA2A;PIK3CA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;CACNG2;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Polymerase switching Homo sapiens R-HSA-69091	0.256594	PCNA				Branchial arch	0.796261	EDNRA
	Leading Strand Synthesis Homo sapiens R-HSA-69109	0.256594	PCNA				Epididymis	0.814974	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;POR;KC

									NQ3;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG2;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;IL1A;F8;CANX;KIT;TLR8;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;GABRE;CD55;GABRA2;GABRQ;GABRP;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;STAT3;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM4;PROS1;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;KCNH2;PDGFRB;G

									UCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;DRD5;FDPS;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;POLB;CASP9;CPT2;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3B;PIK3CA;IFNG;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAP

									K11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Removal of the Flap Intermediate Homo sapiens R-HSA-69166	0.25659	PCNA				Monocyte	0.83423	ATF1;IL1RN;NCF1;PROS1;NCF4;MPO;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;KDR;AKT1;IFNAR2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;CPT1A;CYBB;LIG3;CYBA;HLA-A;PROCR;SCN10A;POR;S100A4;ATF5;RAF1;TP53;ATF3;ATF4;FTL;CES1;NPR1;GLO1;ITPR1;ITPR2;ITPR3;ADRB2;DPP4;ABL1;APOE;ELANE;PRNP;FDPS;JUN;TGFB1;VCAM1;HSPA5;BRAF;NFATC1;L1CAM;NFKB1;NFKBIA;PROC;ALB;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;MCFD2;ORM1;FLT1;FLT3;FLT4;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;ADRA1B;ORM2;ASGR2;IKBKB;POLB;CASP9;TUBA1A;CPT2;CASP3;RAC2;CASP1;PDE4B;ITGAV;RAC1;JAK2;JAK1;MBL2;WARS;GGPS1;PARP1;DDX58;TUBB;PDE4D;SIGMAR1;FOS;HBA1;F2;ADRA2C;F3;F7;F9;CANX;KIT;TLR8;

									MET;TLR4;TLR3;HLA-DQB1;TLR2;PTGER4;PRKAA1;PRKAA2;PCNA;LRP1;PTGER2;NOD2;PTGS2;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;RXRA;MAPK7;CCL5;CCL3;MAPK1;SLC25A20;MAPK6;CD55;MAPK4;MAPK3;F10;STAT1;PTGES3;STAT3;PTPN11;TUBB4B;MAPK15;VEGFA;CD4;FCGR2A;KRAS;CRAT;FRK
	Regulation of necroptotic cell death Homo sapiens R-HSA-5675482	0.25659	FAS				Parenchyma	0.83578	PROS1;SERPINE1;HTR4;ICAM1;FADS2;HTR6;CCND1;MYC;FTH1;FPGS;SCN9A;KDR;AKT1;FADS1;IFNAR2;CHRNB2;PDGFRA;MAP2K1;SLC15A1;CPT1A;CACNA2D2;CYBA;PROCR;SCN10A;S100A4;ATF5;RAF1;ATF6;TP53;ATF4;GRIA1;NPR1;GLO1;NPR2;ITPR1;DPP4;ABL1;APOE;PRNP;FDPS;JUN;TGFB1;VCAM1;HSPA5;NFKBIA;IL6;IL7;CALR;CALM1;FGFR1;DDR1;MCFD2;TNFAIP6;PRKAG1;POLB;CASP9;TUBA1A;CASP3;RAC2;ITGAV;RAC1;JAK1;WARS;PARP1;DDX58;TUBB;SIGMAR1;ADRA2C;F3;ADORA2B;IL1B;CA

									NX;PDE5A;PPARA;HLA-DQB1;PCNA;LRP1;PTGS2;TYMS;TFPI;PTGS1;ADCY5;PGRMC1;NT5E;RXRA;CCL2;PDE6C;SLC25A20;MAPK6;CD55;STAT1;PTGES3;STAT3;AKR1C3;PTPN11;VEGFA;FAS;KRAS;TEK;CRAT
	DCC mediated attractive signaling Homo sapiens R-HSA-418885	0.256594	RAC1				Mesoderm	0.838743	KDR
	SEMA3A-Plexin repulsion signaling by inhibiting Integrin adhesion Homo sapiens R-HSA-399955	0.256594	RAC1				Heart	0.845027	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;SCN10A;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET

									;RYR1;DDR1;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;F7;F8;F9;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER1;NR1I3;PTGER2;NR1I2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;XDH;CD55;GABRP;F10;GABRA6;STAT1;GABRA4;PTGES3;AKR1C1;STAT3;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM1;NCF1;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1

									;CHRNB4;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;NPR1;GLO1;NPR2;CHRNA6;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;DPP4;TPO;HRH1;HRH2;ABL1;CACNA1S;DRD2;DRD5;PRNP;FDPS;TGFB1;VCAM1;HSPA5;NFKB1;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;ADRA2C;ADRA2B;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;MAPK7;CCL5;ERBB2;CCL2;MAPK1;PDE6C;SCN7A;PDE6B;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;KCNJ5;LIMK1;PLA2G2A;PTPN

									11;MAPK15;WARS2;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Activation of Rac Homo sapiens R-HSA-428540	0.256594	RAC1				Vagina	0.850771	ATF1;ATF2;IL1RN;HTR4;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;PRKAB1;POR;KCNQ3;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;PDE1C;PDE1A;APOE;SCN3A;JUN;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;PRKAG2;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;F7;IL1A;F8;CANX;PPARG;TLR7;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;PTGS1;LMAN1;NRAS;NT5E;RXRA;GABRE;CD55;GABRA2;GABRQ;GABRP;GABRA6;IFNB1;GABRA4;PTGES3;STAT3;NR1H4;TUBB4B;VEGFA;GRIN1;CRAT;NEK11;CHRM2;CHRM3;CHRM5;SLC8A1;FADS2;CCND1;A

									DORA3;PDE8B;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CACNB1;PROCR;PLA2G10;S100A4;RAF1;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;CACNA1B;ITPR2;ITPR3;CACNA1C;HRH4;ABL1;GRIA3;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;PROC;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP1;ITGAV;VWF;DDX58;PDE4D;SIGMAR1;HTR3B;ADRA2C;PIK3CA;MET;CRP;PRKAA1;LRP1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;TEK
	Nicotinate metabolism Homo sapiens	0.2565	PTGS2				Rectum	0.8536	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2

	R-HSA-196807	94						35	;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;SIK1;ATF5;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;RET;DDR1;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;WARS;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRA1;GABRP;F10;GABRA6;STAT1;IFNB1;G

									ABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;MPO;SLC8A1;FADS2;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;DRD4;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDK

									RB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Defensins Homo sapiens R-HSA-1461973	0.258504	CD4;TLR2				Uterine endometrium	0.854719	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;POR;KCNQ3;SIK1;ATF5;TP53;ATF3;CES1;EPHA2;PDE1C;PDE1A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;PRKAG2;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;

									RAC1;JAK2;JAK1;IL10;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;IL1A;F8;CANX;TLR7;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;GABRE;CD55;GABRA2;GABRQ;GABRP;GABRA6;IFNB1;GABRA4;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;FRK;CHRM2;CHRM3;NCF1;CHRM4;PROS1;SLC8A1;FADS2;SCN9A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CYBA;CACNB1;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;CACNA1B;ITPR2;ITPR3;CACNA1D;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;FDPS;TGFB1;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR

									2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;HTR2C;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;PIK3CA;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;KRAS;PDE7B;TEK;PDE7A
	S Phase Homo sapiens R-HSA-69242	0.262289	PCNA;CCND1;LIG1;MYC				Melanoma cell line	0.855305	MCFD2;HSPA5;CANX;RAC1;FADS1
	TP53 Regulates Transcription of Cell Cycle Genes Homo sapiens R-HSA-6791312	0.266302	PCNA;TP53				Tongue	0.855575	FADS2;VCAM1;CASP3;PDE2A;PDE4C;PLA2G2A;AKR1C3

	Activation of BAD and translocation to mitochondria Homo sapiens R-HSA-111447	0.27217	AKT1				Smooth muscle	0.85567	ATF1;CHRM2;ATF2;CHRM3;CHRM4;PROS1;SERPINE1;FADS2;RPS6KA3;EDNRA;HTR7;CCND1;SCN11A;MYC;ADORA3;FTH1;FPGS;AKT1;FADS1;SCN1A;KCNH2;GUCY1A2;PRKAB2;MAP2K1;SLC15A1;CPT1A;PHYH;LIG1;CACNA2D1;PRKAB1;CACNB1;PROCR;POR;PLA2G10;KCNQ3;S100A4;SIK1;ATF5;RAF1;ATF4;FTL;IFNAR1;CES1;EPHA2;GRIA2;PDE1C;CHRNA5;PDE1B;NPR1;CHRNA7;NPR2;ITPR1;ITPR2;CACNA1C;HRH1;HRH2;HRH4;ABL1;DRD1;DRD2;SCN3A;GRIA3;JUN;HSPA5;HTR1D;HTR1A;BRAF;L1CAM;GRIN2C;NFKB1;IL2;GRIN2D;NFKBIA;PROC;CALY;IL7;ALB;ATM;CALR;CALM1;FGFR2;FGFR1;RET;GABRB1;MCFD2;ORM1;FLT1;THRB;IFNA1;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PRKAG2;PIK3CD;HTR2C;PIK3CB;CROT;ORM2;SLC6A3;IKBKB;CASP9;TUBA1A;CASP3;RAC2;CASP1;ITGAV;RAC1;JAK2;JAK1;PARP1;DDX58;PDE4D;

									AVPR2;SIGMAR1;IL13;FOS;F2;F7;F8;PIK3CA;IFNG;CANX;TLR7;PDE5A;SCN4A;SLC29A1;MET;JDP2;PPARD;SLC29A2;CRP;PTGER4;PRKAA1;PCNA;LRP1;NR1I3;PTGER3;ADCY2;ADCY1;NOD2;PTGS2;TYMS;TFPI;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;PDE11A;RXRA;MAPK7;CCL2;MAPK1;CACNG1;SLC25A20;PDE6A;MAPK6;CD55;MAPK4;TRDMT1;KCNJ3;MAPK3;GABRA2;NTRK1;GABRQ;GABRA1;KCNJ5;GABRP;KCNJ6;GABRA6;IFNB1;GABRA4;NTRK3;PTGES3;STAT3;LIMK1;NR1H4;PTPN11;MAPK15;VEGFA;MAPK11;PDE7B;TEK;PDE7A;FRK
	Glycogen breakdown (glycogenolysis) Homo sapiens R-HSA-70221	0.272179	CALM1				Bronchus	0.856219	ATF1;ATF2;IL1RN;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;PRKAB1;GABRG3;POR;KCNQ3;SIK1;KCNQ5;ATF5;TP53;ATF3;ATF4;CES1;EPHA2;SLC22A5;PDE1C;PDE1A;GRIN2A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFAT

									C1;L1CAM;GRIN2C;GRIN2D;CD209;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG2;CROT;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;TLR8;PPARG;TLR7;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;TYMS;GLRA1;LMAN1;NRAS;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;CD55;GABRA2;GABRP;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;CHRM2;CHRM3;NCF1;PROS1;NCF4;FADS2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRN

									A5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;HRH1;HRH4;ABL1;DRD1;DRD2;GRIA3;DRD5;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3B;ADRA2C;PIK3CA;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;NOD2;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	FGFR1 ligand binding	0.2	FGFR1				Spleen	0.8	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;ED

	and activation Homo sapiens R-HSA-190242	721779						57561	NRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;HLA-A;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER1;PTGER2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NR

									AS;PGRMC1;NT5E;RXRA;CXCR1;GABRE;CD55;F10;STAT1;IFNB1;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;TNF;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8A;FADS1;KCNH2;IFNAR2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;DPP4;TPO;HRH1;HRH2;ABL1;DRD1;CACNA1S;DRD2;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA

									1B;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;HTR3E;PDE4D;SIGMAR1;PDE4C;HTR3B;ADRA2C;ADRA2B;MMP9;ADRA2A;PIK3CA;ADORA2A;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;OPRL1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NTRK3;LIMK1;PLA2G2A;PTPN11;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	ERBB2 Regulates Cell Motility Homo sapiens R-HSA-6785631	0.272179	ERBB2				Mammary gland	0.86541	PRKAA1;SIGMAR1;NOD2;F2;FGFR2;VEGFA
	Creation of C4 and C2 activators Homo sapiens R-HSA-166786	0.274099	CRP;MBL2				T-cell chronic lym	0.880111	ATF1;ATF2;PRKAA1;SLC22A5;PRKDC;ITPR3;TYMS;ICAM1;IKBKB;RPS6KA3;PGRMC1;NT5E;PDE11A;ABL1;PDE4A;MAPK1;ITGAV;MAPK6;MAPK3;KCNH

							phocytic leukemia cell		2;PRNP;PRKAB2;JUN;PARP1;LIG1;STAT1;PTGES3;CACNA2D2;BRAF;PTPN11;LIG3;FOS;PRKAB1;NFKB1;ALB;CANX;PDE7B;SLC29A1;CALM1;RAF1;ATF4;IFNAR1
	Regulation of PLK1 Activity at G2/M Transition Homo sapiens R-HSA-2565942	0.274815	TUBA1A;TUBB;TUBB4B				Breast	0.880203	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;PDE1C;PDE1A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;ATM;CALR;CALM1;RET;RYR2;GABRB1;ORM1;PRKAG2;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;IL10;PARP1;IL13;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;PPARG;TLR7;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PG

									RMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;CD55;GABRA2;GABRQ;GABRP;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CRAT;FRK;NEK11;CHRM2;CHRM3;PROS1;NCF4;SLC8A1;FADS2;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;LIG3;CACNB1;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;HRH4;ABL1;DRD1;GRIA3;FDPS;VCAM1;HTR1E;HSPA5;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIG

									MAR1;HTR3B;MMP9;PIK3CA;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PTPN11;MAPK15;MAPK11;FCGR2A;PDE7B;TEK;PDE7A
	Metabolism of nucleotides Homo sapiens R-HSA-15869	0.27481	NT5E;TYMS;XDH				Proneph ros	0.88125	PGRMC1;PARP1;LIG1;PRKDC;PTGES3;ATM;ADRB2;RAF1;PTGR2;TP53;SLC8A1
	STING mediated induction of host immune responses Homo sapiens R-HSA-1834941	0.28743	PRKDC				Tonsil	0.88349	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;HLA-A;PRKAB1;GABRG3;SCN10A;POR;KCNQ3;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;CALY;CD209;ATM;CALR;CALM1;H

									LA-DRB1;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;WARS;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;TLR8;PPARG;TLR7;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;OPRD1;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CHRNA10;GABRE;GABRD;CD55;GABRA2;GABRQ;GABRP;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB

									3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1C;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;DRD5;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;IFNG;PDE5A;MET;CRP;PRKAA1;LRP1;NOD2;TFPI;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;

									FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Translesion synthesis by REV1 Homo sapiens R-HSA-110312	0.28743	PCNA				Finger	0.89844	CD4;TGFB1;MYC;F2;CCR5;TP53
	JNK (c-Jun kinases) phosphorylation and activation mediated by activated human TAK1 Homo sapiens R-HSA-450321	0.28743	NOD2				Cerebral cortex	0.91524	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2B;GRIN2D;GRIN3A;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;GABRB3;RET;RYR1;GABRB2;RYR2;GABRB1;ORM1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;PARP3;WARS;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;

									F7;IL1A;F8;IL1B;CANX;KIT;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;CD55;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;STAT1;GABRA5;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;C

									HRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;HRH1;HRH2;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1B;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3B;MMP9;ADRA2A;PIK3CA;ADORA2A;ADORA2B;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;OPRL1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;CACNG2;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;KCNJ5;KCNJ6;NOS2;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTP

									N11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Regulated Necrosis Homo sapiens R-HSA-5218859	0.28743 8	FAS				Neural tube	0.92010 6	PDGFRA
	RIPK1-mediated regulated necrosis Homo sapiens R-HSA-5213460	0.28743 8	FAS				Umbilical cord blood	0.93302 9	PRKAA1;HRH4;HBA1;MMP9
	Regulation of KIT signaling Homo sapiens R-HSA-1433559	0.28743 8	KIT				Cardiac muscle	0.93942 6	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;PRKAB1;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;G

									ABRB3;RET;RYR1; RYR2;GABRB1;OR M1;PTGDR2;PRKA G1;PRKAG2;HBB;C ROT;ORM2;SLC6A 3;IKBKB;TUBA1A;S MPD1;RAC2;RAC1; JAK2;CCR4;JAK1;IL 10;PARP3;WARS;P ARP1;PARP2;TNN C1;IL13;FOS;HBA1; F2;F3;PTGR2;F7;IL 1A;F8;CANX;KIT;P PARG;TLR7;PPARA ;SLC29A1;TLR4;JD P2;TLR3;PPARD;SL C29A2;DDR2;OPR D1;PTGER4;PCNA; PTGER3;ADCY2;AD CY1;PTGS2;TYMS; PTGS1;ADCY5;GLR A1;LMAN1;NRAS; GLRA2;PGRMC1;N T5E;RXRA;CXCR1;C HRNA10;GABRE;G ABRD;CD55;GABR A2;GABRP;F10;GA BRA6;STAT1;IFNB1 ;GABRA4;PTGES3; AKR1C1;STAT3;GA BRA3;NR1H4;AKR 1C3;TUBB4B;VEGF A;FAS;CRAT;FRK;N EK11;CHRM2;CHR M3;NCF1;CHRM4; PROS1;CHRM5;NC F4;SLC8A1;FADS2; CCND1;ADORA3;F PGS;SCN9A;ADOR A1;PDE8B;PDE8A; FADS1;KCNH2;CH RNB2;PDGFRB;GU CY1A2;PDGFRA;M AP2K1;SLC15A1;P

									HYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;ADRB2;CACNA1C;DPP4;TPO;HRH1;HRH2;HRH4;ABL1;DRD1;CACNA1S;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1D;HTR1A;NFKB1;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;ADRA2C;ADRA2B;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;PD

									E6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Rap1 signalling Homo sapiens R-HSA-392517	0.28743838	RAF1				Skeletal muscle	0.9441185	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;RET;RYR1;DDR1;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;ORM2;PRKAG3;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1

									;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRD;XDH;CD55;GABRA2;GABRQ;GABRA1;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;I

									TPR2;ITPR3;ADRB2;DPP4;TPO;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;DRD5;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;TRPV1;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;PDE3B;HTR2B;HTR2C;ADRA1D;PIK3CB;HTR2A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3C;HTR3B;ADRA2C;ADRA2B;MMP9;PIK3CA;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;PDE6C;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	RHO	0	RAC1				Na	0	ATF1;ATF2;IL1RN;

	GTPases activate CIT Homo sapiens R-HSA-5625900	.2874388					sophary nx	.9445388	SERPINE1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;POR;KCNQ3;SIK1;ATF5;ATF6;ATF4;CES1;EPHA2;SLC22A5;PDE1C;PDE1A;GRIN2A;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;CALR;CALM1;RET;RYR2;GABRB1;IFNA1;PRKAG2;HBB;CROT;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;F7;IL1A;F8;CANX;TLR8;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;CD55;GABRA2;GABRQ;GABRP;STAT1;IFNB1;GABRA4;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NC

									F4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;FADS1;KCNH2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;HRH1;HRH4;ABL1;DRD1;GRIA3;DRD5;FDPS;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;HTR3B;PIK3CA;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KC

									NJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;PDE7B;TEK;PDE7A
	Metabolism of Angiotensinogen to Angiotensins Homo sapiens R-HSA-2022377	0.28743838	ACE				Prefrontal cortex	0.945569	ATF2;CHRM3;ICAM1;FADS2;HTR6;MYC;FTH1;FPGS;ADORA1;AKT1;PDE8B;PDE8A;FADS1;SCN1A;IFNAR2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;CPT1A;PHYH;CACNA2D2;SCN10A;RAF1;ATF4;GRIA1;GRIA2;PRKDC;NPR1;GLO1;ITPR1;ABL1;APOE;SCN3A;PRNP;FDPS;VCAM1;HSPA5;PDE2A;L1CAM;NFKBIA;CALY;CALR;CALM1;SCN2A;FGFR2;FGFR1;DDR1;RYR2;GABRB1;MCFD2;THRA;PRKAG1;PIK3CB;HTR2A;CROT;POLB;CASP9;TUBA1A;PDE4B;PDE4A;ITGAV;RAC1;JAK1;MBL2;WARS;VWF;GGPS1;PARP1;PARP2;DDX58;TUBB;ADRA2C;F3;F8;PIK3CA;CANX;KIT;PPARD;PCNA;LRP1;ADCY2;ADCY1;ADCY5;PGRMC1;RXRA;MAPK1;SLC25A20;MAPK6;GABRD;GABRA2;GABRA1;KCNJ6;STAT1;GABRA5;NTRK3;PTGE

									S3;STAT3;PTPN11;VEGFA;GRIN1;KRAS;TEK;CRAT
	TGF-beta receptor signaling in EMT (epithelial to mesenchymal transition) Homo sapiens R-HSA-2173791	0.28743838	TGFB1				Pineal gland	0.9458211	ATF1;ATF2;PROS1;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;ADORA1;AKT1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRA;MAP2K1;CPT1A;PHYH;CACNA2D2;SCN10A;POR;S100A4;SIK1;RAF1;ATF3;ATF4;GRIA1;GRIA2;CHRNA3;PRKDC;NPR1;GLO1;NPR2;ITPR1;ADRB1;ABL1;APOE;CACNA1S;PRNP;FDPS;VCAM1;HTR1E;HSPA5;PDE2A;L1CAM;NFKBIA;CALR;CALM1;FGFR1;RYR1;DDR1;RYR2;MCFD2;THRA;PRKAG1;HTR2C;PIK3CB;CROT;SLC6A4;IKBKB;POLB;CASP9;TUBA1A;PDE4A;ITGAV;RAC1;JAK1;WARS;VWF;GGPS1;PARP1;PARP2;DDX58;TUBB;PDE4D;SIGMAR1;FOS;ADRA2C;F3;F8;CANX;PPARD;PCNA;LRP1;ADCY2;ADCY1;TYMS;PTGS1;ADCY5;PGRMC1;RXRA;SLC25A20;MAPK6;CD55;NTRK1;GABRA1;KCNJ6;STAT1;PTGES3;STAT3;PTPN11;VE

									GFA;PDE10A;KRAS;CRAT
	Metabolism of folate and pterines Homo sapiens R-HSA-196757	0.28743	FPGS				Superior cervical ganglion	0.947306	DDR1;TNFAIP6;CHRM5;PRKAG1;PIK3CB;CROT;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;SCN9A;PDE4B;AKT1;ITGAV;RAC1;CCR5;FADS1;IFNAR2;CHRNB2;PDGFRA;SLC15A1;CPT1A;WARS;GGPS1;PARP1;DDX58;TUBB;SIGMAR1;CACNA2D2;FOS;ADRA2C;F3;SCN10A;F8;CANX;S100A4;PDE5A;ATF5;PPARA;RAF1;ATF3;ATF4;HLA-DQB1;CES1;GRIA1;CHRNA3;PCNA;LRP1;NPR1;GLO1;NPR2;TFPI;ADCY5;LMAN1;PGRMC1;NT5E;RXRA;CCL2;PDE6C;SLC25A20;CACNA1S;MAPK6;XDH;KCNJ3;PRNP;JUN;VCAM1;HSPA5;STAT3;BRAF;PTPN11;L1CAM;VEGFA;NFKBIA;IL7;ATM;KRAS;CALR;TEK;CALM1;CRAT;FGFR1
	Autodegradation of the E3 ubiquitin ligase COP1 Homo sapiens	0.28968	ATM;TP53				Filament	0.948931	CALM1

	R-HSA-349425								
	Nonhomologous End-Joining (NHEJ) Homo sapiens R-HSA-5693571	0.297456	PRKDC;ATM				Gallbladder	0.954367	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;RYR1;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;ADRB3;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TL

									R4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;NR1I3;PTGER2;NR1I2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;DPP4;TPO;HRH1;HRH4;ABL

									1;DRD1;CACNA1S;DRD4;GRIA3;DRD5;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3A;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;ADORA2B;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PDE6C;SCN7A;PDE6B;CACNG1;SLC25A20;CACNG2;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK

									;PDE7A
	Asparagine N-linked glycosylation Homo sapiens R-HSA-446203	0.300812	GRIA1;LMAN1;F8;MCFD2;CANX;CALR;CD55				Seminal vesicle	0.955529	ATF1;ATF2;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;POR;KCNQ3;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF4;CES1;ABCB1;PDE1C;PDE1A;GRIN2A;APOE;SCN3A;ACE;PDE2A;BRAF;L1CAM;GRIN2C;GRIN2D;CALY;CD209;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG2;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP1;PARP2;IL13;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;ADCY2;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CHRNA10;GABRE;GABRD;CD55;GABRA2;GABRQ;GABRP;GABRA6;IFNB1;GABRA4;PTGES3;STAT3;NR1H4;TUBB4B;VEGFA;FAS;CRAT;FRK;CHRM2;C

									HRM3;NCF1;SLC8A1;FADS2;ADORA3;FPGS;SCN9A;PDE8B;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;LIG1;LIG3;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;IFNAR1;GRIA2;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR3;CACNA1C;DPP4;TPO;HRH4;ABL1;DRD1;CACNA1S;GRIA3;FDPS;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;DDX58;PDE4D;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;IFNG;PDE5A;MET;CRP;PRKAA1;PRKAA2;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;LIMK1;OPRK1;MAPK15;MAPK11;CD4;KRAS;

									PDE7B;TEK;PDE7A
	TNF receptor superfamily (TNFSF) members mediating non-canonical NF-kB pathway Homo sapiens R-HSA-5676594	0.302378	CD40LG				Caudate nucleus	0.972735	DDR1;RYR2;MCFD2;THRA;PRKAG1;HTR2C;PIK3CB;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;PDE4B;ITGAV;RAC1;PDE8B;PDE8A;FADS1;JAK1;CHRNB2;MAP2K1;CPT1A;WARS;VWF;GGPS1;PARP1;DDX58;TUBB;CACNA2D2;FOS;ADRA2C;F3;SCN10A;ADORA2A;CANX;KIT;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;ADCY2;ADCY1;ADCY5;PGRMC1;RXRA;MAPK1;SLC25A20;APOE;MAPK6;SCN3A;XDH;GABRA2;PRNP;FDPS;HSPA5;GABRA5;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;GRIN1;NFKBIA;PDE10A;CALY;CALR;CALM1;CRAT;FGFR2;FGFR1
	Butyrate Response Factor 1 (BRF1) binds and destabilizes mRNA Homo sapiens R-HSA-450385	0.302378	AKT1				Colon	0.974678	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF

									7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;ADRB3;IL1B;CANX;KIT;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;NR1I3;PTGER2;NR1I2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GA

									BRA1;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;TRPV1;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;TH

									RA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;ADORA2B;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;OPRL1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Formation of Senescence-Associated Heterochromatin Foci (SAHF)	0.302378	TP53				Ophthalmic nerve	0.976199	CHRM5;PRKAG1;CROT;ICAM1;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;SCN9A;ITGAV;RAC1;FADS1;JAK1;IFNAR2;CHRNB2;PDGFRA;CPT1A;WARS;VWF;PARP1;DDX58;TUBB;FOS;ADRA2C;F

	Homo sapiens R-HSA-2559584								3;SCN10A;CANX;S100A4;ATF3;ATF4;PCNA;LRP1;NPR1;GLO1;NPR2;ADCY5;PGRMC1;NT5E;RXRA;CCL2;SLC25A20;APOE;PRNP;VCAM1;HSPA5;PTGES3;STAT3;PLA2G2A;PTPN11;VEGFA;NFKBIA;IL6;CALR;CALM1;CRAT;FGFR1
	Translesion synthesis by POLK Homo sapiens R-HSA-5655862	0.302378	PCNA				Medulla oblongata	0.977247	DDR1;GABRB1;THRA;PRKAG1;PIK3CB;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;ADORA1;PDE4B;ITGAV;RAC1;PDE8B;PDE8A;FADS1;JAK1;MBL2;SCN1A;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;PARP1;DDX58;TUBB;CACNA2D2;FOS;ADRA2C;F3;SCN10A;CANX;S100A4;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;ADCY1;ADCY5;PGRMC1;RXRA;SLC25A20;APOE;MAPK6;SCN3A;GABRD;XDH;GABRA2;GABRA1;PRNP;FDPS;HSPA5;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;NFKBIA;PDE10A;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR2;FGFR1
	Translesi	0	PCNA				Ov	0	ATF1;ATF2;IL1RN;

	on synthesis by POLI Homo sapiens R-HSA-5656121	.3023378					idu ct	.9777743	SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1A;GRIN2A;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CD209;PDE3A;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;IFNA1;PRKAG2;HBB;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;PARP1;PARP2;TNNC1;IL13;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;GABRD;CD55;GABRA2;GABRQ;GABRP;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;F

									RK;CHRM2;CHRM3;CHRM1;NCF1;PROS1;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;LIG3;CACNB1;PLA2G10;S100A4;RAF1;PDE9A;IFNAR1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;FDPS;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;PROC;IL7;ALB;FGFR1;MCFD2;FLT1;TNFAIP6;THRA;FLT3;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PIK3CA;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;LIMK1;OPRK1;PTPN11;M

									APK15;MAPK11;CD4;KRAS;PDE7B;TEK;PDE7A
	Platelet sensitization by LDL Homo sapiens R-HSA-432142	0.30237 8	PTPN11				Ovary cancer cell	0.97778 4	PARP1
	Activated point mutants of FGFR2 Homo sapiens R-HSA-2033519	0.30237 8	FGFR2				Adrenal gland	0.97952	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;GABRB3;RET;RYR1;GABRB2;RYR2;GABRB1;ORM1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;J

									AK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;NR1I3;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRA1;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;CHRNB4;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;F

									TL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CHRNA9;CACNA1B;ITPR2;ITPR3;CACNA1D;CACNA1C;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1B;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;SCN5A;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;CACNG2;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6

									;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	RHO GTPases Activate ROCKs Homo sapiens R-HSA-5627117	0.302378	LIMK1				Salivary gland	0.979548	ATF1;ATF2;SERPINE1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR1;DDR1;RYR2;GABRB1;PRKAG1;PRKAG2;HBB;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;CCR4;JAK1;PARP3;WARS;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;TL

									R2;DDR2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;DPP4;HRH4;ABL1;CACNA1S;DRD2;GRIA3;GRIA4;PRNP;FDPS;TGFB1;VCA

									M1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;HTR1B;NFKB1;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Synthesis, secretion, and deacylation of	0.3023	ACHE				Eye	0.9806	SERPINE1;FADS2;CCND1;FTH1;KDR;AKT1;FADS1;KCNH2;PDGFRB;PDGFRA;PHYH;LIG1;CYBA;HLA-

	Ghrelin Homo sapiens R-HSA-422085	78						13	A;PRKAB1;PROCR;POR;S100A4;ATF5;RAF1;ATF6;ATF4;FTL;CHRNA3;PRKDC;GLO1;NPR2;ABL1;APOE;DRD4;GRIA4;PRNP;FDPS;JUN;TGFB1;HSPA5;NFKB1;NFKBIA;GGCX;CALY;ALB;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;GABRB3;DDR1;MCFD2;FLT1;THRA;PRKAG1;PRKAG2;HBB;CROT;TUBA1A;SMPD1;RAC2;ITGAV;RAC1;PARP3;WARS;VWF;PARP1;SIGMAR1;FOS;PIK3CA;CANX;SLC29A1;JDP2;DDR2;PRKAA2;PCNA;LRP1;ADCY1;TYMS;LMAN1;NRAS;SLC25A29;PGRMC1;RXRA;MAPK7;ERBB2;CCL2;MAPK1;PDE6B;PDE6A;MAPK4;MAPK3;STAT1;PTGES3;STAT3;LIMK1;PLA2G2A;VEGFA;GRIN1;FAS
	Chylomicron-mediated lipid transport Homo sapiens R-HSA-174800	0.302378	APOE				Peripheral nervous system	0.980087	ADRA2A

	Inflammasomes Homo sapiens R-HSA-622312	0.302378	CASP1				Adrenal cortex	0.980878	DDR1;MCFD2;PRKAG1;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;AKT1;ITGAV;RAC1;PDE8A;FADS1;IFNAR2;CHRNB2;PDGFRA;CPT1A;PHYH;WARS;GGPS1;PARP1;DDX58;TUBB;SIGMAR1;CACNA2D2;FOS;ADRA2C;F3;SCN10A;POR;CANX;S100A4;SIK1;PDE5A;ATF5;PPARA;RAF1;ATF3;ATF4;HLA-DQB1;DDR2;ABCB1;PCNA;LRP1;NPR1;GLO1;TYMS;ADCY5;PGRMC1;NT5E;RXRA;CCL2;PDE6C;SLC25A20;APOE;MAPK6;CD55;PRNP;FDPS;VCAM1;HSPA5;PTGES3;STAT3;PDE2A;NR1H4;PTPN11;VEGFA;NFKBIA;CALR;TEK;CALM1;CRAT;HLA-DRB1;FGFR1
	Golgi Associated Vesicle Biogenesis Homo sapiens R-HSA-432722	0.312966	FTH1;FTL				Liver	0.981696	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;SCN10A;POR;KCNQ3;ATF7;SIK1;KC

									NQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;GABRB3;RET;DDR1;RYR2;GABRB1;ORM1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;PRKAG3;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER1;NR1I3;PTGER2;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRP;F10;GABRA6;

									STAT1;IFNB1;PTGES3;AKR1C1;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;PROS1;NCF4;TNF;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA2;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;DRD5;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1B;ADRA1A;POLB;CASP9;C

									PT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3C;HTR3A;ADRA2C;ADRA2B;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PDE6C;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Stabilization of p53 Homo sapiens R-HSA-69541	0.312966	ATM;TP53				Cingulate cortex	0.981921	DDR1;GABRB1;MCFD2;THRA;PRKAG1;PIK3CB;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;ADORA1;PDE4B;ITGAV;RAC1;PDE8B;PDE8A;FADS1;JAK1;MBL2;SCN1A;IFNAR2;CHRNB2;PDGFRA;MAP2K1;CPT1A;WARS;GGPS1;PARP1;PARP2;DDX58;TUBB;CACNA2D2;ADRA2C;F3;SC

									N10A;CANX;KIT;S100A4;ATF5;RAF1;ATF4;GRIA1;GRIA2;CHRNA3;PCNA;LRP1;NPR1;GLO1;ITPR1;ADCY2;ADCY1;ADCY5;PGRMC1;RXRA;SLC25A20;APOE;MAPK6;GABRA2;GABRA1;PRNP;FDPS;KCNJ6;HSPA5;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;NFKBIA;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR2;FGFR1
	Amine-derived hormones Homo sapiens R-HSA-209776	0.317006	TPO				Dendritic cell	0.982965	ATF1;NCF1;NCF4;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;AKT1;FADS1;IFNAR2;CHRNB2;MAP2K1;CPT1A;CYBB;CYBA;SCN10A;S100A4;SIK1;ATF5;RAF1;TP53;ATF3;ATF4;CES1;EPHA2;PRKDC;NPR1;GLO1;ITPR1;DPP4;ABL1;PRNP;FDPS;JUN;TGFB1;HSPA5;L1CAM;NFKB1;NFKBIA;GGCX;ATM;CALR;CALM1;HLA-DRB1;MCFD2;FLT3;PRKAG1;PIK3CD;IKBKB;POLB;CASP9;TUBA1A;RAC2;CASP1;PDE4B;ITGAV;RAC1;JAK2;CCR5;JAK1;MBL2;WARS;GGPS1;PARP1;DDX58;TUBB;SIGMAR1;FOS;F3;IL1B;CAN

									X;TLR7;HLA-DQB1;TLR2;PTGER4;PCNA;LRP1;PTGS2;TYMS;PTGS1;ADCY5;PGRMC1;RXRA;CCL5;CCL3;MAPK1;SLC25A20;MAPK6;CD55;STAT1;PTGES3;STAT3;PTPN11;CD4;FCGR2A;KRAS;CRAT
	Mitotic G1-G1/S phases Homo sapiens R-HSA-453279	0.318525	PCNA;CCND1;MYC;TYMS				Trigeminal ganglion	0.983521	DDR1;TNFAIP6;PRKAG1;CROT;ICAM1;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;SCN9A;PDE4B;ITGAV;RAC1;FADS1;IFNAR2;CHRNB2;SLC15A1;CPT1A;WARS;GGPS1;PARP1;DDX58;TNNC1;TUBB;FOS;ADRA2C;F3;SCN10A;CANX;S100A4;PDE5A;ATF5;PPARA;RAF1;ATF3;ATF4;HLA-DQB1;CES1;LRP1;NPR1;GLO1;PTGER2;NPR2;ITPR1;ADRB2;ADCY5;PGRMC1;NT5E;RXRA;CCL2;PDE6C;SLC25A20;APOE;PRNP;FDPS;HSPA5;PTGES3;STAT3;PLA2G2A;PTPN11;L1CAM;VEGFA;NFKBIA;IL7;CALR;TEK;CALM1;CRAT;FGFR1
	SUMO E3 ligases SUMOylate target	0.32	PCNA;PARP1;TP53				Lymphno	0.98	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;S

	proteins Homo sapiens R-HSA-3108232	6369					de	4001	CN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR1;DDR1;RYR2;GABRB1;PRKAG1;PRKAG2;HBB;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;CD55;GABRA2;GABRA1;GABRP;F

									10;STAT1;IFNB1;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;DPP4;TPO;HRH2;HRH4;ABL1;CACNA1S;DRD2;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1D;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GG

									PS1;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3A;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;MET;CRP;PRKAA1;LRP1;OPRL1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Signaling by FGFR2 IIIa TM Homo sapiens R-HSA-8851708	0.331328	FGFR2				Esophagus	0.984582	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;HLA-A;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CD209;PDE3A;ATM;CALR;CALM1;HLA-

									DRB1;GABRB3;RET;RYR1;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;NR1I3;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;GABRA5;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;

									PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB2;CACNA1C;DPP4;TPO;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;ADRA2C;MMP9;PIK3CA;ADORA2A;IFNG;ADORA2B;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PD

									E6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Translesion Synthesis by POLH Homo sapiens R-HSA-110320	0.331328	PCNA				Adipose tissue	0.984924	ATF1;ATF2;IL1RN;SERPINE1;ICAM1;RPS6KA3;EDNRA;MYC;FTH1;KDR;AKT1;PRKAB2;CPT1A;CACNA2D1;HLA-A;PRKAB1;POR;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;APOE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2B;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RYR1;DDR1;GABRB2;IFNA1;PRKAG1;PRKAG2;HBB;CROT;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;FOS;HBA1;F3;PTGR2;F7;F8;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER

									1;PTGER2;PTGER3;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;XDH;CD55;F10;GABRA6;STAT1;PTGES3;AKR1C1;STAT3;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;NEK11;PROS1;NCF4;SLC8A1;FADS2;CCND1;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;IFNAR2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;S100A4;RAF1;PDE9A;FTL;IFNAR1;NPR1;GLO1;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;ADRB2;CACNA1C;DPP4;TPO;HRH1;ABL1;DRD5;PRNP;FDPS;TGFB1;VCAM1;HSPA5;NFKB1;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;HTR3C;ADRA2B;MMP9;ADRA2A;PIK3CA;PDE5A;SCN4

									A;MET;PRKAA1;PRKAA2;LRP1;TFPI;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;SLC25A20;PDE6A;MAPK6;MAPK4;MAPK3;KCNJ5;NOS2;LIMK1;PLA2G2A;PTPN11;WARS2;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Ephrin signaling Homo sapiens R-HSA-3928664	0.33138	RAC1				Duodenum	0.98516	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;GABRB3;RET;GABRB2;RYR2;GABRB1;IFNA1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;I

									L13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;NR1I3;PTGER2;NR1I2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NP

									R2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;CACNA1C;DPP4;HRH1;HRH2;HRH4;ABL1;DRD1;CACNA1S;DRD2;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;HTR1B;TRPV1;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;HTR3E;PDE4D;SIGMAR1;PDE4C;HTR3B;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCG

									R2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Anchoring of the basal body to the plasma membrane Homo sapiens R-HSA-5620912	0.33211 4	TUBA1A;TUBB;TUBB4B				Lung	0.9852 21	ATF1;ATF2;IL1RN;SERPINE1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;RYR1;DDR1;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;TLR8;PP

									ARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;GABRE;CD55;GABRA2;GABRQ;GABRA1;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;NCF4;TNF;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;CHRNB4;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;

									ADRB2;CACNA1C; DPP4;HRH1;HRH2; HRH4;ABL1;DRD1; CACNA1S;DRD2;G RIA3;DRD5;PRNP;F DPS;TGFB1;VCAM 1;HTR1E;HSPA5;H TR1F;HTR1D;HTR1 B;NFKB1;IL2;NFKBI A;IL6;PROC;GGCX;I L7;ALB;FGFR2;FGF R1;MCFD2;FLT1;T HRB;TNFAIP6;THR A;FLT3;ITGB3;FLT4 ;PDE3B;HTR2B;PIK 3CD;HTR2C;ADRA 1D;PIK3CB;ADRA1 B;ADRA1A;POLB;C ASP9;CPT2;CASP3; CASP1;PDE4B;PDE 4A;BDKRB1;ITGAV ;MBL2;VWF;GGPS 1;DDX58;PDE4D;A VPR2;SIGMAR1;PD E4C;HTR3A;HTR3B ;ADRA2C;MMP9;P IK3CA;ADORA2A;I FNG;ADORA2B;PD E5A;SCN4A;MET;C RP;PRKAA1;PRKAA 2;LRP1;NOD2;TFPI ;SLC25A29;PDE11 A;MAPK7;CCL5;ER BB2;CCL3;CCL2;M APK1;SCN7A;PDE6 B;CACNG1;SLC25A 20;PDE6A;MAPK6; MAPK4;TRDMT1;K CNJ3;MAPK3;KCNJ 5;KCNJ6;NOS2;NT RK3;LIMK1;PLA2G 2A;OPRK1;PTPN11 ;MAPK15;WARS2; MAPK11;CD4;FCG

									R2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Transport of inorganic cations/anions and amino acids/oligopeptides Homo sapiens R-HSA-425393	0.343596	SLC15A1;CALM1;SLC8A1				Cervical carcinoma cell	0.985466	ATF1;ATF2;PDE3B;PRKAG1;PRKAG2;ICAM1;IKBKB;CASP9;RPS6KA3;CPT2;MYC;FTH1;CASP3;FPGS;AKT1;PDE4A;ITGAV;RAC1;PDE8B;PDE8A;IFNAR2;PRKAB2;MAP2K1;WARS;PARP1;LIG1;PDE4D;LIG3;HLA-A;PRKAB1;POR;CANX;ATF7;PPARG;SLC29A1;RAF1;ATF6;MET;JDP2;ATF4;SLC29A2;IFNAR1;EPHA2;DDR2;PRKAA1;ABCB1;PRKAA2;SLC22A5;PRKDC;NPR1;ITPR1;ITPR2;ITPR3;PGRMC1;HRH1;RXRA;MAPK7;ERBB2;ABL1;MAPK1;MAPK6;CD55;MAPK4;MAPK3;JUN;HSPA5;STAT1;PTGES3;STAT3;LIMK1;BRAF;PTPN11;L1CAM;TUBB4B;NFKB1;PDE10A;PDE3A;FAS;ATM;KRAS;CALM1;HLA-DRB1;FRK;NEK11
	Hedgehog 'off' state Homo sapiens R-HSA-5610787	0.343596	ADCY2;ADCY1;ADCY5				Kidney	0.986458	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D

									2;HLA-A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;PRKAG3;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;PTGER1;NR1I3;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GL

									RA2;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;DRD5;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;TRPV1;NFKB1;IL2;NFK

									BIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1B;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;OPRM1;ADRA2C;ADRA2B;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Initial triggering of complement	0.343	CRP;MBL2				Prostategland	0.987	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;KDR;AK

	Homo sapiens R-HSA-166663	739						28	T1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;GABRB3;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;PRKAG3;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;NR1I3;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1

									;NT5E;RXRA;CXCR1;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRA1;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;DRD4;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1D;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;

									PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Regulation of gene expression in beta cells Homo sapiens R-HSA-210745	0.345	AKT1				Stomach	0.98731	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CE

									S1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1A;GRIN2A;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;RYR2;GABRB1;ORM1;IFNA1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;SLC6A4;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;PTGER1;NR1I3;PTGER2;NR1I2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES

									3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH2;HRH4;ABL1;DRD1;DRD2;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;HTR1B;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP

									1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3B;ADRA2C;ADRA2B;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;ADORA2B;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	FGFR2 ligand binding and activation Homo sapiens R-HSA-190241	0.345	FGFR2				Intestine	0.98713	DDR1;IL1RN;THRA;PROS1;PRKAG1;PRKAG2;HBB;ICAM1;IKBKB;TUBA1A;CCND1;MYC;FTH1;FPGS;CASP1;AKT1;ITGAV;RAC1;FADS1;PDGFRB;MAP2K1;CPT1A;WARS;VWF;GGPS1;PARP1;LIG1;SIGMAR1;CYBA;FOS;HLA-A;PRKAB1;MMP9;PROCR;POR;PIK3CA;CANX;PPARG;S100A4;ATF5;PPARA;SLC29A1;RAF1;AT

									F6;MET;TP53;ATF3;PDE9A;ATF4;HLA-DQB1;SLC29A2;FTL;IFNAR1;EPHA2;DDR2;PCNA;LRP1;PRKDC;GLO1;ITPR3;CACNA1D;DPP4;LMAN1;PGRMC1;NT5E;RXRA;ERBB2;ABL1;CCL2;MAPK1;SLC25A20;APOE;CD55;MAPK3;PRNP;FDPS;JUN;HSPA5;STAT1;PTGES3;STAT3;PLA2G2A;AKR1C3;PTPN11;NFKB1;NFKBIA;CD4;ATM;KRAS;CALR;CALM1;HLA-DRB1;FGFR1
	Synthesis, secretion, and inactivation of Glucagon-like Peptide-1 (GLP-1) Homo sapiens R-HSA-381771	0.34535	DPP4				Natural killer cell	0.98909095	ATF1;ATF2;CHRM3;IL1RN;NCF1;PROS1;NCF4;MPO;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;KDR;AKT1;PDE8B;KCNH2;IFNAR2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;CPT1A;LIG1;CACNA2D2;CYBB;LIG3;CYBA;HLA-A;PRKAB1;CACNB1;SCN10A;POR;ATF7;S100A4;SIK1;RAF1;ATF6;TP53;ATF4;FTL;CES1;EPHA2;ABCB1;NPR1;GLO1;ITPR1;ITPR2;ITPR3;ADRB2;DPP4;ABL1;ELANE;PRNP;FDPS;JUN;ACE;TGFB1;HSPA5;BRAF;NFATC1;L1CAM;GRIN2C;NFKB1;NFK

									BIA;GRIN3A;GGCX;ALB;PDE3A;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;RYR1;RYR2;MCFD2;FLT1;FLT3;FLT4;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;IKBKB;POLB;CASP9;TUBA1A;CPT2;SMPD1;CASP3;RAC2;CASP1;PDE4B;PDE4A;ITGAV;RAC1;JAK2;JAK1;MBL2;WARS;VWF;GGPS1;PARP1;DDX58;TUBB;PDE4D;SIGMAR1;FOS;HBA1;ADRA2C;F3;ADRA2A;F8;PIK3CA;ADORA2A;IFNG;CANX;KIT;TLR8;PDE5A;PPARA;MET;TLR3;HLA-DQB1;PPARD;TLR2;PTGER4;PRKAA1;PRKAA2;PCNA;LRP1;PTGER2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;RXRA;MAPK7;CCL5;ERBB2;CCL3;MAPK1;SLC25A20;CACNG2;GABRE;MAPK6;XDH;CD55;MAPK4;MAPK3;NTRK1;STAT1;KCNJ9;NTRK3;PTGES3;AKR1C1;STAT3;LIMK1;AKR1C3;PTPN11;TUBB4B;MAPK15;WARS2;KRAS;PDE7A;CRAT;FRK

	Signaling by Hippo Homo sapiens R-HSA-2028269	0.34535	CASP3				Placenta	0.98953 1	ATF1;ATF2;IL1RN;SERPINE1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;ADRB3;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;NR1I3;PTGER2;PTGER3;ADC

									Y2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;GABRA3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH2;HRH4;ABL1;DRD1;DRD2;GRIA3;DRD5;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1D;HTR1B;NFKB1;IL2;NFKBI

									A;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;ADORA2B;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Synthesis of PC Homo sapiens R-HSA-1483191	0.345	ACHE				Pons	0.99116	DDR1;GABRB1;MCFD2;THRA;CHRM5;PRKAG1;PIK3CB;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;PDE4B;ITGAV;RAC1;PDE8B;FADS1;JAK1;MBL2

									;IFNAR2;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;PARP1;DDX58;TUBB;CACNA2D2;ADRA2C;F3;SCN10A;CANX;ATF5;RAF1;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;ADCY5;PGRMC1;NT5E;RXRA;CCL2;SLC25A20;APOE;MAPK6;GABRA1;PRNP;FDPS;HSPA5;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;NFKBIA;IL6;CALY;CALR;CALM1;CRAT;FGFR1
	DNA Damage/ Telomere Stress Induced Senescence Homo sapiens R-HSA-2559586	0.351367	ATM;TP53				Pancreatic islet	0.991967	DDR1;MCFD2;PROS1;SERPINE1;PRKAG1;CROT;HTR4;ICAM1;POLB;CASP9;FADS2;RPS6KA3;HTR6;TUBA1A;MYC;FTH1;FPGS;AKT1;ITGAV;RAC1;FADS1;JAK1;IFNAR2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;CPT1A;PHYH;WARS;VWF;GGPS1;PARP1;DDX58;TUBB;CACNA2D2;CYBA;FOS;ADRA2C;F3;SCN10A;CANX;S100A4;SIK1;RAF1;ATF3;ATF4;HLA-DQB1;CES1;CRP;PCNA;LRP1;NPR1;GLO1;PTGS2;TFPI;ADCY5;PGRMC1;RXRA;CCL5;CCL2;SLC25A20;MAPK6;CD

									55;PRNP;FDPS;JUN;VCAM1;HSPA5;STAT1;PTGES3;STAT3;PLA2G2A;AKR1C3;PTPN11;VEGFA;NFKBIA;IL6;ALB;KRAS;CALR;CALM1;CRAT;FGFR1
	Telomere Maintenance Homo sapiens R-HSA-157579	0.351367	PCNA;LIG1				Spinal ganglion	0.992385	DDR1;PROS1;PRKAG1;CROT;ICAM1;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;ITGAV;RAC1;FADS1;JAK1;MBL2;IFNAR2;CHRNB2;PDGFRB;CPT1A;WARS;VWF;PARP1;DDX58;TUBB;FOS;ADRA2C;F3;SCN10A;CANX;S100A4;ATF4;CES1;PCNA;LRP1;NPR1;GLO1;NPR2;ADCY5;PGRMC1;RXRA;APOE;MAPK6;PRNP;FDPS;HSPA5;PTGES3;STAT3;PLA2G2A;PTPN11;L1CAM;NFKBIA;KRAS;CALR;CALM1;CRAT;FGFR1
	Transport of glucose and other sugars, bile salts and organic acids, metal ions and amine compoun	0.355061	SLC22A5;SLC6A2;SLC6A3				Globus pallidus	0.992907	DDR1;GABRB1;CHRM5;PRKAG1;CROT;ICAM1;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;PDE4B;ITGAV;RAC1;PDE8B;FADS1;JAK1;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;PARP1;DDX58;TUBB;ADRA2C;F3;SCN10A;CANX;ATF4;GRIA1;GRIA2;LRP1;NPR1;GLO1;ITPR1;

	ds Homo sapiens R-HSA-425366								ADCY1;ADCY5;PGRMC1;RXRA;APOE;MAPK6;GABRA2;GABRA1;PRNP;FDPS;HSPA5;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;NFKBIA;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR1
	SUMOylation Homo sapiens R-HSA-2990846	0.355061	PCNA;PARP1;TP53				Urinary bladder	0.993348	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;

									F3;PTGR2;IL1A;F8;F9;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;NR1I3;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;C

									ACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH2;HRH4;ABL1;DRD1;CACNA1S;DRD4;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;ADORA2B;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK

									11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	TP53 regulates transcription of additional cell cycle genes whose exact role in the p53 pathway remain uncertain Homo sapiens R-HSA-6804115	0.359078	TP53				Subthalamic nucleus	0.993517	DDR1;GABRB1;MCFD2;PRKAG1;PIK3CB;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;PDE4B;ITGAV;RAC1;PDE8B;FADS1;JAK1;MBL2;SCN1A;IFNAR2;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;PARP1;DDX58;TUBB;CACNA2D2;ADRA2C;F3;SCN10A;CANX;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;ADCY1;ADCY5;PGRMC1;RXRA;APOE;MAPK6;GABRA2;GABRA1;PRNP;FDPS;HSPA5;GABRA5;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;GRIN1;NFKBIA;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR1
	Regulation of Insulin-like Growth Factor (IGF) transport and uptake by Insulin-	0.359078	F2				Cytotoxic T-lymphocyte	0.993567	ATF1;ATF2;PRKAG1;PIK3CD;CROT;ICAM1;IKBKB;POLB;CASP9;FADS2;RPS6KA3;HTR6;TUBA1A;MYC;FTH1;CASP3;FPGS;RAC2;CASP1;PDE4B;AKT1;ITGAV;RAC1;CCR5;JAK1;MBL2;IFNAR2;CHRNB2;MAP2K1;CPT1A;WARS;GGPS

	like Growth Factor Binding Proteins (IGFBPs) Homo sapiens R-HSA-381426								1;PARP1;DDX58;TUBB;CACNA2D2;CYBA;FOS;ADRA2C;F3;SCN10A;PIK3CA;ADORA2A;CANX;S100A4;RAF1;ATF4;PTGER4;PRKAA1;ABCB1;PCNA;LRP1;PRKDC;NPR1;GLO1;PTGER2;ITPR3;ADRB2;TYMS;ADCY5;DPP4;PGRMC1;NT5E;CCL5;ABL1;MAPK1;SLC25A20;MAPK6;CD55;PRNP;FDPS;TGFB1;HSPA5;STAT1;PTGES3;STAT3;NFATC1;PTPN11;L1CAM;NFKB1;NFKBIA;FAS;ATM;KRAS;CALR;CALM1;PDE7A;CRAT
	Mitochondrial tRNA aminoacylation Homo sapiens R-HSA-379726	0.359078	WARS2				Ovary	0.993641	ATF1;ATF2;SERPINE1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;POR;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;GRIN3A;CALY;CD209;PDE3A;ATM;CALR;CALM1

									;HLA-DRB1;GABRB3;RET;RYR1;DDR1;RYR2;ORM1;IFNA1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;ADRB3;CANX;KIT;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;TLR2;DDR2;PTGER4;PCNA;PTGER1;NR1I3;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE

									8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA5;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1C;DPP4;TPO;HRH1;HRH4;ABL1;CACNA1S;DRD4;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1D;HTR1A;TRPV1;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;ADRA1B;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;SCN5A;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;ADRA2C;ADRA2B;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NO

									D2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Glycerophospholipid biosynthesis Homo sapiens R-HSA-1483206	0.360785	ACHE;PLA2G10;PLA2G2A				Amygdala	0.994199	DDR1;ATF2;GABRB1;MCFD2;THRA;PRKAG1;HTR2C;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;ADORA1;PDE4B;AKT1;ITGAV;RAC1;PDE8B;PDE8A;FADS1;JAK1;SCN1A;CHRNB2;PDGFRA;MAP2K1;CPT1A;PHYH;WARS;VWF;GGPS1;PARP1;DDX58;TUBB;CACNA2D2;FOS;ADRA2C;F3;SCN10A;CANX;KIT;RAF1;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;ADCY2;ADCY1;ADCY5;PGRMC1;NT5E;RXRA;MAPK1;SLC25A20;APOE;MAPK6;SCN3A;GABRD;GABRA2;GABRA1;PRNP;FDPS;HSPA5;STAT1;GABR

									A5;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;VEGFA;GRIN1;NFKBIA;CALY;KRAS;CALR;CALM1;CRAT;FGFR2;FGFR1
	MHC class II antigen presentation Homo sapiens R-HSA-2132295	0.3665 01	CANX;HLA-DRB1;HLA-DQB1				Bone marrow	0.99464 49	ATF1;ATF2;IL1RN;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;PRKAB1;GABRG3;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;ORM2;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;F7;IL1A;F8;IL1B;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;TLR2;OPRD1;PTGER4;PCNA;PTGER2;ADCY2;A

									DCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;GABRE;XDH;CD55;GABRA2;GABRQ;GABRP;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;GUCY1A2;PDGFRA;MAP2K1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;FTL;IFNAR1;GRIA1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB2;CACNA1C;HRH2;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3

									;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;MBL2;VWF;GGPS1;DDX58;HTR3E;PDE4D;AVPR2;SIGMAR1;ADRA2C;MMP9;PIK3CA;ADORA2A;IFNG;PDE5A;MET;CRP;PRKAA1;LRP1;OPRL1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;KCNJ5;KCNJ6;NTRK3;LIMK1;PLA2G2A;PTPN11;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Cell death signalling via NRAGE, NRIF and NADE Homo sapiens R-HSA-204998	0.36528	CASP3;RAC1				Bronchial epithelial cell	0.99485	ATF1;DDR1;MCFD2;IL1RN;SERPINE1;PRKAG1;PIK3CB;ICAM1;POLB;FADS2;RPS6KA3;HTR6;TUBA1A;CCND1;MYC;FTH1;CASP3;RAC2;AKT1;ITGAV;RAC1;FADS1;JAK1;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;PARP1;DDX58;TUBB;SIGMAR1;CYBA;ADRA2C;F3;IL1A;PROCR;SCN10A;ADORA2B;IL1B;CANX;S100A4;SIK1;RAF1

									;MET;ATF4;PPARD;EPHA2;PTGER4;PCNA;LRP1;PRKDC;NPR1;GLO1;ADRB2;PTGS2;TYMS;ADCY5;PGRMC1;NT5E;RXRA;MAPK1;SLC25A20;MAPK6;PRNP;FDPS;JUN;TGFB1;HSPA5;STAT1;PTGES3;STAT3;AKR1C3;PTPN11;VEGFA;NFKBIA;KRAS;CALR;CALM1;CRAT
	RA biosynthesis pathway Homo sapiens R-HSA-5365859	0.37252	AKR1C3				Teratocarcinomacell	0.99509	CHRM3;SLC25A29;WARS;FADS1;FGFR1
	Cell Cycle, Mitotic Homo sapiens R-HSA-69278	0.37591 5	TUBA1A;PCNA;CCND1;LIG1;MYC;TUBB;MAPK1;TUBB4B;TYMS;TP53;MAPK3				Thymus	0.99647 3	DDR1;MCFD2;PRKAG1;CROT;ICAM1;IKBKB;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;RAC2;AKT1;ITGAV;RAC1;JAK1;IFNAR2;CHRNB2;CPT1A;WARS;VWF;PARP1;LIG1;DDX58;TUBB;CYBA;FOS;HLA-A;MMP9;SCN10A;POR;ADORA2A;CANX;S100A4;SLC29A1;RAF1;TP53;ATF3;ATF4;HLA-DQB1;CHRNA3;PCNA;LRP1;NPR1;GLO1;CACNA1C;TYMS;ADCY5;PGRMC1;RXRA;MAPK7;CCL

									5;ABL1;CCL2;MAPK1;SLC25A20;APOE;MAPK6;PRNP;FDPS;TGFB1;VCAM1;HSPA5;STAT1;PTGES3;STAT3;AKR1C3;PTPN11;NFKBIA;CD4;ALB;KRAS;CALR;CALM1;PDE7A;CRAT;HLA-DRB1;FGFR1
	p53-Dependent G1/S DNA damage checkpoint Homo sapiens R-HSA-69580	0.38155	ATM;TP53				Helper T-lymphocyte	0.996912	ATF1;DDR1;ATF2;PRKAG1;PIK3CD;CROT;ICAM1;IKBKB;POLB;CASP9;FADS2;RPS6KA3;HTR6;TUBA1A;MYC;FTH1;FPGS;RAC2;CASP1;PDE4B;AKT1;RAC1;JAK1;MBL2;IFNAR2;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;PARP1;DDX58;TUBB;SIGMAR1;CACNA2D2;CYBA;FOS;ADRA2C;SCN10A;PIK3CA;CANX;S100A4;ATF5;RAF1;ATF4;PTGER4;PRKAA1;ABCB1;PCNA;LRP1;PRKDC;NPR1;GLO1;PTGER2;ITPR3;TYMS;ADCY5;DPP4;PGRMC1;NT5E;RXRA;CCL5;MAPK1;SLC25A20;MAPK6;CD55;PRNP;FDPS;TGFB1;HSPA5;STAT1;PTGES3;STAT3;NFATC1;PTPN11;L1CAM;NFKB1;NFKBIA;CD4;FAS;ATM;KRAS;CALR;CALM1;PDE7A;CRAT;F

									GFR1
	p53-Dependent G1 DNA Damage Response Homo sapiens R-HSA-69563	0.381555	ATM;TP53				Cerebral peduncle	0.996915	DDR1;MCFD2;THRA;PRKAG1;PIK3CB;CROT;SLC6A2;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;PDE4B;AKT1;ITGAV;RAC1;FADS1;JAK1;IFNAR2;CHRNB2;MAP2K1;CPT1A;WARS;VWF;GGPS1;PARP1;DDX58;TUBB;SIGMAR1;CACNA2D2;ADRA2C;F3;SCN10A;CANX;KIT;ATF5;RAF1;ATF4;SLC29A2;CES1;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;NPR2;ITPR1;ADCY1;ADCY5;PGRMC1;NT5E;SLC25A20;APOE;MAPK6;GABRD;XDH;GABRA1;PRNP;FDPS;GABRA6;HSPA5;PTGES3;STAT3;PTPN11;L1CAM;NFKBIA;CALY;KRAS;CALR;TEK;CALM1;SCN2A;CRAT;FGFR2;FGFR1
	Degradation of the extracellular matrix Homo sapiens R-HSA-1474228	0.383593	CASP3;MMP9;ELANE				BTO:0005453	0.997214	ATF1;ATF2;NCF4;MPO;ICAM1;RPS6KA3;HTR6;FTH1;KDR;AKT1;PDGFRB;PDGFRA;MAP2K1;CPT1A;LIG1;CYBB;LIG3;CYBA;HLA-A;PRKAB1;POR;ATF7;S100A4;RAF1;FTL;GLO1;ITPR1;ITPR2;ITPR3;DPP4;ABL1;ELANE;PRNP;FD

									PS;TGFB1;HSPA5;BRAF;NFATC1;NFKB1;NFKBIA;GGCX;ALB;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;MCFD2;ORM1;FLT1;FLT3;FLT4;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;ORM2;PRKAG3;SLC6A4;IKBKB;POLB;TUBA1A;CPT2;CASP3;RAC2;CASP1;PDE4B;RAC1;JAK2;JAK1;WARS;GGPS1;PARP1;DDX58;TUBB;PDE4D;SIGMAR1;HBA1;PTGR2;PIK3CA;ADORA2A;CANX;KIT;TLR7;MET;TLR3;HLA-DQB1;PRKAA1;PRKAA2;PCNA;PTGER2;LMAN1;NRAS;PGRMC1;RXRA;MAPK7;MAPK1;SLC25A20;PDE6A;MAPK6;CD55;MAPK4;KCNJ3;MAPK3;NOS2;STAT1;KCNJ9;NTRK3;PTGES3;AKR1C1;STAT3;AKR1C3;PTPN11;TUBB4B;MAPK15;WARS2;CD4;FAS;KRAS;CRAT;FRK
	Laminin interactions Homo sapiens R-HSA-3000157	0.385688	ITGAV				B-lymphocyte	0.997488	ATF1;ATF2;NCF1;NCF4;MPO;ICAM1;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;PRKAB2;MAP2K1;

								3	CPT1A;LIG1;CYBB;LIG3;CYBA;HLA-A;PRKAB1;POR;ATF7;S100A4;RAF1;PDE9A;ATF4;FTL;CES1;EPHA2;ABCB1;GLO1;ITPR1;CACNA1B;ITPR2;ITPR3;ABL1;APOE;ELANE;FDPS;JUN;TGFB1;VCAM1;HSPA5;BRAF;NFATC1;L1CAM;NFKB1;NFKBIA;ALB;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;RYR2;MCFD2;FLT1;FLT3;FLT4;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;IKBKB;POLB;CASP9;TUBA1A;CPT2;SMPD1;CASP3;RAC2;CASP1;PDE4B;PDE4A;RAC1;JAK2;JAK1;WARS;VWF;GGPS1;PARP1;DDX58;TUBB;PDE4D;SIGMAR1;HBA1;F7;PIK3CA;ADORA2A;IFNG;CANX;KIT;TLR8;TLR7;MET;TLR3;HLA-DQB1;PPARD;TLR2;PRKAA1;PRKAA2;PCNA;LRP1;ADCY2;PTGS1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;MAPK7;CCL5;MAPK1;SLC25A20;CACNG2;GABRE;MAPK6;XDH;CD55;MAPK4;MAPK3;NOS2;STAT1;PTGES

									3;AKR1C1;STAT3;LIMK1;AKR1C3;PTPN11;TUBB4B;MAPK15;WARS2;CD4;FCGR2A;FAS;KRAS;TEK;CRAT;FRK
	Downregulation of SMAD2/3:SMAD4 transcriptional activity Homo sapiens R-HSA-2173795	0.385688	PARP1				Olfactory bulb	0.998399	DDR1;MCFD2;PROS1;PRKAG1;ICAM1;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;ITGAV;RAC1;FADS1;JAK1;MBL2;IFNAR2;CHRNB2;PDGFRB;PDGFRA;CPT1A;WARS;VWF;PARP1;DDX58;TUBB;FOS;ADRA2C;F3;SCN10A;CANX;S100A4;SIK1;ATF3;ATF4;DDR2;GRIA2;PCNA;LRP1;NPR1;GLO1;ADCY5;PGRMC1;RXRA;ABL1;CCL2;SLC25A20;APOE;MAPK6;PRNP;FDPS;HSPA5;STAT1;PTGES3;STAT3;PTPN11;L1CAM;NFKBIA;FCGR2A;KRAS;CALR;CALM1;CRAT;HLA-DRB1;FGFR1
	Incretin synthesis, secretion, and inactivation Homo sapiens R-HSA-400508	0.385688	DPP4				Uterus	0.998431	ATF1;ATF2;IL1RN;SERPINE1;ICAM1;RPS6KA3;EDNRA;MYC;FTH1;KDR;AKT1;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;PRKAB1;POR;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;

									PDE1A;APOE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;PDE3A;ATM;CALR;CALM1;HLA-DRB1;GABRB3;DDR1;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;FOS;HBA1;F3;PTGR2;IL1A;F8;IL1B;CANX;KIT;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;TLR2;DDR2;PTGER4;PCNA;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;LMAN1;NRAS;PGRMC1;NT5E;RXRA;GABRE;CD55;GABRQ;GABRP;F10;STAT1;PTGES3;AKR1C1;STAT3;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;NEK11;CHRM3;CHRM1;NCF1;PROS1;NCF4;SLC8A1;FADS2;CCND1;ADORA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;S100A4;RAF1

									;PDE9A;FTL;IFNAR1;GRIA2;CHRNA5;NPR1;GLO1;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;ABL1;DRD2;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;NFKB1;NFKBIA;IL6;GGCX;IL7;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT4;HTR2B;PIK3CD;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;PDE4C;ADRA2C;ADRA2A;PIK3CA;ADORA2A;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;SLC25A20;MAPK6;TRDMT1;MAPK3;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	HDR through Homologous Recombination	0.3890	PCNA;ATM				Embryonic brain	0.9988	DDR1;ATF2;MCFD2;THRA;PRKAG1;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;CASP3;FPGS;P

	(HRR) Homo sapiens R-HSA-5685942	04						52	DE4B;AKT1;ITGAV;RAC1;FADS1;JAK1;SCN1A;CHRNB2;PDGFRA;MAP2K1;CPT1A;WARS;GGPS1;PARP1;PARP2;DDX58;TUBB;CACNA2D2;FOS;ADRA2C;F3;ADRA2A;SCN10A;CANX;KIT;RAF1;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ADCY1;ADCY5;PGRMC1;RXRA;CCL2;APOE;MAPK6;SCN3A;GABRA2;PRNP;FDPS;VCAM1;HSPA5;GABRA5;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;VEGFA;NFKBIA;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR1
	ER-Phagosome pathway Homo sapiens R-HSA-1236974	0.396419	HLA-A;CALR				Skin	0.998878	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;G

									RIN2C;GRIN2D;CALY;CD209;ATM;CALR;CALM1;SCN2A;HLA-DRB1;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;PTGER4;PCNA;NR1I3;PTGER3;ADCY2;ADCY1;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;GABRE;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A

									;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;ADRB2;CACNA1C;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;DRD5;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;TRPV1;NFKB1;IL2;NFKBIA;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2B;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;

									CCL5;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	G1/S DNA Damage Checkpoints Homo sapiens R-HSA-69615	0.396419	ATM;TP53				BTO:0004410	0.992971	ATF1;ATF2;NCF1;NCF4;TNF;MPO;ICAM1;RPS6KA3;HTR6;FTH1;FPGS;KDR;AKT1;PDE8B;KCNH2;PDGFRB;PDGFRA;PRKAB2;MAP2K1;CPT1A;LIG1;CACNA2D2;CYBB;LIG3;CYBA;HLA-A;PRKAB1;POR;KCNQ3;ATF7;S100A4;RAF1;FTL;CES1;EPHA2;ABCB1;GLO1;NPR2;ITPR1;ITPR2;ITPR3;ADRB2;DPP4;ABL1;ELANE;PRNP;FDPS;JUN;ACE;TGFB1;HSPA5;BRAF;NFATC1;NFKB1;GRIN2D;NFKBIA;GRIN3A;IL7;ALB;PDE3A;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;RYR1;RYR2;MCFD2;FLT1;FLT3;PTGDR2;FLT4;PDE3B;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;PRKAG3;IKBKB;POLB;CASP9;T

									UBA1A;CPT2;SMPD1;CASP3;RAC2;CASP1;PDE4B;RAC1;JAK2;JAK1;WARS;VWF;GGPS1;PARP1;PARP2;DDX58;TUBB;PDE4D;SIGMAR1;HBA1;PTGR2;F7;F8;PIK3CA;ADORA2A;IFNG;CANX;KIT;TLR7;PPARA;MET;TLR4;TLR3;HLA-DQB1;PPARD;TLR2;PTGER4;PRKAA1;PRKAA2;PCNA;LRP1;ADCY2;ADCY1;PTGS1;LMAN1;NRAS;SLC25A29;PGRMC1;NT5E;MAPK7;CCL5;MAPK1;SLC25A20;CACNG2;GABRE;MAPK6;CD55;MAPK4;MAPK3;GABRA2;NOS2;STAT1;IFNB1;GABRA4;NTRK3;PTGES3;AKR1C1;STAT3;AKR1C3;PTPN11;TUBB4B;MAPK15;WARS2;CD4;FAS;KRAS;PDE7A;CRAT;FRK
	Cytosolic tRNA aminoacylation Homo sapiens R-HSA-379716	0.398565	WARS				Pancreas	0.999345	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF

									5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1A;GRIN2A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;GABRB3;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;CANX;KIT;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;PGRMC1;NT5E;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR

									1C3;TUBB4B;VEGFA;GRIN1;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM4;PROS1;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;CHRNB4;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;DPP4;HRH4;ABL1;DRD1;DRD2;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1B;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;MBL2;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIG

									MAR1;PDE4C;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;CACNG2;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;TEK;PDE7A
	Biological oxidations Homo sapiens R-HSA-211859	0.040638	POR;RXRA;NR1H4;CES1;PTGS1				Thalamus	0.999382	DDR1;MCFD2;PRKAG1;PIK3CB;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;ADORA1;PDE4B;ITGAV;RAC1;PDE8B;PDE8A;FADS1;JAK1;SCN1A;IFNAR2;CHRNB2;PDGFRA;MAP2K1;CPT1A;WARS;VWF;GGPS1;PARP1;PARP2;DDX58;TUBB;SIGMAR1;CACNA2D2;ADRA2C;F3;SCN10A;CANX;KIT;S100A4;ATF5;RAF1;ATF4;GRIA2;CHRNA3;PCNA;LRP1;NPR1;GLO1;NPR2;ADCY5;PGRMC1;RXRA;SLC25A20;APOE;MA

									PK6;PRNP;FDPS;HSPA5;STAT1;GABRA5;PTGES3;STAT3;PTPN11;L1CAM;NFKBIA;CALY;CALR;CALM1;CRAT;FGFR2;FGFR1
	Regulation of RAS by GAPs Homo sapiens R-HSA-5658442	0.411121	NRAS;KRAS				BTO:0000379	0.999443	CHRNA9
	G0 and Early G1 Homo sapiens R-HSA-1538133	0.411118	PCNA				B-lymphoblastoid cell	0.999666	ATF1;DDR1;ATF2;MCFD2;NCF1;NCF4;PRKAG1;ICAM1;IKBKB;POLB;CASP9;FADS2;RPS6KA3;HTR6;TUBA1A;MYC;FTH1;CASP3;FPGS;RAC2;CASP1;AKT1;ITGAV;RAC1;PDE8A;FADS1;JAK1;MBL2;IFNAR2;CHRNB2;MAP2K1;PARP3;WARS;GGPS1;PARP1;LIG1;PARP2;DDX58;TUBB;SIGMAR1;CYBA;ADRA2C;SCN10A;POR;PIK3CA;CANX;S100A4;ATF5;SLC29A1;RAF1;TP53;ATF3;ATF4;HLA-DQB1;PCNA;LRP1;PRKDC;NPR1;GLO1;ITPR1;TYMS;ADCY5;PGRMC1;NT5E;RXRA;CCL5;ABL1;CCL3;MAPK1;SLC25A20;MAPK6;CD55;PRNP;FDPS;TGFB1

									;VCAM1;HSPA5;STAT1;PTGES3;STAT3;PTPN11;NFKB1;VEGFA;WARS2;NFKBIA;PDE10A;GGCX;IL7;FAS;ATM;KRAS;CALR;CALM1;CRAT;FGFR1
	Basigin interactions Homo sapiens R-HSA-210991	0.411188	L1CAM				Erythroid cell	0.999793	ATF1;PRKAG1;ICAM1;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;RAC2;AKT1;RAC1;JAK2;FADS1;JAK1;MBL2;KCNH2;IFNAR2;CHRNB2;CPT1A;WARS;PARP1;LIG1;DDX58;TUBB;SIGMAR1;CACNA2D2;FOS;ADRA2C;PRKAB1;F3;SCN10A;CANX;S100A4;ATF5;SLC29A1;ATF4;PCNA;LRP1;NPR1;GLO1;TYMS;ADCY5;PGRMC1;RXRA;MAPK1;SLC25A20;MAPK6;CD55;PRNP;FDPS;HSPA5;PTGES3;STAT3;AKR1C3;PTPN11;VEGFA;NFKBIA;FAS;KRAS;CALR;CALM1;CRAT;FGFR1
	Synthesis of IP3 and IP4 in the cytosol Homo sapiens R-HSA-1855204	0.411188	CALM1				Erythroleukemia cell	0.999944	ATF1;ATF2;ITGB3;PDE3B;PIK3CD;ICAM1;IKBKB;CASP9;RPS6KA3;MYC;CASP3;FPGS;AKT1;PDE4A;JAK2;PDE8A;KCNH2;PRKAB2;WARS;PARP1;LIG1;TUBB;LIG3;CYBA;PRKAB1;POR;CANX;ATF7;KCNQ5;ATF5;SLC

									29A1;RAF1;ATF3;JDP2;SLC29A2;IFNAR1;PRKAA1;PRKDC;ITPR3;TYMS;PGRMC1;RXRA;ERBB2;ABL1;MAPK1;MAPK6;MAPK3;JUN;STAT1;PTGES3;STAT3;LIMK1;BRAF;NFATC1;PTPN11;TUBB4B;NFKB1;ATM;CALM1
	TRP channels Homo sapiens R-HSA-3295583	0.411183	TRPV1				MOLT-4 cell	0.999977	DDR1;PRKAG1;CROT;ICAM1;POLB;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;CASP3;RAC2;AKT1;ITGAV;RAC1;FADS1;JAK1;CHRNB2;CPT1A;WARS;GGPS1;PARP1;LIG1;PARP2;DDX58;TUBB;SIGMAR1;CYBA;ADRA2C;SCN10A;CANX;ATF5;RAF1;ATF4;PCNA;LRP1;PRKDC;NPR1;GLO1;TYMS;ADCY5;PGRMC1;ABL1;SLC25A20;MAPK6;SCN3A;PRNP;FDPS;HSPA5;PTGES3;STAT3;PTPN11;VEGFA;NFKBIA;KRAS;CALR;CALM1;CRAT;FGFR1
	FCERI mediated NF-kB activation Homo sapiens R-HSA-2871837	0.411183	NFKBIA;IKBKB;NFKB1				Testis	0.999985	ATF1;ATF2;IL1RN;SERPINE1;HTR4;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;HLA-

									A;PRKAB1;GABRG3;POR;KCNQ3;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;GRIN2A;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2C;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;RYR1;DDR1;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;SLC6A2;ORM2;PRKAG3;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;CANX;KIT;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;NR1I3;PTGER2;PTGER3;ADCY2;ADCY1;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXR

									A;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;GABRQ;GABRP;F10;GABRA6;STAT1;IFNB1;GABRA4;PTGES3;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;GRIN1;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;MPO;SLC8A1;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;IFNAR2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;CHRNB4;PHYH;CHRNB3;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;SCN8A;PLA2G10;S100A4;RAF1;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;ADRB2;CACNA1C;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;DRD5;GRIA4;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;HTR1A;NFKB1;IL2;NFKBIA;PROC;GGC

									X;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;TNFAIP6;THRA;FLT3;ITGB3;FLT4;PDE3B;HTR2B;PIK3CD;HTR2C;ADRA1D;PIK3CB;HTR2A;ADRA1A;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;BDKRB1;ITGAV;VWF;GGPS1;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3C;HTR3B;OPRM1;MMP9;ADRA2A;PIK3CA;ADORA2A;IFNG;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;OPRL1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	HDR through Homologous Recombination (HR) or	0.417443	PCNA;ABL1;ATM				Thyroid gland	0.999999	ATF1;ATF2;IL1RN;SERPINE1;ICAM1;RPS6KA3;HTR6;EDNRA;SCN11A;MYC;FTH1;KDR;AKT1;PRKAB2;CPT1A;CACNA2D1;CACNA2D2

	Single Strand Annealing (SSA) Homo sapiens R-HSA-5693567	2						2	;HLA-A;PRKAB1;GABRG3;GABRG1;SCN10A;POR;ATF7;SIK1;KCNQ5;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;APOE;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;GABRB3;DDR1;RYR2;ORM1;PRKAG1;PRKAG2;HBB;CROT;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;PARP3;WARS;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F3;PTGR2;IL1A;F8;IL1B;CANX;KIT;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;TLR2;DDR2;OPRD1;PTGER4;PCNA;PTGER3;ADCY1;PTGS2;TYMS;PTGS1;ADCY5;GLRA1;LMAN1;NRAS;GLRA2;PGRMC1;NT5E;RXRA;GABRE;CD55;GABRQ;F10;STAT1;PTGES3;AKR1C1;STAT3;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;SLC8A1;FADS2;CCND1;ADO

									RA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CYBA;CACNB1;PROCR;S100A4;RAF1;PDE9A;FTL;IFNAR1;CHRNA3;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;CACNA1C;DPP4;TPO;ABL1;CACNA1S;GRIA3;PRNP;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;NFKB1;NFKBIA;GGCX;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT4;PIK3CD;PIK3CB;POLB;CASP9;CPT2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;VWF;GGPS1;DDX58;PDE4D;SIGMAR1;ADRA2C;MMP9;PIK3CA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PDE6B;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;NOS2;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;

									PDE7A
	Immunoregulatory interactions between a Lymphoid and a non-Lymphoid cell Homo sapiens R-HSA-198933	0.418171	VCAM1;CD40LG;HLA-A;ICAM1						
	Cyclin E associated events during G1/S transition Homo sapiens R-HSA-69202	0.418406	CCND1;MYC						
	Attenuation phase Homo sapiens R-HSA-3371568	0.423531	PTGES3						
	Resolution of D-loop Structures through Synthesis-Dependent Strand Annealin	0.423531	ATM						

	g (SDSA) Homo sapiens R-HSA-5693554								
	Regulation of Hypoxia-inducible Factor (HIF) by oxygen Homo sapiens R-HSA-1234174	0.42353531	VEGFA						
	Cellular response to hypoxia Homo sapiens R-HSA-2262749	0.42353531	VEGFA						
	Downregulation of TGF-beta receptor signaling Homo sapiens R-HSA-2173788	0.42353531	TGFB1						
	Cyclin A:Cdk2-associated events at S phase entry Homo sapiens R-HSA-	0.42564 4	CCND1;MYC						

	69656								
	trans-Golgi Network Vesicle Budding Homo sapiens R-HSA-199992	0.432836	FTH1;FTL						
	Clathrin derived vesicle budding Homo sapiens R-HSA-421837	0.432836	FTH1;FTL						
	Lipid digestion, mobilization, and transport Homo sapiens R-HSA-73923	0.439979	ALB;APOE						
	Recognition of DNA damage by PCNA-containing replication complex Homo sapiens R-HSA-110314	0.447463	PCNA						
	G-protein	0.	OPRM1						

	activation Homo sapiens R-HSA-202040	4.474634							
	HSF1 activation Homo sapiens R-HSA-3371511	0.459055	PTGES3						
	RNA Polymerase I Promoter Opening Homo sapiens R-HSA-73728	0.470404	MAPK3						
	Termination of translesion DNA synthesis Homo sapiens R-HSA-5656169	0.470404	PCNA						
	Activation of Kainate Receptors upon glutamate binding Homo sapiens R-HSA-451326	0.470404	CALM1						

	G2/M DNA damage checkpoint Homo sapiens R-HSA-69473	0.48854	ATM;TP53						
	G2/M Transition Homo sapiens R-HSA-69275	0.49190 5	TUBA1A;TUBB;TUBB4B;TP53						
	Regulation of beta-cell development Homo sapiens R-HSA-186712	0.49239 5	AKT1						
	Resolution of D-loop Structures through Holliday Junction Intermediates Homo sapiens R-HSA-5693568	0.49239 5	ATM						
	TGF-beta receptor signaling activates SMADs Homo	0.49923	TGFB1						

	sapiens R-HSA-2173789	95							
	HIV Infection Homo sapiens R-HSA-162906	0.49823	CD4;LIG1;HLA-A;RAC1;CCR5						
	Mitotic G2-G2/M phases Homo sapiens R-HSA-453274	0.50086	TUBA1A;TUBB;TUBB4B;TP53						
	Resolution of D-Loop Structures Homo sapiens R-HSA-5693537	0.50304	ATM						
	FGFR2 mutant receptor activation Homo sapiens R-HSA-1839126	0.50304	FGFR2						
	Smooth Muscle Contraction Homo sapiens R-HSA-445355	0.50304	CALM1						

	Host Interactions of HIV factors Homo sapiens R-HSA-162909	0.509366	CD4;HLA-A;RAC1						
	HSF1-dependent transactivation Homo sapiens R-HSA-3371571	0.513475	PTGES3						
	Negative regulators of RIG-I/MDA5 signaling Homo sapiens R-HSA-936440	0.513475	DDX58						
	Striated Muscle Contraction Homo sapiens R-HSA-390522	0.513475	TNNC1						
	Cell Cycle Homo sapiens R-HSA-1640170	0.524491	TUBA1A;PCNA;CCND1;LIG1;MYC;TUBB;MAPK1;ATM;TUBB4B;TYMS;TP53;MAPK3						
	Chromos	0	PCNA;LIG1						

	ome Mainten ance Homo sapiens R-HSA-73886	.540697							
	Regulatio n of mRNA stability by proteins that bind AU-rich elements Homo sapiens R-HSA-450531	0.540697	MAPK11;AKT1						
	Translesi on synthesis by Y family DNA polymera ses bypasses lesions on DNA template Homo sapiens R-HSA-110313	0.543468	PCNA						
	Apoptoti c cleavage of cellular proteins Homo sapiens	0.543468	CASP3						

	R-HSA-111465								
	Signaling by Hedgehog Homo sapiens R-HSA-5358351	0.544975	ADCY2;ADCY1;ADCY5						
	Beta defensins Homo sapiens R-HSA-1461957	0.553005	TLR2						
	G1 Phase Homo sapiens R-HSA-69236	0.553005	CCND1						
	Cyclin D associated events in G1 Homo sapiens R-HSA-69231	0.553005	CCND1						
	Activation of anterior HOX genes in hindbrain development during early embryog	0.559286	JUN;RXRA						

	enesis Homo sapiens R-HSA-5617472								
	Activation of HOX genes during differentiation Homo sapiens R-HSA-5619507	0.559286	JUN;RXRA						
	Presynaptic phase of homologous DNA pairing and strand exchange Homo sapiens R-HSA-5693616	0.562432	ATM						
	tRNA modification in the nucleus and cytosol Homo sapiens R-HSA-6782315	0.562432	TRDMT1						
	HIV Life Cycle Homo sapiens R-HSA-162587	0.56944	CD4;LIG1;CCR5						

		7							
	PCP/CE pathway Homo sapiens R-HSA-4086400	0.571378	RAC2;RAC1						
	Glycosphingolipid metabolism Homo sapiens R-HSA-1660662	0.580609	SMPD1						
	Host Interactions with Influenza Factors Homo sapiens R-HSA-168253	0.580609	TGFB1						
	Transcriptional regulation of pluripotent stem cells Homo sapiens R-HSA-452723	0.589413	STAT3						
	Homologous DNA Pairing and Strand Exchange Homo	0.589411	ATM						

	sapiens R-HSA-5693579	3							
	Deactivation of the beta-catenin transactivating complex Homo sapiens R-HSA-3769402	0.589413	AKT1						
	TNFR2 non-canonical NF-kB pathway Homo sapiens R-HSA-5668541	0.594833	CD40LG;TNF						
	Influenza Infection Homo sapiens R-HSA-168254	0.597768	TGFB1;CANX;CALR						
	Classical antibody-mediated complement activation Homo sapiens R-HSA-173623	0.598033	CRP						
	Synthesis	0	PCNA;LIG1						

	of DNA Homo sapiens R-HSA-69239	.606196							
	SUMOylation of DNA replication proteins Homo sapiens R-HSA-4615885	0.606473	PCNA						
	Inositol phosphate metabolism Homo sapiens R-HSA-1483249	0.606473	CALM1						
	Gene Expression Homo sapiens R-HSA-74160	0.609858	ATF2;PRKAA1;PRKAA2;PCNA;THRB;THRA;NR1I3;SERPINE1;NR1I2;PRKAG1;PRKAG2;PRKAG3;RXRA;MYC;CASP1;AKT1;TRDMT1;MAPK3;PRKAB2;JUN;WARS;PARP1;NR1H4;FOS;PRKAB1;WARS2;MAPK11;FAS;PPARG;ATM;PPARA;TP53;PPARD						
	Metabolism of water-soluble vitamins	0.611	FPGS;PTGS2						

	and cofactors Homo sapiens R-HSA-196849	7.87							
	ABC-family proteins mediated transport Homo sapiens R-HSA-382556	0.614735	ABCB1						
	NRAGE signals death through JNK Homo sapiens R-HSA-193648	0.614735	RAC1						
	DNA Damage Bypass Homo sapiens R-HSA-73893	0.622825	PCNA						
	The citric acid (TCA) cycle and respiratory electron transport Homo sapiens R-HSA-	0.624826	RXRA;GLO1;PPARD						

	1428517								
	NOTCH1 Intracellular Domain Regulates Transcription Homo sapiens R-HSA-2122947	0.6307455	MYC						
	Amino acid and oligopeptide SLC transporters Homo sapiens R-HSA-425374	0.6460909	SLC15A1						
	FCGR activation Homo sapiens R-HSA-2029481	0.6460909	FCGR2A						
	DNA Replication Homo sapiens R-HSA-69306	0.6492266	PCNA;LIG1						
	Ubiquitin-dependent degradation of	0.6535	CCND1						

	Cyclin D1 Homo sapiens R-HSA-69229	23							
	Ubiquitin-dependent degradation of Cyclin D Homo sapiens R-HSA-75815	0.653523	CCND1						
	Mitotic Prophase Homo sapiens R-HSA-68875	0.659383	MAPK1;MAPK3						
	Vpu mediated degradation of CD4 Homo sapiens R-HSA-180534	0.66008	CD4						
	Apoptotic execution phase Homo sapiens R-HSA-75153	0.66008	CASP3						
	p53-Independ	0.	ATM						

	ent DNA Damage Response Homo sapiens R-HSA-69610	6679924							
	p53-Independent G1/S DNA damage checkpoint Homo sapiens R-HSA-69613	0.6679924	ATM						
	Ubiquitin Mediated Degradation of Phosphorylated Cdc25A Homo sapiens R-HSA-69601	0.6679924	ATM						
	Assembly of collagen fibrils and other multimeric structures Homo sapiens R-HSA-2022090	0.6817288	MMP9						
	Meiotic recombin	0.	ATM						

	ation Homo sapiens R-HSA-912446	6.81728							
	IRE1alpha activates chaperones Homo sapiens R-HSA-381070	0.6884144	HSPA5						
	Ion transport by P-type ATPases Homo sapiens R-HSA-936837	0.6884144	CALM1						
	Constitutive Signaling by NOTCH1 HD+PEST Domain Mutants Homo sapiens R-HSA-2894862	0.7013688	MYC						
	Signaling by NOTCH1 in Cancer Homo sapiens R-HSA-2644603	0.7013688	MYC						
	Signaling by	0.	MYC						

	NOTCH1 PEST Domain Mutants in Cancer Homo sapiens R-HSA-2644602	7 0 1 3 6 8							
	Constitutive Signaling by NOTCH1 PEST Domain Mutants Homo sapiens R-HSA-2644606	0 . 7 0 1 3 6 8	MYC						
	Signaling by NOTCH1 HD+PEST Domain Mutants in Cancer Homo sapiens R-HSA-2894858	0 . 7 0 1 3 6 8	MYC						
	Formation of the beta-catenin:TCF transactivating complex Homo sapiens R-HSA-201722	0 . 7 0 7 6 4 2	MYC						

	The role of GTSE1 in G2/M progression after G2 checkpoint Homo sapiens R-HSA-8852276	0.713785	TP53						
	SCF(Skp2)-mediated degradation of p27/p21 Homo sapiens R-HSA-187577	0.713785	CCND1						
	RHO GTPases activate PKNs Homo sapiens R-HSA-5625740	0.719799	RAC1						
	Rho GTPase cycle Homo sapiens R-HSA-194840	0.728181	RAC2;RAC1						
	Dual incision in TC-NER Homo sapiens	0.7370	PCNA						

	R-HSA-6782135	95							
	Assembly of the primary cilium Homo sapiens R-HSA-5617833	0.754039	TUBA1A;TUBB;TUBB4B						
	Influenza Life Cycle Homo sapiens R-HSA-168255	0.781418	CANX;CALR						
	Signaling by NOTCH1 Homo sapiens R-HSA-1980143	0.782849	MYC						
	Sphingolipid metabolism Homo sapiens R-HSA-428157	0.791884	SMPD1						
	SUMOylation of DNA damage response and repair proteins Homo sapiens	0.796261	PARP1						

	R-HSA-3108214								
	RNA Polymerase I Promoter Clearance Homo sapiens R-HSA-73854	0.800545	MAPK3						
	COPI-mediated anterograde transport Homo sapiens R-HSA-6807878	0.808846	CD55						
	RNA Polymerase I Transcription Homo sapiens R-HSA-73864	0.812866	MAPK3						
	Glucose metabolism Homo sapiens R-HSA-70326	0.812866	CALM1						
	Processing of DNA double-strand break	0.820	ATM						

	ends Homo sapiens R-HSA-5693607	6 5 6							
	G2/M Checkpoints Homo sapiens R-HSA-69481	0 . 8 2 5 2 9 6	ATM;TP53						
	Class B/2 (Secretin family receptors) Homo sapiens R-HSA-373080	0 . 8 3 1 7 3 7	CD55						
	Collagen formation Homo sapiens R-HSA-1474290	0 . 8 3 5 2 7 7	MMP9						
	Meiosis Homo sapiens R-HSA-1500620	0 . 8 3 5 2 7 7	ATM						
	Chromatin organization Homo sapiens R-HSA-	0 . 8 5 5 5 0	ATF2;CCND1;JAK2						

	4839726	1							
	Chromatin modifying enzymes Homo sapiens R-HSA-3247509	0.855501	ATF2;CCND1;JAK2						
	tRNA processing Homo sapiens R-HSA-72306	0.887668	TRDMT1						
	HATs acetylate histones Homo sapiens R-HSA-3214847	0.896847	ATF2						
	Cell Cycle Checkpoints Homo sapiens R-HSA-69620	0.897266	ATM;TP53						
	RHO GTPases Activate Formins Homo sapiens R-HSA-5663220	0.911129	RAC1						
	RNA Polymera	0.	MAPK3						

	se I, RNA Polymerase III, and Mitochondrial Transcription Homo sapiens R-HSA-504046	9148355							
	TCF dependent signaling in response to WNT Homo sapiens R-HSA-201681	0.9231996	MYC;AKT1						
	M Phase Homo sapiens R-HSA-68886	0.9774949	MAPK1;MAPK3						
	Metabolism of carbohydrates Homo sapiens R-HSA-71387	0.9975522	CALM1						
	Metabolism of amino acids and derivatives Homo sapiens	0.9992121	TPO						

	R-HSA-71291	5							

Supplementary Table 7: Host-virus-drug-enrichment.

Gene	Reactome			Kegg			Tissue		
GABRA5	Term	P-value	Genes	Term	P-value	Genes	Term	P-value	Genes
1HLA-B	Signal Transduction Homo sapiens R-HSA-162582	6.76E-56	ATF1;SERPINE1;HTR4;RPS6KA3;HTR6;EDNRA;HTR7;MYC;KDR;AKT1;PRKAB2;CPT1A;PRKAB1;AR;AGTR1;TP53;PDE1C;PDE1B;PDE1A;SDC2;GRIN2A;MC2R;APOE;JUN;PDE2A;BRAF;NFATC1;GRIN2C;GRIN2B;GRIN2D;PDE3A;CALM1;RET;PTGDR2;PRKAG1;PRKAG2;PTH1R;PRKAG3;IKBKB;RAC2;RAC1;JAK2;CCR5;JAK3;CCR4;JAK1;ANXA1;PARP1;PTH2R;F2;ADRB3;KIT;TLR9;PPARD;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;ADCY2;ADCY1;ADCY5;NRAS;RXRA;CXCR1;CD55;P2RY12;STAT1;AKR1C1;STAT3;AKR1C3;GRIN1;VEGFA;FAS;PF4;CHRM2;CH	Neuroactive ligand-receptor interaction	1.13E-84	CHRM2;CHRM3;PRSS1;CHRM1;CHRM4;CHRM5;HTR4;NR3C1;EDNRA;HTR6;HTR7;ADORA3;ADORA1;CHRNB2;CHRNB4;CHRNB3;GABRG3;GABRG2;GABRG1;AGTR1;GRIA1;GRIA2;CALCA;CHRNA3;CALCB;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9;ADRB1;ADRB2;GRIN2A;MC2R;HRH1;HRH2;HRH4;DRD1;DRD2;DRD3;DRD4;GRIA3;DRD5;GRIA4;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;TRPV1;GRIN2C;GRIN2B;GRIN2D;GRIN3B;GRIN3A;GABRB3;GABRB2;GABRB1;THRB;THRA;HTR2B;HTR2C;ADRA1D;PTH1R;HTR2A;ADRA1B;ADRA1	Adult	1.53E-77	IL1RN;PROS1;SERPINE1;FGF1;NR3C1;FGF2;TNF;MPO;MT-ND1;AQP1;ICAM1;NR3C2;CDH5;HTR7;CCND1;MYC;ADORA1;KDR;AKT1;TNFSF11;PDGFRB;PDGFRA;HGF;CYBB;HLA-A;AR;SCN8A;AGTR1;PGR;TP53;GRIA1;GRIA2;CALCA;ABCB1;CHRNA4;ADRB1;ADRB2;CACNA1C;DPP4;GRIN2A;ABL1;APOE;DRD2;ELANE;DRD4;GRIA4;JUN;ACE;TGFB1;VCAM1;VDR;HTR1A;HTR1B;TRPV1;GRIN2C;GRIN2B;IL2;IL4;SELP;IL6;IL7;ALB;REN;SHBG;CALM1;SCN2A;FGFR4;HLA-DRB1;FGFR2;FGFR1;RET;RYR1;FLT1;I

			RM3;CHRM1;NCF1;CHRM4;CHRM5;NCF4;FGF1;NR3C1;FGF2;TNF;FGF4;CDH5;CCND1;ADORA3;ADORA1;PDE8B;PDE8A;PDGFRB;PDGFRA;MAP2K1;CYBB;CYBA;PGR;RAF1;CALCA;CALCB;ITPR1;ITPR2;ITPR3;ADRB1;CSF2RB;ADRB2;CSF2RA;HRH1;HRH2;HRH4;ABL1;DRD1;DRD2;DRD3;DRD4;DRD5;TGFB1;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;NFKB1;IL2;NFKBIA;IL6;FGF19;FGFR4;FGFR2;FGFR1;FLT1;CXCL8;FLT4;ITGB3;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1B;ADRA1A;CASP9;CASP3;PDE4B;BDKRB1;PDE4A;ITGAV;CHUK;VWF;MMP2;PDE4D;AVPR2;PDE4C;OPRM1;ADRA2C;ADRA2B;MMP9;ADRA2A;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;PRKAA1;PRKAA2;LRP1;OPRL1;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;PDE6B;PDE6A;MAPK6;MAPK4;MAPK3;NTRK1;LIMK1;OPRK1;PTPN11;CCK;			A;BDKRB1;AVPR2;PTH2R;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;ADRB3;ADORA2A;ADORA2B;CRH;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;OPRL1;GLRA1;GLRA2;GLRA3;CHRNA10;GABRE;GABRD;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;GABRA5;GABRA4;GABRA3;OPRK1;CCK;GRIN1			FNA1;FLT3;FLT4;HTR2C;HBB;HTR2A;SLC6A2;SLC6A3;SLC6A4;CA1;CA2;CASP3;CA4;CTLA4;SCN5A;JAK2;CCR5;IL10;VWF;MMP2;AVPR2;IL13;HTR3A;FOS;HBA1;OPRM1;F2;F3;MMP9;F7;IL1A;F8;F9;ADRB3;IFNG;IL1B;KIT;CRH;PPARG;PDE5A;SCN4A;PPARA;MET;TLR4;TLR2;CRP;SERPINC1;NR1I2;NOD2;PTGS2;CYP17A1;NRAS;NT5E;CCL5;ERBB2;CCL2;MAPK3;NTRK1;KCNJ11;IFNB1;NTRK3;AKR1C1;STAT3;PTPN11;CCK;GRIN1;VEGFA;CD4;CD40LG;KRAS;TEK

			MAPK11;PDE10A;KRAS;PDE7B;TEK;PDE7A						
AB CB1	Signaling by GPCR Homo sapiens R-HSA-372790	1.96E-49	CHRM2;CHRM3;CHRM1;CHRM4;CHRM5;HTR4;FGF1;FGF2;FGF4;RPS6KA3;HTR6;EDNRA;HTR7;ADORA3;ADORA1;AKT1;PDE8B;PDE8A;PDGFRB;PDGFRA;MAP2K1;AGTR1;RAF1;CALCA;CALCB;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADRB1;CSF2RB;ADRB2;CSF2RA;GRIN2A;MC2R;HRH1;HRH2;HRH4;DRD1;DRD2;DRD3;DRD4;DRD5;HTR1E;HTR1F;HTR1D;PDE2A;HTR1A;HTR1B;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;FGF19;PDE3A;CALM1;FGFR4;FGFR2;FGFR1;RET;CXCL8;PTGDR2;ITGB3;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PTH1R;HTR2A;PIK3CB;ADRA1B;ADRA1A;RAC2;PDE4B;BDKRB1;PDE4A;RAC1;JAK2;CCR5;JAK3;CCR4;JAK1;ANXA1;VWF;PDE4D;AVPR2;PDE4C;PTH2R;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;ADORA2A;PIK3CA;ADRB3;ADORA2B;IL3RA;KIT;CR	Calcium signaling pathway	1.78E-66	RET;RYR1;CHRM2;RYR2;CHRM3;CHRM1;FLT1;FLT4;CHRM5;HTR2B;HTR2C;ADRA1D;HTR2A;HTR4;FGF1;ADRA1B;FGF2;ADRA1A;SLC8A1;FGF4;EDNRA;HTR6;HTR7;KDR;BDKRB1;PDGFRB;PDGFRA;TNNC1;HGF;ADRB3;ADORA2A;ADORA2B;AGTR1;PPIF;MET;PDE1C;PDE1B;PTGER1;PDE1A;CHRNA7;PTGER3;CACNA1B;ITPR1;CACNA1A;ITPR2;ADCY2;ADRB1;CACNA1D;ITPR3;ADCY1;ADRB2;CACNA1C;CACNA1F;CACNA1E;CACNA1H;CACNA1G;CACNA1I;GRIN2A;HRH1;PPP3R2;HRH2;ERBB2;PTK2B;CACNA1S;DRD1;DRD5;NTRK1;NOS2;NTRK3;GRIN2C;GRIN2D;GRIN1;VEGFA;FGF19;CALM1;FGFR4;FGFR2;FGFR1	Immune system	3.07E-63	IL1RN;NCF1;SERPINE1;NR3C1;FGF2;TNF;MPO;ICAM1;CCND1;MYC;KDR;AKT1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;HGF;CYBB;HLA-A;AR;PLA2G10;AGTR1;RAF1;TP53;PPIA;ATF3;ABCB1;PRKDC;ADRB2;CSF2RA;DPP4;TPO;HRH2;HRH4;ABL1;APOE;ELANE;PRNP;JUN;ACE;TGFB1;VCAM1;HSPA5;VDR;NFKB1;IL2;IL4;NFKBIA;SELP;IL6;IL7;ALB;REN;ATM;CALR;CALM1;HLA-DRB1;FGFR1;FLT1;IFNA1;ITGB3;PIK3CD;HBB;IKBKB;CASP9;SMPD1;CASP3;RAC2;CASP1;PDE4A;JAK2;CCR5;JAK3;CCR4;JAK1;MBL2;IL10;ANXA1;CHUK;VWF;PARP1;DDX58;MMP2;IL13;FOS;HBA1;F2;F3;MMP9;IL1A;F8;F9;ADORA2A;IFNG;IL1B;CANX;KIT;CRH;PPARG;PPARA;TLR4;TLR3;HLA-DQB1;TLR2;CRP;PTGER4;LRP1;SERPINC1;PTGER1;NOD2;PTGS2;ATP2C1;P

			H;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;OPRL1;ADCY2;ADCY1;ADCY5;NRAS;PDE11A;MAPK7;CXCR1;CCL5;ERBB2;CCL3;CCL2;MAPK1;CD55;MAPK3;P2RY12;OPRK1;CCK;GRIN1;PDE10A;KRAS;PDE7B;TEK;PDE7A;PF4						TGS1;NRAS;NT5E;CXCR1;CCL5;CCL3;CCL2;MAPK1;PTK2B;PDE6B;CD55;MAPK3;NOS2;STAT1;IFNB1;STAT3;PLA2G2A;PTPN11;VEGFA;CD4;FCGR2A;CD40LG;FAS;TEK;PF4
ABL1	Transmission across Chemical Synapses Homo sapiens R-HSA-112315	6.58E-46	GABRB3;ACHE;GABRB2;GABRB1;SLC6A3;RPS6KA3;CHRNB2;CHRNB4;CHRNB3;CACNA2D1;CACNA2D3;CACNA2D2;GABRG3;GABRG2;CACNB1;CACNB2;CACNB3;CACNB4;RAF1;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9;CACNA1B;CACNA1A;ADCY2;ADCY1;CACNA1E;ADCY5;GRIN2A;CACNG8;MAPK1;CACNG2;CACNG3;GRIA3;CACNG4;GRIA4;KCNJ3;GABRA2;GABRQ;GABRA1;KCNJ5;KCNJ6;GABRA6;GABRA5;KCNJ9;GABRA4;GABRA3;BRAF;GRIN2C;GRIN2B;GRIN2D;GRIN1;CALM1	MAPK signaling pathway	1.33E-57	ATF2;FLT1;FLT3;FLT4;FGF1;FGF2;TNF;FGF4;IKBKB;RPS6KA3;MYC;CASP3;KDR;RAC2;AKT1;RAC1;PDGFRB;PDGFRA;MAP2K1;CHUK;CACNA2D1;HGF;CACNA2D3;CACNA2D2;CACNA2D4;FOS;CACNB1;IL1A;CACNB2;CACNB3;CACNB4;IL1B;KIT;RAF1;TP53;MET;ATF4;EPHA2;CACNA1B;CACNA1A;CACNA1D;CACNA1C;CACNA1F;CACNA1E;CACNA1H;CACNA1G;CACNG6;CACNA1I;CACNG7;NRAS;CACNG8;PPP3R2;MAPK7;ERBB2;MAPK1;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;MAPK3;NTRK1;JUN;TGFB1;BRAF;NFATC1;NFKB1;VEGFA;MAPK11;FGF19;FAS;KRAS;TEK;FGFR4;FGFR2;FGFR1	Ganglion	3.78E-45	RET;HTR2B;HTR2C;PIK3CD;HTR2A;HTR4;FGF1;NR3C1;SLC6A2;TNF;FGF2;SLC6A3;SLC6A4;HTR6;CA1;HTR7;CASP3;ADORA1;AKT1;HTR3A;FOS;OPRM1;AR;SCN10A;ADORA2A;IL1B;SCN8A;CRH;TP53;ATF3;GRIA1;GRIA2;CALCA;CHRNA4;CACNA1B;OPRL1;CACNA1D;PTGS2;GRIN2A;APOE;DRD1;DRD2;SCN3A;DRD3;DRD4;GRIA4;MAPK3;NTRK1;PRNP;JUN;KCNJ6;ACE;HTR1E;HTR1F;NTRK3;HTR1D;HTR1A;HTR1B;OPRK1;CCK;TRPV1;GRIN2C;GRIN2B;GRIN2D;VEGFA;GRIN1;IL6;ALB;CALM1

ACE	Amine ligand-binding receptors Homo sapiens R-HSA-375280	2.55E-45	CHRM2;CHRM3;CHRM1;CHRM4;CHRM5;HTR2B;HTR2C;ADRB1;ADRA1D;HTR2A;ADRB2;ADRA1B;HTR4;ADRA1A;HTR6;HRH1;HTR7;HRH2;HRH4;DRD1;DRD2;DRD3;DRD4;DRD5;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;ADRA2C;ADRA2B;ADRA2A;ADRB3	cAMP signaling pathway	7.35E-53	CHRM2;RYR2;CHRM1;PDE3B;PIK3CD;PIK3CB;HTR4;EDNRA;HTR6;RAC2;ADORA1;PDE4B;AKT1;PDE4A;RAC1;MAP2K1;PDE4D;PDE4C;FOS;ADORA2A;PIK3CA;PPARA;RAF1;GRIA1;GRIA2;NPR1;PTGER2;PTGER3;ADCY2;ADRB1;CACNA1D;ADCY1;ADRB2;CACNA1C;CACNA1F;ADCY5;GRIN2A;MC2R;MAPK1;CACNA1S;DRD1;DRD2;GRIA3;DRD5;GRIA4;MAPK3;JUN;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;BRAF;NFATC1;GRIN2C;GRIN2B;NFKB1;GRIN2D;GRIN1;NFKBIA;GRIN3B;GRIN3A;PDE10A;PDE3A;CALM1	HUVEC cell	1.48E-44	FLT1;SERPINE1;FGF1;TFPI;PTGS2;TNF;FGF2;ICAM1;CASP9;CDH5;CASP3;KDR;AKT1;CCL2;MAPK1;ITGAV;APOE;MAPK3;MAP2K1;JUN;TGFB1;VCAM1;ACE;VWF;PARP1;F10;HGF;MMP2;STAT3;HBA1;MMP9;F3;VEGFA;SELP;IL4;NFKBIA;PROCR;IL1A;IL6;IFNG;IL1B;ALB;PPARG;TEK;TP53;TLR4
ACE2	Neuronal System Homo sapiens R-HSA-112316	9.69E-42	GABRB3;ACHE;GABRB2;GABRB1;SLC6A3;RPS6KA3;CHRNB2;KCNH2;CHRNB4;CHRNB3;CACNA2D1;CACNA2D3;CACNA2D2;GABRG3;GABRG2;CACNB1;CACNB2;CACNB3;CACNB4;KCNMA1;KCNQ3;KCNQ5;RAF1;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9;CACNA1B;CACNA1A;ADCY	Oxytocin signaling pathway	7.81E-51	RYR1;RYR2;PRKAG1;PRKAG2;PRKAG3;CCND1;GUCY1A2;MAP2K1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;FOS;PRKAB1;CACNB1;CACNB2;CACNB3;CACNB4;RAF1;PRKAA1;PRKAA2;NPR1;NPR2;ITPR1;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;CACNA1F;PTGS2;ADCY5;CACNG6;CACNG7;CACNG8	Stromal cell	1.48E-38	FLT1;FLT3;FLT4;SERPINE1;TNF;FGF2;ICAM1;CCND1;MYC;CASP3;KDR;AKT1;TNFSF11;CCR5;PDGFRB;IL10;VWF;HGF;MMP2;HBA1;MMP9;AR;IL1A;IFNG;IL1B;KIT;S100A4;PGR;PPARG;TP53;MET;PTGER4;PTGS2;DPP4;NT5E;CCL5;CCL3;CCL2;MAPK3;JUN;TGFB1;VCAM1;STAT3;IL2;VEGFA;IL4;IL6;CD4;IL7;FGFR2

			2;ADCY1;CACNA1E;ADCY5;GRIN2A;CACNG8;MAPK1;CACNG2;CACNG3;GRIA3;CACNG4;GRIA4;KCNJ3;GABRA2;GABRQ;GABRA1;KCNJ5;KCNJ6;GABRA6;KCNJ11;GABRA5;KCNJ9;GABRA4;GABRA3;BRAF;GRIN2C;GRIN2B;GRIN2D;GRIN1;CALM1			;NRAS;PPP3R2;MAPK7;MAPK1;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;KCNJ3;MAPK3;KCNJ5;JUN;KCNJ6;KCNJ9;NFATC1;KRAS;CALM1			
ACHE	Phase 0 - rapid depolarisation Homo sapiens R-HSA-5576892	1.25E-40	CACNA1D;CACNA1C;CACNA1F;CACNG6;CACNG7;CACNG8;SCN11A;SCN9A;SCN7A;CACNA1S;SCN5A;CACNG1;CACNG2;SCN3A;CACNG3;CACNG4;SCN1A;CACNG5;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;CACNB1;CACNB2;CACNB3;SCN10A;CACNB4;SCN8A;SCN4A;SCN2A;CALM1	Nicotine addiction	2.65E-47	GABRB3;GRIA1;GABRB2;GRIA2;GABRB1;CHRNA4;CHRNA7;CHRNA6;CACNA1B;CACNA1A;GRIN2A;GABRE;GABRD;GRIA3;GRIA4;CHRNB2;GABRA2;GABRQ;GABRA1;GABRP;GABRA6;GABRA5;GABRA4;GABRA3;GRIN2C;GABRG3;GRIN2B;GABRG2;GABRG1;GRIN1;GRIN2D;GRIN3B;GRIN3A	Artery	1.36E-35	NCF1;SERPINE1;HTR2B;HBB;HTR2A;MPO;ADRA1A;SLC8A1;NR3C2;EDNRA;CASP3;ADORA1;AKT1;PDE4A;IL10;PARP1;MMP2;CYBB;CYBA;HTR3A;FOS;F2;MMP9;ACE2;F7;F9;IL1B;KCNMA1;AGTR1;PPARG;PDE5A;PTGER4;CRP;CALCA;SERPINC1;NPR1;NPR2;PTGER3;ADRB1;ADRB2;CACNA1C;PTGS1;PGRMC1;CCL2;APOE;MAPK3;P2RY12;JUN;ACE;TGFB1;HSPA5;NOS2;HTR1D;HTR1A;HTR1B;TRPV1;IL6;CYP11B2;ALB;REN;CALM1
ACY1	Neurotransmitter Receptor Binding And Downstream Transmis	1.62E-40	GRIA1;GABRB3;GRIA2;GABRB2;CHRNA3;GABRB1;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9;ADCY2;ADCY1;ADCY5;RPS6KA3;GRIN2A;C	Morphine addiction	8.31E-47	GABRB3;GABRB2;GABRB1;PDE1C;PDE1B;PDE1A;PDE3B;CACNA1B;CACNA1A;ADCY2;ADCY1;ADCY5;PDE11A;ADORA1;PDE4B;PDE4A;DRD1;PDE8B;	U-937 cell	2.13E-35	IFNA1;TNF;ICAM1;CASP9;MYC;CASP3;CASP1;AKT1;CCL2;MAPK1;ELANE;MAPK3;IL10;MAP2K1;JUN;TGFB1;VCAM1;PARP1;STAT1;IFNB1;FOS;MMP9;

	sion In The Postsynaptic Cell Homo sapiens R-HSA-112314		ACNG8;MAPK1;CACNG2;CACNG3;GRIA3;CACNG4;GRIA4;KCNJ3;CHRNB2;GABRQ;GABRA2;KCNJ5;GABRA1;CHRNB4;KCNJ6;CHRNB3;GABRA6;KCNJ9;GABRA5;GABRA4;GABRA3;BRAF;GRIN2C;GABRG3;GRIN2B;GABRG2;GRIN2D;GRIN1;RAF1;CALM1			GABRE;PDE8A;GABRD;KCNJ3;GABRA2;GABRQ;GABRA1;GABRP;KCNJ5;KCNJ6;GABRA6;GABRA5;KCNJ9;PDE4D;GABRA4;PDE4C;GABRA3;PDE2A;OPRM1;GABRG3;GABRG2;GABRG1;PDE10A;PDE3A;PDE7B;PDE7A			F3;IL2;IL4;NFKBIA;IL1A;IL6;CD4;FCGR2A;IFNG;IL1B;TLR4;TP53
ADCY1	Class A/1 (Rhodopsin-like receptors) Homo sapiens R-HSA-373076	1.06E-38	CHRM2;CHRM3;CHRM1;CXCL8;PTGDR2;CHRM4;CHRM5;HTR2B;HTR2C;ADRA1D;HTR2A;HTR4;ADRA1B;ADRA1A;HTR6;EDNRA;HTR7;ADORA3;ADORA1;BDKRB1;CCR5;CCR4;ANXA1;AVPR2;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;ADRB3;ADORA2A;ADORA2B;AGTR1;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;OPRL1;ADRB1;ADRB2;MC2R;HRH1;CXCR1;HRH2;CCL5;HRH4;CCL3;CCL2;DRD1;DRD2;DRD3;DRD4;DRD5;P2RY12;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;OPRK1;CCK;PF4	Pathways in cancer	3.51E-45	RET;CXCL8;IFNA1;FLT3;FLT4;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CKS1B;IKBKB;CASP9;EDNRA;CCND1;MYC;CASP3;RAC2;AKT1;BDKRB1;ITGAV;RAC1;JAK2;JAK3;JAK1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;CHUK;HGF;MMP2;IL13;FOS;F2;MMP9;AR;PIK3CA;IFNG;IL3RA;KIT;AGTR1;PPARG;RAF1;MET;TP53;PPARD;IFNAR1;PTGER4;PTGER1;PTGER2;PTGER3;ADCY2;CSF2RB;ADCY1;PTGS2;CSF2RA;ADCY5;NRAS;RXRA;ERBB2;ABL1;MAPK1;MAPK3;NTRK1;JUN;TGFB1;NOS2;STAT1;STAT3;BRAF;NFKB1;IL2;VEGFA;IL4;NFKBIA;IL6;IL7;FGF19;FAS;KRAS;CALM1;FGFR4;FGFR	Vasculature	1.39E-34	CRP;FLT1;FLT4;SERPINE1;PTGS2;TNF;FGF2;ICAM1;CDH5;EDNRA;HTR7;CA4;KDR;AKT1;CCL2;APOE;MAPK3;PDGFRB;TGFB1;VCAM1;ACE;VWF;MMP2;CYBB;CYBA;HBA1;MMP9;F3;VEGFA;SELP;IL6;IL1B;ALB;AGTR1;REN;PPARG;PDE5A;TEK;TP53;EPHA2

						2;FGFR1			
ADCY2	GPCR ligand binding Homo sapiens R-HSA-500792	1.51E-35	CHRM2;CHRM3;CHRM1;CXCL8;PTGDR2;CHRM4;CHRM5;HTR2B;HTR2C;ADRA1D;PTH1R;HTR2A;HTR4;ADRA1B;ADRA1A;HTR6;EDNRA;HTR7;ADORA3;ADORA1;BDKRB1;CCR5;CCR4;ANXA1;AVPR2;PTH2R;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;ADORA2A;ADRB3;ADORA2B;AGTR1;CRH;OPRD1;PTGER4;CALCA;CALCB;PTGER1;PTGER2;PTGER3;OPRL1;ADRB1;ADRB2;MC2R;HRH1;CXCR1;HRH2;CCL5;HRH4;CCL3;CCL2;DRD1;DRD2;DRD3;DRD4;CD55;DRD5;P2RY12;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;OPRK1;CCK;PF4	Human cytomegalovirus infection	6.43E-43	ATF2;CXCL8;IFNA1;ITGB3;PIK3CD;PIK3CB;TNF;IKBKB;CASP9;CCND1;MYC;CASP3;RAC2;AKT1;ITGAV;RAC1;CCR5;JAK1;PDGFRA;MAP2K1;CHUK;HLA-A;PIK3CA;IL1B;RAF1;TP53;ATF4;PTGER4;PTGER1;PTGER2;PTGER3;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;PTGS2;ADCY5;NRAS;PPP3R2;CCL5;CCL3;CCL2;MAPK1;PTK2B;MAPK3;IFNB1;STAT3;NFATC1;NFKB1;VEGFA;NFKBIA;MAPK11;IL6;FAS;KRAS;CALR;CALM1	Vascular cell	1.48E-31	CRP;FLT1;SERPINE1;PTGS2;TNF;FGF2;ICAM1;CDH5;KDR;AKT1;CCL2;APOE;TGFB1;VCAM1;VWF;CYBB;HBA1;MMP9;F3;VEGFA;SELP;IL6;IL1B;PPARG;REN;TEK
ADCY5	GPCR downstream signaling Homo sapiens R-HSA-388396	1.77E-35	CHRM2;CHRM3;CHRM1;CHRM4;CHRM5;HTR4;HTR6;EDNRA;HTR7;ADORA3;ADORA1;AKT1;PDE8B;PDE8A;AGTR1;CALCA;CALCB;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADRB1;CSF2RB;ADRB2;CSF2RA;MC2R;HRH1;HRH2;HRH4;DRD1;DRD2;DRD3;DRD4;DRD5;HTR1E;HTR1F;HTR1D;PDE	Serotonergic synapse	1.28E-41	GABRB3;GABRB2;GABRB1;CACNA1B;ITPR1;HTR2B;CACNA1A;ITPR2;HTR2C;CACNA1D;ITPR3;CACNA1C;HTR2A;HTR4;CACNA1F;PTGS2;SLC6A4;ADCY5;PTGS1;HTR6;NRAS;HTR7;CASP3;MAPK1;CACNA1S;KCNJ3;MAPK3;KCNJ5;MAP2K1;KCNJ6;HTR1E;HTR1F;KCNJ9;HTR3E;HTR1D;H	Synovial tissue	3.61E-30	CRP;IL1RN;PTGS2;TNF;FGF2;ICAM1;CASP3;CCL5;CCL3;AKT1;TNFSF11;CCL2;CD55;IL10;JUN;TGFB1;VCAM1;MMP2;STAT3;MMP9;IL2;VEGFA;IL4;NFKBIA;IL1A;CD4;IL6;CD40LG;IFNG;IL1B;TLR4;TLR2

			2A;HTR1A;HTR1B;IL2;PDE3A;CXCL8;PTGDR2;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PTH1R;HTR2A;PIK3CB;ADRA1B;ADRA1A;RAC2;PDE4B;BDKRB1;PDE4A;RAC1;JAK2;CCR5;JAK3;CCR4;JAK1;ANXA1;PDE4D;AVPR2;PDE4C;PTH2R;OPRM1;F2;ADRA2C;ADRA2B;ADRA2A;ADORA2A;PIK3CA;ADRB3;ADORA2B;IL3RA;CRH;OPRD1;PTGER4;PTGER1;PTGER2;PTGER3;OPRL1;ADCY2;ADCY1;ADCY5;PDE11A;CXCR1;CCL5;P2RY12;OPRK1;CCK;PDE10A;PDE7B;PDE7A;PF4			TR1A;HTR3C;HTR1B;HTR3D;BRAF;HTR3A;HTR3B;KRAS;RAF1			
ADORA1	Axon guidance Homo sapiens R-HSA-422475	3.39E-34	RET;ITGB3;FGF1;FGF2;FGF4;RPS6KA3;SCN11A;SCN9A;KDR;RAC2;ITGAV;RAC1;SCN5A;JAK2;JAK3;JAK1;SCN1A;PDGFRB;PDGFRA;MAP2K1;VWF;MMP2;MMP9;CACNB1;CACNB2;SCN10A;CACNB3;CACNB4;SCN8A;IL3RA;KIT;KCNQ3;SCN4A;RAF1;MET;EPHA2;SDC2;CACNA1D;CSF2RB;CACNA1C;CSF2RA;CACNA1H;CACNA1G;CACNA1I;GRIN2A;NRAS;ERBB2;	Lipid and atherosclerosis	5.36E-37	CXCL8;IFNA1;NCF1;NCF4;PIK3CD;PIK3CB;TNF;ICAM1;IKBKB;CASP9;CASP3;CASP1;AKT1;RAC1;JAK2;CHUK;CYBB;CYBA;FOS;MMP9;PIK3CA;IL1B;PPARG;ATF6;TP53;TLR4;ATF4;TLR2;ITPR1;NRAS;PPP3R2;RXRA;CCL5;CCL3;CCL2;MAPK1;MAPK3;JUN;VCAM1;HSPA5;IFNB1;STAT3;NFATC1;NFKB1;NFKBIA;SELP;MAPK11;IL6;CD40LG;FAS;KRAS;CALM1	Mast cell	5.86E-30	PTGDR2;PTGS2;MPO;TNF;FGF2;ICAM1;HRH1;HTR7;HRH2;ADORA3;CCL5;HRH4;CASP1;CCL3;AKT1;CCL2;ELANE;IL10;PDGFRA;TGFB1;VCAM1;ACE;IL13;PTPN11;TRPV1;MMP9;IL2;VEGFA;SELP;IL4;IL6;CD4;CD40LG;IFNG;IL1B;ALB;KIT;CRH;TLR4;TLR2

			ABL1;MAPK1;SCN7A;CACNA1S;SCN3A;MAPK3;PRNP;LIMK1;BRAF;PTPN11;GRIN2C;L1CAM;GRIN2B;IL2;GRIN2D;GRIN1;VEGFA;FGF19;KRAS;TEK;CALM1;SCN2A;FGFR4;FGFR2;FGFR1						
ADORA2A	Hemostasis Homo sapiens R-HSA-109582	6.56E-34	ORM1;IFNA1;PROS1;ITGB3;SERPINE1;PDE3B;PIK3CD;HBB;PIK3CB;SLC7A11;ORM2;SLC8A1;RAC2;AKT1;ITGAV;RAC1;JAK2;JAK3;JAK1;GUCY1A2;VWF;HGF;F2;ADRA2C;F3;ADRA2B;ADRA2A;F7;PROCR;F8;F9;PIK3CA;KCNMA1;IL3RA;PDE5A;RAF1;TP53;PPIA;PDE9A;SERPINC1;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;CSF2RB;TFPI;CSF2RA;NRAS;PDE11A;ABL1;MAPK1;MAPK3;P2RY12;TGFB1;F10;HSPA5;NOS2;IFNB1;F11;PDE2A;PTPN11;L1CAM;IL2;VEGFA;SELP;PROC;PDE10A;ALB;PDE3A;KRAS;TEK;CALM1;PF4	PI3K-Akt signaling pathway	3.23E-36	CHRM2;ATF2;CHRM1;FLT1;IFNA1;FLT3;FLT4;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;IKBKB;CASP9;CCND1;MYC;KDR;AKT1;ITGAV;RAC1;JAK2;JAK3;JAK1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;CHUK;VWF;HGF;PIK3CA;KIT;IL3RA;RAF1;TP53;TLR4;MET;ATF4;EPHA2;TLR2;IFNAR1;PRKAA1;PRKAA2;NRAS;RXRA;ERBB2;MAPK1;MAPK3;NTRK1;IFNB1;IL2;NFKB1;VEGFA;IL4;IL6;IL7;FGF19;KRAS;TEK;FGFR4;FGFR2;FGFR1	Blood vessel endothelium	5.97E-29	CRP;ABCB1;NCF1;SERPINC1;SERPINE1;MPO;AQP1;PTGS1;EDNRA;HTR7;CASP3;AKT1;CCL2;APOE;MAPK3;IL10;JUN;ACE;HSPA5;PARP1;NOS2;MMP2;CYBB;CYBA;FOS;F2;MMP9;F7;IL6;IL1B;ALB;AGTR1;REN;PPARG;CALM1;EPHA2
ADORA2B	Cardiac conduction Homo sapiens R-HSA-5576891	1.01E-3	RYR1;RYR2;NPR1;NPR2;ITPR1;ITPR2;CACNA1D;ITPR3;CACNA1C;CACNA1F;SLC8A1;CACNG6;CACNG7;CACNG8;SCN11A;SCN9A;SC	Cholinergic synapse	5.95E-3	CHRM2;CHRM3;ACHE;CHRNA3;CHRM1;CHRNA4;CHRM4;CHRNA7;CHRM5;CHRNA6;CACNA1B;ITPR1;CACNA1A;ITPR2;PIK3CD;	Bronchoalveolar	1.11E-2	CRP;SERPINC1;SERPINE1;PTGS2;MPO;TNF;ICAM1;CCL5;CCL3;PDE4A;CCL2;ELANE;IL10;TGFB1;VCAM1;ACE;NOS2;MMP2;IL13;MM

		3	N7A;CACNA1S;SCN5A;CACNG1;CACNG2;SCN3A;CACNG3;CACNG4;SCN1A;CACNG5;KCNH2;KCNJ11;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;CACNB1;CACNB2;SCN10A;CACNB3;CACNB4;SCN8A;SCN4A;CALM1;SCN2A		6	CACNA1D;ITPR3;ADCY2;CACNA1C;PIK3CB;ADCY1;CACNA1F;ADCY5;NRAS;AKT1;MAPK1;CACNA1S;JAK2;KCNJ3;MAPK3;CHRNB2;CHRNB4;MAP2K1;KCNJ6;FOS;PIK3CA;KCNQ3;KCNQ5;KRAS;ATF4	lavage	8	P9;F3;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;ALB;TLR4;TLR2
ADORA3	Developmental Biology Homo sapiens R-HSA-1266738	1.05E-32	RET;ITGB3;FGF1;FGF2;TNF;FGF4;RPS6KA3;SCN11A;SCN9A;KDR;RAC2;AKT1;ITGAV;RAC1;SCN5A;JAK2;JAK3;JAK1;SCN1A;PDGFRB;PDGFRA;MAP2K1;VWF;MMP2;MMP9;CACNB1;CACNB2;SCN10A;CACNB3;CACNB4;SCN8A;IL3RA;KIT;KCNQ3;PPARG;SCN4A;PPARA;RAF1;MET;EPHA2;SDC2;CACNA1D;CSF2RB;CACNA1C;CSF2RA;CACNA1H;CACNA1G;CACNA1I;GRIN2A;NRAS;CACNG8;RXRA;ERBB2;ABL1;MAPK1;SCN7A;CACNA1S;CACNG2;CACNG3;SCN3A;CACNG4;MAPK3;PRNP;JUN;TGFB1;STAT3;LIMK1;BRAF;PTPN11;GRIN2C;L1CAM;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;VEGFA;M	Hepatitis B	5.25E-35	ATF2;CXCL8;PCNA;IFNA1;PIK3CD;PIK3CB;TNF;CASP9;IKBKB;NRAS;MYC;CASP3;AKT1;MAPK1;PTK2B;JAK2;JAK3;JAK1;MAPK3;MAP2K1;JUN;TGFB1;CHUK;DDX58;IFNB1;STAT1;STAT3;BRAF;NFATC1;FOS;MMP9;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;FAS;KRAS;RAF1;TP53;TLR4;TLR3;ATF4;IFNAR1;TLR2	Neointima	5.58E-27	SERPINE1;TFPI;TNF;FGF2;ICAM1;CCND1;KDR;AKT1;CCL2;APOE;MAPK3;PDGFRB;TGFB1;ACE;VCAM1;VWF;MMP2;HBA1;MMP9;F3;VEGFA;SELP;IL1B;AGTR1;PPARG;REN

			APK11;FGF19;KRAS;TEK;CALM1;SCN2A;FGFR4;FGFR2;FGFR1						
ADRA1A	Innate Immune System Homo sapiens R-HSA-168249	4.20E-31	ATF1;RET;ATF2;IFNA1;PROS1;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;IKBKB;CASP9;RPS6KA3;CASP1;AKT1;RAC1;JAK2;JAK3;JAK1;MBL2;PDGFRB;PDGFRA;MAP2K1;CHUK;VWF;DDX58;FOS;PIK3CA;IL1B;IL3RA;KIT;TLR9;TLR8;TLR7;RAF1;TLR4;TLR3;TLR2;CRP;PDE1C;PRKDC;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;ITPR3;CSF2RB;ADCY1;NOD2;CSF2RA;ADCY5;GRIN2A;NRAS;MAPK7;ERBB2;ABL1;MAPK1;CD55;MAPK3;JUN;IFNB1;LIMK1;BRAF;NFATC1;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;NFKBIA;MAPK11;CD4;FCGR2A;CD209;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	Kaposi sarcoma-associated herpesvirus infection	8.15E-35	CXCL8;IFNA1;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;PTGS2;FGF2;ICAM1;IKBKB;CASP9;NRAS;PPP3R2;CCND1;MYC;CASP3;AKT1;MAPK1;RAC1;CCR5;JAK2;CCR4;JAK1;MAPK3;IFNAR2;JUN;MAP2K1;CHUK;IFNB1;STAT1;STAT3;NFATC1;HLA-A;FOS;NFKB1;VEGFA;NFKBIA;MAPK11;IL6;PIK3CA;FAS;KRAS;CALM1;RAF1;TP53;TLR3;IFNAR1	Atherosclerotic plaque	5.18E-26	CRP;SERPINE1;TFPI;TNF;ICAM1;CCL5;AKT1;CCL2;APOE;IL10;TGFB1;ACE;VCAM1;VWF;MMP2;HBA1;MMP9;F3;VEGFA;SELP;IL6;IL1B;ALB;AGTR1;PPARG;REN;TLR4
ADRA1B	NGF signalling via TRKA from the plasma membrane Homo sapiens	4.96E-30	ATF1;RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;RPS6KA3;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;ADORA2A;KI	Hypertrophic cardiomy	1.01E-34	RYR2;PRKAA1;PRKAA2;ITGB3;PRKAG1;PRKAG2;CACNA1D;CACNA1C;CACNA1F;TNF;PRKAG3;SLC8A1;CACNG6;CACNG7;CACNG8;ITGAV;CACNA1S;C	Breast cancer cell	4.60E-25	ABCB1;FLT1;PRKDC;SERPINE1;PTGS2;TYMS;TNF;FGF2;CASP9;CCND1;MYC;CASP3;ERBB2;KDR;AKT1;MAPK1;JAK2;MAPK3;JUN;MAP2K1;TGFB1;PARP

	R-HSA-187037		T;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;MAPK7;ERBB2;MAPK1;MAPK3;NTRK1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;MAPK11;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	opathy		ACNG1;CACNG2;CACNG3;CACNG4;CACNG5;PRKAB2;ACE;TGFB1;CACNA2D1;TNNC1;CACNA2D3;CACNA2D2;CACNA2D4;PRKAB1;CACNB1;CACNB2;CACNB3;IL6;CACNB4	line		1;HSPA5;VDR;MMP2;STAT3;FOS;F2;MMP9;VEGFA;NFKBIA;AR;IL6;PIK3CA;ALB;ATM;PPARG;S100A4;PGR;RAF1;TP53;MET
ADRA1D	Signalling by NGF Homo sapiens R-HSA-166520	5.70E-30	ATF1;RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;IKBKB;CASP9;RPS6KA3;CASP3;AKT1;RAC1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;ADORA2A;IL3RA;KIT;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;ITPR3;CSF2RB;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;MAPK7;ERBB2;MAPK1;MAPK3;NTRK1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;NFKBIA;MAPK11;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	cGMP-PKG signaling pathway	3.73E-33	OPRD1;ATF2;NPR1;NPR2;PDE3B;ITPR1;ITPR2;ADRB1;CACNA1D;ITPR3;ADRA1D;ADCY2;ADRB2;CACNA1C;ADCY1;CACNA1F;ADRA1B;ADRA1A;SLC8A1;ADCY5;EDNRA;PPP3R2;ADORA3;ADORA1;AKT1;MAPK1;CACNA1S;MAPK3;GUCY1A2;MAP2K1;PDE2A;NFATC1;ADRA2C;ADRA2B;ADRA2A;ADRB3;KCNMA1;AGTR1;PPIF;PDE3A;PDE5A;RAF1;CALM1;ATF4	Spike	9.73E-22	ITPR1;CACNA1A;CACNA1D;HTR4;CACNA1H;CACNA1G;DPP4;CACNA1I;CA1;GRIN2A;HTR7;ADORA1;PDE6B;SCN1A;HTR1A;HTR3A;CCK;GRIN2B;GABRG2;ACE2;SCN10A;CD4;CD40LG;SCN8A;KCNQ3;CALM1
ADRA	Immune System Homo sapiens	1.66	ATF1;ATF2;IL1RN;NCF1;PROS1;NCF4;FGF1;FGF2;TNF;FGF4;ICAM1;RPS6K	Chemical car	2.42	ATF2;PIK3CD;PIK3CB;FGF2;FGF4;RPS6KA3;CCND1;MYC;AKT1;TNFSF11;JAK	Mesench	1.45	TNFAIP6;TNF;FGF2;FGF4;ICAM1;CDH5;CCND1;MYC;CASP3;KDR;AKT1;TNFS

2A	R-HSA-168256	E-29	A3;AKT1;TNFSF11;IFNAR2;PDGFRB;PDGFRA;MAP2K1;HGF;CYBB;CYBA;HLA-A;RAF1;IFNAR1;PDE1C;PRKDC;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;CSF2RB;CSF2RA;GRIN2A;ABL1;JUN;VCAM1;HSPA5;BRAF;NFATC1;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;NFKBIA;IL6;CD209;IL7;FGF19;CALR;CALM1;FGFR4;HLA-DRB1;FGFR2;FGFR1;RET;IFNA1;FLT3;ITGB3;PIK3CD;PIK3CB;IKBKB;CASP9;CASP3;CASP1;CTLA4;ITGAV;RAC1;JAK2;JAK3;JAK1;MBL2;CHUK;VWF;DDX58;IL13;FOS;IL1A;PIK3CA;IFNG;IL1B;IL3RA;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;HLA-DQB1;TLR2;CRP;ADCY2;ADCY1;NOD2;ADCY5;NRAS;MAPK7;ERBB2;MAPK1;PTK2B;CD55;MAPK3;NOS2;STAT1;IFNB1;STAT3;LIMK1;PTPN11;GRIN1;MAPK11;CD4;FCGR2A;CD40LG;KRAS;TEK	cinogenesis	E-32	2;CHRNB2;CHRNB4;MAP2K1;FOS;AR;ADRB3;PIK3CA;PGR;PPARA;RAF1;ATF4;CHRNA3;CHRNA4;NR1I3;CHRNA7;CACNA1B;CHRNA9;CACNA1A;ADCY2;ADRB1;CACNA1D;ADCY1;ADRB2;CACNA1C;PTGS2;CACNA1F;ADCY5;NRAS;RXRA;MAPK1;CACNA1S;MAPK3;JUN;VDR;PTGES3;STAT3;NFKB1;VEGFA;KRAS	ymal stem cell	E-21	F11;CCL2;MAPK3;PDGFRB;IL10;TGFB1;VCAM1;VWF;HGF;MMP2;STAT3;HBA1;MMP9;VEGFA;IL6;CD4;IL1B;ALB;KIT;PPARG;TP53;TLR4
ADR	Signaling by VEGF Homo	2.4	RET;FLT1;NCF1;FLT4;ITGB3;NCF4;PIK3CB;FGF1;FGF2;FG	Adrenerg	1.1	ATF2;RYR2;ADRB1;CACNA1D;ADRA1D;ADCY2;ADRB2;C	Tendon	6.2	CRP;IL1RN;PTGS2;TNF;FGF2;ICAM1;CASP3;CCL5;AKT1;

A2B	sapiens R-HSA-194138	8E-29	F4;CDH5;KDR;AKT1;ITGAV;RAC1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CYBB;CYBA;PIK3CA;KIT;IL3RA;RAF1;ITPR1;ITPR2;CSF2RB;ITPR3;CSF2RA;GRIN2A;NRAS;ERBB2;PTK2B;MAPK1;MAPK3;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;VEGFA;GRIN1;MAPK11;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	ic signaling in cardiomyocytes	6E-31	ACNA1C;ADCY1;CACNA1F;ADRA1B;ADRA1A;SLC8A1;ADCY5;CACNG6;CACNG7;CACNG8;AKT1;MAPK1;SCN7A;CACNA1S;SCN5A;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;MAPK3;CACNA2D1;TNNC1;CACNA2D3;CACNA2D2;CACNA2D4;CACNB1;CACNB2;MAPK11;CACNB3;CACNB4;AGTR1;CALM1;ATF4		3E-21	TNFSF11;CCL2;IL10;TGFB1;VCAM1;MMP2;HBA1;MMP9;IL2;VEGFA;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL1B;ALB;SIK1
ADRA2C	G alpha (s) signalling events Homo sapiens R-HSA-418555	4.88E-29	PTGER4;CALCA;CALCB;PDE1B;PDE1A;PTGER2;PDE3B;ADRB1;ADCY2;ADRB2;PTH1R;ADCY1;HTR4;ADCY5;HTR6;MC2R;PDE11A;HTR7;HRH2;PDE4B;PDE4A;DRD1;PDE8B;PDE8A;DRD5;PDE4D;PDE2A;AVPR2;PDE4C;PTH2R;PDE10A;ADORA2A;ADRB3;ADORA2B;PDE3A;CRH;PDE7B;PDE7A	Retrograde endocannabinoid signaling	1.06E-30	GRIA1;GABRB3;GRIA2;GABRB2;GABRB1;CACNA1B;ITPR1;CACNA1A;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;CACNA1F;PTGS2;ADCY5;MAPK1;CACNA1S;GABRE;GABRD;GRIA3;GRIA4;KCNJ3;MAPK3;GABRA2;GABRQ;GABRA1;GABRP;KCNJ5;KCNJ6;GABRA6;GABRA5;KCNJ9;GABRA4;GABRA3;GABRG3;GABRG2;GABRG1;MAPK11	Synovia	3.81E-20	IL10;CRP;TGFB1;TNFAIP6;MMP2;PLA2G2A;TNF;MMP9;IL4;IL1A;CD4;IL6;CD40LG;IFNG;IL1B;CCL5;KIT;PLA2G10;ALB;TNFSF11;CCL2;ELANE
ADRB1	Muscle contraction Homo sapiens R-HSA-397014	7.80E-29	RYR1;RYR2;NPR1;NPR2;ITPR1;ITPR2;CACNA1D;ITPR3;CACNA1C;CACNA1F;SLC8A1;CACNG6;CACNG7;CACNG8;SCN11A;SCN9A;SCN7A;CACNA1S;SCN5A;CACNG1;CAC	Chagas disease	1.10E-29	CXCL8;SERPINE1;PIK3CD;PIK3CB;ADCY1;TNF;IKBKB;CCL5;CCL3;AKT1;CCL2;MAPK1;MAPK3;IL10;JUN;ACE;TGFB1;CHUK;NOS2;IFNB1;FOS;IL2;NFKB1;NFKBIA;MAPK11;IL6	Prostate gland cancer cel	1.25E-19	TMPRSS2;PTGS2;TNF;FGF2;CASP9;CCND1;MYC;CASP3;ERBB2;AKT1;MAPK3;ST14;JUN;TGFB1;HSPA5;PARP1;VDR;HGF;MMP2;STAT3;AKR1C3;MMP9;VEGFA;NFKBIA;AR

			NG2;SCN3A;CACNG3;CACNG4;SCN1A;CACNG5;KCNH2;ANXA1;KCNJ11;CACNA2D1;TNNC1;CACNA2D3;CACNA2D2;CACNA2D4;CACNB1;CACNB2;SCN10A;CACNB3;CACNB4;SCN8A;SCN4A;CALM1;SCN2A			;IFNG;PIK3CA;IL1B;TLR9;FAS;CALR;TLR4;TLR2	l		;IL6;TP53;EPHA2
ADRB2	Cytokine Signaling in Immune system Homo sapiens R-HSA-1280215	3.53E-28	RET;IL1RN;IFNA1;FLT3;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;TNF;FGF4;ICAM1;IKBKB;CASP3;CASP1;TNFSF11;JAK2;JAK3;JAK1;IFNAR2;PDGFRB;PDGFRA;MAP2K1;CHUK;VWF;DDX58;HGF;IL13;HLA-A;IL1A;PIK3CA;IFNG;IL1B;IL3RA;KIT;RAF1;HLA-DQB1;IFNAR1;CSF2RB;NOD2;CSF2RA;GRIN2A;NRAS;ERBB2;MAPK1;PTK2B;MAPK3;VCAM1;STAT1;IFNB1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;IL6;CD4;CD40LG;IL7;FGF19;KRAS;TEK;CALM1;FGFR4;HLA-DRB1;FGFR2;FGFR1	Influenza A	4.56E-29	PRSS1;CXCL8;IFNA1;PIK3CD;TMPRSS2;PIK3CB;TNF;ICAM1;CASP9;IKBKB;CASP3;CCL5;CASP1;AKT1;CCL2;MAPK1;JAK2;JAK1;MAPK3;IFNAR2;FDPS;MAP2K1;CHUK;DDX58;IFNB1;STAT1;NFKB1;NFKBIA;IL1A;IL6;IFNG;PIK3CA;IL1B;FAS;TLR7;RAF1;TLR4;HLA-DRB1;TLR3;IFNAR1;HLA-DQB1	Marrow	5.94E-19	CALCA;IFNA1;FLT3;ITGB3;HBB;TNF;FGF2;ABL1;CCL3;TNFSF11;JAK2;TGFB1;HLA-A;IL2;VEGFA;IL1A;IL6;CD4;CD40LG;IL7;IL1B;ALB;KIT;PPARG;HLA-DRB1
ADRB	Signaling by Interleukins Homo	5.02	RET;IL1RN;FLT3;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;IKBKB;CASP3;CAS	Renin secreti	6.04	PTGER4;PDE1C;NPR1;PDE1B;PDE1A;PTGER2;PDE3B;ITPR1;ITPR2;ADRB1;C	Fiber	6.97	RYR1;CRP;CALCA;CHRNA4;TNF;FGF2;SLC6A3;SLC6A4;HTR7;CA3;SCN11A;C

3	sapiens R-HSA-449147	E-28	P1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;HGF;IL13;IL1A;PIK3CA;IL1B;IL3RA;KIT;RAF1;CSF2RB;NOD2;CSF2RA;GRIN2A;NRAS;ERBB2;PTK2B;MAPK1;MAPK3;STAT1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;IL6;CD4;IL7;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	on	E-29	ACNA1D;ITPR3;ADRB2;CACNA1C;CACNA1F;AQP1;ADCY5;EDNRA;PPP3R2;ADORA1;CACNA1S;GUCY1A2;ACE;ADRB3;KCNMA1;AGTR1;PDE3A;REN;CALM1		E-19	ASP3;SCN9A;CA4;ERBB2;AKT1;APOE;CACNA1S;NTRK1;TGFB1;MMP2;NTRK3;PTH2R;HTR3A;CCK;FOS;TRPV1;F2;MMP9;VEGFA;SCN10A;IL6;IL1B;ALB;CRH;PPARG;CALM1;TP53
AGTR1	VEGFA-VEGFR2 Pathway Homo sapiens R-HSA-4420097	5.47E-28	RET;NCF1;ITGB3;NCF4;PIK3CB;FGF1;FGF2;FGF4;CDH5;KDR;AKT1;ITGAV;RAC1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CYBB;CYBA;PIK3CA;KIT;IL3RA;RAF1;ITPR1;ITPR2;CSF2RB;ITPR3;CSF2RA;GRIN2A;NRAS;ERBB2;PTK2B;MAPK1;MAPK3;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;VEGFA;GRIN1;MAPK11;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	AGE-RAGE signaling pathway in diabetic complications	1.11E-28	CXCL8;SERPINE1;PIK3CD;PIK3CB;TNF;ICAM1;NRAS;CCND1;CASP3;AKT1;CCL2;MAPK1;RAC1;JAK2;MAPK3;JUN;TGFB1;VCAM1;STAT1;MMP2;STAT3;CYBB;NFATC1;F3;NFKB1;VEGFA;IL1A;MAPK11;IL6;PIK3CA;IL1B;AGTR1;KRAS	Blood clot	8.41E-19	CRP;P2RY12;VWF;F10;SERPINC1;ITGB3;SERPINE1;F11;HBA1;F2;TFPI;MMP9;F3;SELP;F7;F8;CD40LG;ALB;APOE;EPHA2;PF4
AKR1C1	Phase 2 - plateau phase Homo sapiens R-HSA-5576893	6.74E-28	CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA1C;CACNA2D4;CACNA1F;CACNG6;CACNB1;CACNG7;CACNB2;CACNG8;CACNB3;CACNB4;CAC	Rap1 signaling pathway	1.59E-27	FLT1;FLT4;ITGB3;PIK3CD;ADCY2;ADCY1;PIK3CB;FGF1;FGF2;ADCY5;FGF4;GRIN2A;NRAS;KDR;RAC2;AKT1;MAPK1;RAC1;DRD2;MAPK3;PDGFRB;PDGF	Capillary	2.20E-18	CRP;ABCB1;SERPINC1;SERPINE1;HBB;MPO;AQP1;HTR7;CASP3;SMPD1;AKT1;CCL2;APOE;MAPK3;TGFB1;ACE;MMP2;F2;MMP9;IL6;IL1B;ALB;AGTR

			NA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5			RA;MAP2K1;HGF;BRAF;GRIN2B;GRIN1;VEGFA;MAPK11;ADORA2A;PIK3CA;ADORA2B;FGF19;KIT;KRAS;TEK;CALM1;RAF1;FGFR4;MET;FGFR2;EPHA2;FGFR1			1;REN;SCN2A
AKR1C3	Ligand-gated ion channel transport Homo sapiens R-HSA-975298	6.74E-28	GABRB3;GABRA2;GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;HTR3E;GABRA3;HTR3C;HTR3D;HTR3A;HTR3B;GABRG3;GABRG2;GLRA1;GLRA2;GLRA3	Toll-like receptor signaling pathway	9.46E-27	CXCL8;IFNA1;PIK3CD;PIK3CB;TNF;IKBKB;CCL5;CCL3;AKT1;MAPK1;RAC1;MAPK3;IFNAR2;MAP2K1;JUN;CHUK;IFNB1;STAT1;FOS;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;IL1B;TLR9;TLR8;TLR7;TLR4;TLR3;IFNAR1;TLR2	Gingiva	7.18E-18	IL10;CRP;TGFB1;MMP2;PTGS2;TNF;MMP9;ICAM1;IL4;IL1A;IL6;CD4;CD40LG;IFNG;CASP3;IL1B;TNFSF11;CCL2;TLR4;ELANE;TLR2
AKT1	Downstream signal transduction Homo sapiens R-HSA-186763	1.54E-27	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;STAT1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	Dilated cardiomyopathy	1.11E-26	RYR2;ITGB3;ADCY2;ADRB1;CACNA1D;ADCY1;CACNA1C;CACNA1F;TNF;SLC8A1;ADCY5;CACNG6;CACNG7;CACNG8;ITGAV;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5;TGFB1;CACNA2D1;TNNC1;CACNA2D3;CACNA2D2;CACNA2D4;CACNB1;CACNB2;CACNB3;CACNB4	NIH-3T3 cell	9.59E-18	RET;FGF1;TNF;FGF2;FGF4;NRAS;CCND1;MYC;ERBB2;ABL1;AKT1;MAPK1;JAK2;MAPK3;NTRK1;MAP2K1;JUN;TGFB1;STAT3;FOS;ALB;PPARG;KRAS;RAF1;TP53
ALB	Phase 1 - inactivation of fast	2.5	CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA1C	Ras signal	1.1	FLT1;FLT3;FLT4;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;IKBKB;	Fruit	1.2	CRP;PTGS2;TNF;ICAM1;CASP9;CCND1;CASP3;SMPD1;A

	Na+ channels Homo sapiens R-HSA-5576894	4E-27	;CACNA2D4;CACNA1F;CACNG6;CACNB1;CACNG7;CACNB2;CACNG8;CACNB3;CACNB4;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	ingpathway	1E-26	GRIN2A;NRAS;HTR7;KDR;RAC2;ABL1;AKT1;MAPK1;RAC1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;CHUK;HGF;PLA2G2A;PTPN11;GRIN2B;NFKB1;GRIN1;VEGFA;PIK3CA;FGF19;KIT;PLA2G10;KRAS;TEK;CALM1;RAF1;FGFR4;MET;FGFR2;EPHA2;FGFR1		1E-17	KT1;MAPK3;JUN;TGFB1;PARP1;MMP2;FOS;F2;MMP9;VEGFA;IL6;CD4;CD40LG;IL1B;ALB;PPARG;TP53
ANXA1	IRS-mediated signalling Homo sapiens R-HSA-112399	1.11E-26	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;PRKAG3;FGF4;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;TLR9;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Osteoclast differentiation	4.22E-26	NCF1;ITGB3;NCF4;PIK3CD;PIK3CB;TNF;IKBKB;PPP3R2;AKT1;TNFSF11;MAPK1;RAC1;JAK1;MAPK3;IFNAR2;MAP2K1;JUN;TGFB1;CHUK;IFNB1;STAT1;CYBA;NFATC1;FOS;NFKB1;NFKBIA;IL1A;MAPK11;FCGR2A;IFNG;PIK3CA;IL1B;PPARG;IFNAR1	Knee	1.21E-17	CRP;IL1RN;SERPINC1;PROS1;PTGS2;TNF;FGF2;PGRMC1;TNFSF11;IL10;TGFB1;F10;MMP2;AKR1C1;F2;MMP9;F3;VEGFA;IL1A;IL6;F8;IL1B;ALB;SIK1;DDR2
APOE	Gastrin-CREB signalling pathway via PKC and MAPK Homo sapiens R-HSA-881907	1.17E-26	RET;CHRM3;CHRM1;ITGB3;CHRM5;HTR2B;HTR2C;ADRA1D;HTR2A;FGF1;ADRA1B;FGF2;ADRA1A;FGF4;RPS6KA3;EDNRA;BDKRB1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;ANXA1;VWF;F2;PIK3CA;IL3	Leishmaniasis	7.12E-26	NCF1;NCF4;PTGS2;TNF;MAPK1;JAK2;JAK1;MAPK3;IL10;JUN;TGFB1;NOS2;STAT1;CYBB;CYBA;FOS;NFKB1;IL4;NFKBIA;IL1A;MAPK11;FCGR2A;IFNG;IL1B;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Mesenchyme	4.05E-17	FLT1;FGF1;TNF;FGF2;CDH5;NT5E;CCND1;MYC;ERBB2;AKT1;TNFSF11;MAPK3;PDGFRB;PDGFRA;TGFB1;VCAM1;VWF;HGF;MMP2;STAT3;HBA1;MMP9;VEGFA;AR;IL6;IL1B;KIT;PPARG;S100A4;PGR;KRAS;TEK;T

			RA;KIT;AGTR1;RAF1;PTGER1;ITPR1;ITPR2;ITPR3;CSF2RB;CSF2RA;GRIN2A;NRAS;HRH1;MAPK7;ERBB2;MAPK1;MAPK3;BRAF;CCK;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1						P53;MET;FGFR2;FGFR1
AQP1	Downstream signaling of activated FGFR2 Homo sapiens R-HSA-5654696	1.80E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	C-type lectin receptor signaling pathway	1.78E-25	ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;PTGS2;TNF;IKBKB;NRAS;PPP3R2;CASP1;AKT1;MAPK1;MAPK3;IL10;JUN;CHUK;STAT1;NFATC1;PTPN11;IL2;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;CD209;IL1B;KRAS;RAF1;CALM1	Acute lymphoblastic leukemia cell	8.20E-17	TGFB1;IFNA1;PARP1;NR3C1;TYMS;TNF;IL2;CASP9;CD4;CCND1;IL7;CASP3;ERBB2;ABL1;AKT1;FAS;KRAS;TP53
AR	Downstream signaling of activated FGFR4 Homo sapiens R-HSA-5654716	1.80E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;G	Circadian entrainment	3.17E-25	GRIA1;RYR1;GRIA2;RYR2;ITPR1;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;CACNA1H;CACNA1G;ADCY5;CACNA1I;GRIN2A;MAPK1;GRIA3;GRIA4;KCNJ3;MAPK3;GUCY1A2;KCNJ5;KCNJ6;KCNJ9;FOS;GRIN2C;GRIN2B;GRIN2D;GRI	Rotnodule	9.55E-17	RET;CRP;CALCA;TNF;FGF2;TPO;NRAS;PGRMC1;CCND1;MYC;ERBB2;TGFB1;MMP2;HBA1;F2;MMP9;IL2;VEGFA;CD4;CD40LG;ALB;KIT;PGR;KRAS;TP53;HLA-DRB1

			RIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1			N1;CALM1			
ASGR2	Downstream signaling of activated FGFR3 Homo sapiens R-HSA-5654708	1.80E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	PD-L1 expression and PD-1 checkpoint pathway in cancer	3.66E-25	PIK3CD;PIK3CB;IKBKB;NRAS;PPP3R2;AKT1;MAPK1;JAK2;JAK1;MAPK3;MAP2K1;JUN;CHUK;STAT1;STAT3;NFATC1;PTPN11;FOS;NFKB1;NFKBIA;MAPK11;CD4;IFNG;PIK3CA;TLR9;KRAS;RAF1;TLR4;TLR2	BTO:0000964	2.32E-16	GRIA1;TNFAIP6;CHRNA4;ITPR1;HTR2C;SLC8A1;AQP1;RPS6KA3;GRIN2A;HTR7;SCN5A;CACNG2;KCNJ3;KCNH2;SLC12A3;KCNJ5;SLC15A1;KCNJ6;KCNJ11;KCNJ9;SLC12A1;HTR3A;GRIN2C;GRIN2B;GRIN2D;GRIN1;KCNMA1;ALB;KCNQ3;PDE3A;SCN4A;SCN2A;SLC29A1;SLC29A2
ATF1	Insulin receptor signalling cascade Homo sapiens R-HSA-74751	1.81E-26	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;PRKAG3;FGF4;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;TLR9;KR	Human T-cell leukemia virus 1 infection	1.07E-24	ATF2;PIK3CD;ADCY2;ADCY1;PIK3CB;TNF;ICAM1;ADCY5;IKBKB;POLB;NRAS;PPP3R2;CCND1;MYC;AKT1;MAPK1;JAK3;JAK1;MAPK3;FDPS;JUN;MAP2K1;TGFB1;CHUK;NFATC1;HLA-A;FOS;IL2;NFKB1;NFKBIA;IL6;CD4;PIK3CA;CANX;ATM;KRAS;CALR;TP53;HLA-DRB1;ATF4;HLA-DQB1	Ovarian cancer cell line	2.35E-16	JUN;ABCB1;TGFB1;PARP1;MMP2;SERPINE1;STAT3;F2;TNF;MMP9;VEGFA;CASP9;CCND1;MYC;CASP3;ERBB2;AKT1;TP53;MAPK3

			AS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1						
ATF2	DAP12 signaling Homo sapiens R-HSA-2424491	1.93E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;RAC1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	Fluid shear stress and atherosclerosis	1.10E-24	PRKAA1;PRKAA2;NCF1;SDC2;ITGB3;PIK3CD;PIK3CB;TNF;ICAM1;IKBKB;CDH5;MAPK7;KDR;RAC2;AKT1;CCL2;ITGAV;RAC1;JUN;VCAM1;CHUK;MMP2;CYBA;FOS;MMP9;NFKB1;VEGFA;IL1A;MAPK11;IFNG;PIK3CA;IL1B;CALM1;TP53	Cervical cancer cell line	9.20E-16	JUN;IFNA1;PARP1;HSPA5;STAT1;IFNB1;MMP2;STAT3;FOS;TNF;CASP9;IL6;CD4;CCND1;MYC;CASP3;ALB;AKT1;APOE;CALM1;TP53;MAPK3
ATF3	IGF1R signaling cascade Homo sapiens R-HSA-2428924	2.13E-26	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;PRKAG3;FGF4;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;TLR9;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Coronavirus disease	1.13E-24	CXCL8;IFNA1;TMPRSS2;PIK3CD;PIK3CB;TNF;IKBKB;CASP1;CCL2;MAPK1;JAK1;MBL2;MAPK3;IFNAR2;JUN;ACE;CHUK;VWF;IFNB1;STAT1;DDX58;STAT3;CYBB;FOS;F2;IL2;NFKB1;NFKBIA;SELP;ACE2;MAPK11;IL6;FCGR2A;PIK3CA;IL1B;AGTR1;TLR8;TLR7;TLR4;TLR3;TLR2;IFNAR1	Colorectal cancer cell	1.61E-15	TGFB1;PARP1;MMP2;STAT3;TYMS;PTGS2;MMP9;VEGFA;CASP9;CCND1;PIK3CA;MYC;CASP3;CA7;AKT1;KRAS;TP53;ATF3;MAPK3
AT	Signaling by Type	2.	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;P	Prion	1.	RYR1;ATF2;RYR2;NCF1;NCF4;CACNA1	Embr	1.	JUN;TGFB1;CHUK;LRP1;DDX58;STAT

F4	1 Insulin-like Growth Factor 1 Receptor (IGF1R) Homo sapiens R-HSA-2404192	13E-26	RKAG1;PRKAG2;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;PRKAG3;FGF4;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;TLR9;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	disease	35E-24	B;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;CACNA1C;PIK3CB;CACNA1F;TNF;CASP9;GRIN2A;PPP3R2;TUBA1A;CASP3;CCL5;RAC2;MAPK1;RAC1;CACNA1S;MAPK3;PRNP;HSPA5;TUBB;CYBB;CYBA;GRIN2C;TUBB4B;GRIN2B;GRIN2D;GRIN1;IL1A;MAPK11;GRIN3B;IL6;GRIN3A;PIK3CA;IL1B;PPIF;ATF4	yonic fibroblast	73E-15	1;IFNB1;STAT3;TNF;FGF2;IKBKB;NFKBIA;CCND1;MYC;CASP3;AKT1;PPARG;ATM;TP53;ATF4;MAPK3
ATF5	IRS-related events triggered by IGF1R Homo sapiens R-HSA-2428928	2.13E-26	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;PRKAG3;FGF4;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;TLR9;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Human immunodeficiency virus 1 infection	2.97E-24	IFNA1;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;TNF;IKBKB;CASP9;NRAS;PPP3R2;CASP3;RAC2;AKT1;MAPK1;PTK2B;RAC1;CCR5;MAPK3;JUN;MAP2K1;CHUK;IFNB1;LIMK1;NFATC1;HLA-A;FOS;NFKB1;NFKBIA;MAPK11;CD4;PIK3CA;FAS;ATM;KRAS;CALR;CALM1;RAF1;TLR4;TLR2	Blood vessel wall	2.06E-15	CRP;TGFB1;ACE;SERPINC1;MMP2;CYBA;MMP9;IL6;IL1B;ALB;CCL2;PPARG;REN;APOE
ATF6	Signaling by FGFR4 Homo sapiens R-HSA-5654743	2.78E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;P	GnRH secretion	3.75E-24	ITPR1;PIK3CD;ITPR2;CACNA1D;ITPR3;PIK3CB;CACNA1C;CACNA1F;CACNA1H;CACNA1G;CACNA1I;NRAS;AKT1;MAPK1;CACNA1S;KCNJ3;MAPK3;KCNJ5	Pancreatic cancer cel	2.91E-15	JUN;TGFB1;PARP1;HGF;STAT3;PTGS2;MMP9;VEGFA;CASP9;NFKBIA;CCND1;MYC;CASP3;IL1B;AKT1;KRAS;TP53;MET;MAPK3

			DE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1			;MAP2K1;KCNJ6;KCNJ11;KCNJ9;PIK3CA;KRAS;RAF1	l		
ATF7	Downstream signaling of activated FGFR1 Homo sapiens R-HSA-5654687	2.78E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	Proteoglycans in cancer	8.23E-24	SDC2;ITGB3;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;FGF2;TNF;NRAS;CCND1;MYC;CASP3;ERBB2;KDR;AKT1;MAPK1;ITGAV;RAC1;MAPK3;MAP2K1;TGFB1;HGF;MMP2;STAT3;BRAF;PTPN11;MMP9;VEGFA;MAPK11;PIK3CA;FAS;KRAS;RAF1;TP53;TLR4;MET;TLR2;FGFR1	Laminapropria	2.58E-14	IL10;TGFB1;IL13;NOD2;TNF;IL2;ICAM1;IL4;IL6;CD4;CD40LG;IFNG;IL1B;KIT;TLR4;TLR2
ATM	Signaling by FGFR3 Homo sapiens R-HSA-5654741	3.21E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;G	Measles	1.53E-23	IFNA1;PIK3CD;PIK3CB;CASP9;IKBKB;CCND1;CASP3;AKT1;JAK3;JAK1;IFNAR2;JUN;CHUK;DDX58;IFNB1;STAT1;STAT3;FOS;IL2;NFKB1;NFKBIA;IL1A;IL6;PIK3CA;CD209;IL1B;TLR9;FAS;TLR7;TP53;TLR4;IFNAR1;TLR2	Peritonealcavity	4.16E-14	IL10;IL6;CD4;TGFB1;IL1B;ALB;CCL2;TNF;IL2;ICAM1;VEGFA

			RIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1						
ATP2C1	Signaling by PDGF Homo sapiens R-HSA-186797	3.94E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;STAT1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	Alzheimer disease	2.95E-23	CHRM3;CHRM1;CHRM5;PIK3CD;PIK3CB;TNF;IKBKB;CASP9;TUBA1A;CASP3;AKT1;MAP2K1;CHUK;TUBB;CYBB;IL1A;PIK3CA;IL1B;PPIF;RAF1;ATF6;ATF4;LRP1;CHRNA7;ITPR1;ITPR2;CACNA1D;ITPR3;CACNA1C;PTGS2;CACNA1F;GRIN2A;NRAS;PPP3R2;MAPK1;APOE;CACNA1S;MAPK3;NOS2;BRAF;GRIN2C;TUBB4B;GRIN2B;NFKB1;GRIN2D;GRIN1;IL6;FAS;KRAS;CALM1	Myofibroblast	1.28E-13	PDGFRB;TGFB1;MMP2;HGF;SERPINE1;HBA1;TNF;FGF2;MMP9;VEGFA;IL6;IL1B;FGF19;KIT;AKT1;CCL2;S100A4;PPARG
AVPR2	NCAM signaling for neurite out-growth Homo sapiens R-HSA-375165	4.80E-26	RET;ITGB3;CACNA1D;CSF2RB;CACNA1C;FGF1;FGF2;CSF2RA;CACNA1H;FGF4;CACNA1G;CACNA1I;GRIN2A;NRAS;ERBB2;MAPK1;CACNA1S;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;PRNP;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;CACNB1;CACNB2;CACNB3;CACNB4;FGF19;KIT;IL3	Apoptosis	3.18E-23	ITPR1;ITPR2;PIK3CD;CSF2RB;ITPR3;PIK3CB;TNF;CASP9;IKBKB;NRAS;TUBA1A;CASP3;AKT1;MAPK1;MAPK3;NTRK1;MAP2K1;JUN;PARP3;CHUK;PARP1;PARP2;FOS;NFKB1;NFKBIA;PIK3CA;IL3RA;FAS;ATM;KRAS;RAF1;TP53;ATF4	K-562 cell	1.64E-13	JUN;ABCB1;IFNA1;PARP1;ITGB3;STAT3;HBB;TNF;IL2;CASP9;CCND1;IFNG;MYC;CASP3;ABL1;AKT1;JAK2;TP53

			RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1						
BDKRB1	Signaling by FGFR1 Homo sapiens R-HSA-5654736	4.94E-26	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	Dopaminergic synapse	3.61E-23	GRIA1;ATF2;GRIA2;CACNA1B;ITPR1;CACNA1A;ITPR2;CACNA1D;ITPR3;CACNA1C;SLC6A3;ADCY5;GRIN2A;AKT1;DRD1;DRD2;DRD3;DRD4;GRIA3;SCN1A;DRD5;GRIA4;KCNJ3;KCNJ5;KCNJ6;KCNJ9;FOS;GRIN2B;MAPK11;CALY;CALM1;ATF4	HaCaT cell	2.56E-13	JUN;IL6;TGFB1;PARP1;STAT1;CASP3;IL1B;AKT1;PTGS2;TNF;MMP9;TP53
BRAF	DAP12 interactions Homo sapiens R-HSA-2172127	1.53E-25	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;RAC1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	Hepatitis C	8.03E-23	IFNA1;PIK3CD;PIK3CB;TNF;CASP9;IKBKB;NRAS;RXRA;CCND1;MYC;CASP3;AKT1;MAPK1;JAK1;MAPK3;IFNAR2;MAP2K1;CHUK;DDX58;IFNB1;STAT1;STAT3;BRAF;NFKB1;NFKBIA;IFNG;PIK3CA;FAS;KRAS;RAF1;PPARA;TP53;TLR3;IFNAR1	Sputum	6.81E-13	IL10;CRP;IL13;MPO;TNF;MMP9;IL4;IL6;CD4;CD40LG;IFNG;IL1B;CCL5;ALB;ELANE
C	Signaling	6	RET;ITGB3;PIK3CD	Pro	1	PIK3CD;TMPRSS2;	Tr	1	IL10;TGFB1;FLT1;I

A1	by EGFR Homo sapiens R-HSA-177929	.76E-25	;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	state cancer	.07E-22	PIK3CB;CASP9;IKBKB;NRAS;CCND1;ERBB2;AKT1;MAPK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;SRD5A2;CHUK;BRAF;MMP9;NFKB1;NFKBIA;AR;PIK3CA;KRAS;RAF1;TP53;FGFR2;ATF4;FGFR1	opho blast	.10E-12	FNA1;MMP2;SERPINE1;STAT3;HLA-A;TNF;FGF2;MMP9;F3;FGF4;VEGFA;IL6;IFNG;CASP3;IL1B;KDR;CRH;AKT1;PGR;TP53;MAPK3
CA12	Signaling by Insulin receptor Homo sapiens R-HSA-74752	7.10E-25	RET;PRKAA1;PRKAA2;ITGB3;PDE3B;PRKAG1;PRKAG2;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;PRKAG3;FGF4;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;PRKAB2;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;PRKAB1;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;TLR9;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Yersinia infection	1.25E-22	CXCL8;PIK3CD;PIK3CB;TNF;IKBKB;RPS6KA3;CASP1;RAC2;AKT1;CCL2;MAPK1;PTK2B;RAC1;MAPK3;IL10;MAP2K1;JUN;CHUK;IFNB1;LIMK1;NFATC1;FOS;IL2;NFKB1;NFKBIA;MAPK11;IL6;CD4;FCGR2A;PIK3CA;IL1B;TLR4	Hip	1.14E-12	CRP;CALCA;VWF;F10;VDR;SERPINC1;PROS1;AKR1C1;SERPINE1;F2;TNF;F3;F7;IL6;ADRB3;IL1B;ALB;TNFSF11;SIK1;SHBG
CA14	Signaling by FGFR2 Homo sapiens R-HSA-5654738	1.49E-	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CH	Pathways of neuro	3.73E-	RYR1;CHRM3;RYR2;CHRM1;CHRM5;TNF;SLC6A3;CASP9;TUBA1A;CASP3;RAC1;MAP2K1;TUBB;SIGMAR1;CYBB	Mammary gland	1.69E-	TGFB1;PARP1;MMP2;STAT3;MMP9;AR;CCND1;MYC;CASP3;ERBB2;AKT1;PGR;TP53;MAPK3

		24	UK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	degeneration	22	;IL1A;IL1B;PPIF;RAF1;ATF6;ATF4;GRIA1;GRIA2;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;CACNA1C;PTGS2;CACNA1F;GRIN2A;NRAS;PPP3R2;MAPK1;CACNA1S;GRIA3;GRIA4;MAPK3;PRNP;HSPA5;NOS2;BRAF;GRIN2C;TUBB4B;GRIN2B;NFKB1;GRIN2D;GRIN1;MAPK11;IL6;FAS;KRAS;CALM1	cell line	12	
CA2	Signaling by FGFR Homo sapiens R-HSA-190236	2.84E-24	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;AKT1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;PIK3CA;KIT;IL3RA;RAF1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ADCY2;CSF2RB;ITPR3;ADCY1;CSF2RA;ADCY5;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	TNF signaling pathway	5.52E-22	ATF2;PIK3CD;PIK3CB;NOD2;PTGS2;TNF;ICAM1;IKBKB;CASP3;CCL5;AKT1;CCL2;MAPK1;MAPK3;MAP2K1;JUN;VCAM1;CHUK;IFNB1;FOS;MMP9;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;IL1B;FAS;ATF4	MG-63 cell	2.10E-12	IL6;TGFB1;CCND1;PARP1;CASP3;MMP2;IL1B;AKT1;TNFSF11;TNF;MMP9;TP53
CA3	Fc epsilon receptor (FCERI) signaling Homo sapiens R-HSA-2454202	1.45E-23	RET;ITGB3;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;IKBKB;CASP9;AKT1;RAC1;JAK2;JAK3;JAK1;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;FOS;PIK3CA;IL3RA;KIT;	Vascular smooth muscl	6.26E-22	CALCA;CALCB;NPR1;NPR2;ITPR1;ITPR2;CACNA1D;ITPR3;ADRA1D;ADCY2;CACNA1C;ADCY1;CACNA1F;ADRA1B;ADRA1A;ADCY5;EDNRA;MAPK1;CAC	Peritoneal exudate	2.36E-12	IL10;IL4;GLRA1;IL6;CD4;IFNA1;IL1B;ALB;TNF;IL2

	2454202		RAF1;ITPR1;ITPR2;ITPR3;CSF2RB;CSF2RA;GRIN2A;NRAS;ERBB2;MAPK1;MAPK3;JUN;NFATC1;BRAF;PTPN11;GRIN2C;GRIN2B;NFKB1;IL2;GRIN2D;GRIN1;NFKBIA;FGF19;KRAS;TEK;CALM1;FGFR4;FGFR2;FGFR1	econtraction		NA1S;MAPK3;GUCY1A2;MAP2K1;PLA2G2A;BRAF;ADORA2A;ADORA2B;PLA2G10;KCNMA1;AGTR1;RAF1;CALM1			
CA4	Signaling by SCF-KIT Homo sapiens R-HSA-1433557	2.91E-22	RET;ITGB3;PIK3CD;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;FGF4;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;RAC1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;CHUK;STAT1;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;MMP9;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Tastetransduction	9.73E-22	CHRM3;PDE1C;PDE1B;PDE1A;CACNA1A;ITPR3;CACNA1C;SCN9A;SCN3A;GABRA2;GABRA1;GABRA6;HTR1E;GABRA5;HTR1F;HTR3E;GABRA4;GABRA3;HTR1D;HTR3C;HTR1A;HTR3D;HTR1B;HTR3A;HTR3B;SCN2A	Neonate	2.53E-12	IL10;CRP;KCNJ11;SERPINC1;AKR1C1;F2;TNF;F3;IL2;IL4;F7;IL6;CD40LG;IFNG;IL1B;ALB;REN;TLR4
CA7	Platelet activation, signaling and aggregation Homo sapiens R-HSA-76002	3.31E-22	ORM1;PROS1;ITGB3;SERPINE1;ITPR1;ITPR2;PIK3CD;CSF2RB;ITPR3;PIK3CB;ORM2;CSF2RA;RAC2;AKT1;MAPK1;RAC1;JAK2;JAK3;JAK1;MAPK3;P2RY12;TGFB1;HSPA5;VWF;HGF;PTPN11;F2;ADRA2C;ADRA2B;IL2;ADRA2A;VEGFA;SELP;F8;PIK3CA;ALB;IL3RA;CALM	GABAergic synapse	2.60E-21	GABRB3;GABRB2;GABRB1;CACNA1B;CACNA1A;ADCY2;CACNA1D;ADCY1;CACNA1C;CACNA1F;ADCY5;CACNA1S;GABRE;GABRD;GABRA2;GABRQ;GABRA1;GABRP;KCNJ6;GABRA6;GABRA5;GABRA4;GABRA3;GABRG3;GABRG2;GABRG1	Dopaminergic system	5.66E-12	CHRNA4;HTR1A;HTR2C;FOS;SLC6A3;SLC6A4;HTR7;REN;DRD1;DRD2;DRD3;DRD4;DRD5

			1;RAF1;PPIA;PF4						
CACNA1A	MAPK family signaling cascades Homo sapiens R-HSA-5683057	4.83E-22	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;MYC;ERBB2;MAPK1;RAC1;JAK2;MAPK6;JAK3;MAPK4;JAK1;MAPK3;PDGFRB;PDGFRA;JUN;MAP2K1;VWF;MMP2;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Malaria	2.74E-21	IL10;CXCL8;TGFB1;VCAM1;LRP1;HGF;SDC2;HBB;HBA1;TNF;ICAM1;SELP;IL6;CD40LG;IFNG;IL1B;TLR9;CCL2;MET;TLR4;TLR2	MC3T3-E1 cell	6.27E-12	JUN;TGFB1;VDR;PTH1R;FOS;PTGS2;TNF;FGF2;VEGFA;IL6;CASP3;AKT1;TNFSF11;MAPK3
CACNA1B	VEGFR2 mediated cell proliferation Homo sapiens R-HSA-5218921	1.30E-21	RET;ITGB3;ITPR1;ITPR2;CSF2RB;ITPR3;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;KDR;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;VEGFA;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Long-term potentiation	8.31E-21	GRIA1;GRIA2;MAP2K1;ITPR1;ITPR2;ITPR3;BRAF;ADCY1;CACNA1C;GRIN2C;GRIN2B;GRIN1;GRIN2D;RPS6KA3;GRIN2A;NRAS;PPP3R2;MAPK1;KRAS;RAF1;CALM1;ATF4;MAPK3	Cranium	2.95E-11	CRP;CALCA;TGFB1;MMP2;NFATC1;PTH1R;FOS;F2;PTGS2;TNF;FGF2;MMP9;VEGFA;IL1A;IL6;PGRMC1;IL1B;TNFSF11;TP53;FGFR2;FGFR1
CACNA1C	Interleukin-2 signaling Homo sapiens R-HSA-451927	1.95E-20	RET;ITGB3;PIK3CD;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;PTK2B;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3R	Pancreatic cancer	1.14E-20	MAP2K1;TGFB1;CHUK;STAT1;STAT3;PIK3CD;BRAF;PIK3CB;NFKB1;VEGFA;CASP9;IKBKB;CCND1;PIK3CA;ERBB2;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;TP53;JAK1;MAPK3	Peripheral nerve	3.41E-11	GRIA1;NTRK1;JUN;NTRK3;AVPR2;CACNA1B;CCK;TRPV1;OPRM1;FOS;FGF1;FGF2;CACNA1H;SCN10A;CD40LG;SCN11A;SCN8A;PDE6B;CALM1;SCN3A;ATF3;GRIA4

			A;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1						
CACNA1D	Interleukin receptor SHC signaling Homo sapiens R-HSA-912526	5.65E-20	RET;ITGB3;PIK3CD;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	T cell receptor signaling pathway	1.38E-20	PIK3CD;PIK3CB;TNF;IKBKB;NRAS;PPP3R2;AKT1;CTLA4;MAPK1;MAPK3;IL10;MAP2K1;JUN;CHUK;NFATC1;FOS;IL2;NFKB1;IL4;NFKBIA;MAPK11;CD4;CD40LG;IFNG;PIK3CA;KRAS;RAF1	Peritoneal fluid	5.13E-11	IL10;IL6;IL1B;SERPINE1;ALB;CCL2;TNF;VEGFA
CACNA1E	Interleukin-3, 5 and GM-CSF signaling Homo sapiens R-HSA-512988	7.03E-20	RET;ITGB3;PIK3CD;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Arrhythmogenic right ventricular cardiomyopathy	1.62E-20	RYR2;ITGB3;CACNA2D1;CACNA2D3;CACNA2D2;CACNA1D;CACNA2D4;CACNA1C;CACNA1F;SLC8A1;CACNB1;CACNG6;CACNB2;CACNG7;CACNB3;CACNG8;CACNB4;ITGAV;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	Autonomic nervous system	1.01E-10	RET;NTRK1;ACE;CHRNA4;NTRK3;HTR3A;ADRB1;CCK;FOS;TNF;IL6;HTR7;IL1B;SCN9A;CRH
CACNA1F	Signaling by ERBB4 Homo sapiens R-HSA-1236394	1.81E-19	RET;ITGB3;PIK3CD;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;FGF4;CASP9;GRIN2A;NRAS;ERBB2;AKT1;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;	Central carbon metab	2.62E-20	RET;PDGFRB;NTRK1;PDGFRA;MAP2K1;FLT3;NTRK3;PIK3CD;PIK3CB;NRAS;PIK3CA;MYC;KIT;ERBB2;AKT1;MAPK1;KRAS;RAF1;MET;TP53;FGFR2;MAPK	Plasma cell	4.24E-10	IL1RN;ORM1;LRP1;SERPINC1;PROS1;FLT4;ITGB3;TFPI;ORM2;MPO;ICAM1;ASGR2;DPP4;CDH5;MBL2;ACE;TGFB1;VCAM1;VWF;CACNA2D1;F11;L1CA

			MAP2K1;VWF;CHUK;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;PIK3CA;FGF19;KIT;IL3RA;PGR;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	olism in cancer		3;FGFR1			M;F2;F8;PROC;KIT;SHBG;FGFR1
CACNA1G	MAPK1/MAPK3 signaling Homo sapiens R-HSA-5684996	2.53E-19	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;IL6;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Gap junction	3.30E-20	HTR2B;ITPR1;HTR2C;ITPR2;ADCY2;ADRB1;ITPR3;HTR2A;ADCY1;ADCY5;NRAS;TUBA1A;MAPK7;MAPK1;DRD1;DRD2;MAPK3;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;TUBB;TUBB4B;KRAS;RAF1	HEK-293 cell	1.01E-09	RYR1;RYR2;CACNA1I;GRIN2A;SCN4A;HTR3B;GRIN2B;CACNA1G;KCNJ3
CACNA1H	Signaling by Leptin Homo sapiens R-HSA-2586552	3.37E-19	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;STAT3;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Purine metabolism	4.02E-20	PDE1C;NPR1;PDE1B;NPR2;PDE1A;PDE3B;ADCY2;ADCY1;ADCY5;NT5E;PDE11A;PDE4B;PDE4A;PDE6C;PDE6B;PDE6A;PDE8B;PDE8A;XDH;GUCY1A2;PDE4D;PDE2A;PDE4C;PDE10A;PDE3A;PDE5A;PDE7B;PDE7A;PDE9A	Periosteum	1.25E-09	IL1A;ITGB3;STAT3;KIT;CCL3;PTK2B;CCL2;MAPK1;TNF;MMP9
CACNA1I	Depolarization of the Presynaptic Terminal Triggers the	4.60E-19	CACNB1;CACNB2;CACNB3;CACNB4;CACNA2D1;CACNA1B;CACNA2D3;CACNA1A;CACNA2D2;CACNG2;CACNA1E;CACNG4	Chemokine signaling pat	7.31E-20	CXCL8;NCF1;PIK3CD;ADCY2;PIK3CB;ADCY1;ADCY5;IKBKB;NRAS;CXCR1;CCL5;RAC2;CCL3;AKT1;CCL2;MAPK1;PTK2B;RAC1;CCR5;JAK2;CCR4;JAK3;MA	Conjuctiva	1.48E-09	IL4;IL6;CD4;TGFB1;CD40LG;IL1B;IL13;ALB;TNF;MMP9;ICAM1;VEGFA

	Opening of Calcium Channels Homo sapiens R-HSA-112308			hway		PK3;MAP2K1;CHUK;STAT1;STAT3;BRAF;NFKB1;NFKBIA;PIK3CA;KRAS;RAF1;PF4			
CACNA1S	GABA A receptor activation Homo sapiens R-HSA-977441	4.60E-19	GABRA2;GABRB3;GABRQ;GABRB2;GABRA1;GABRB1;GABRA6;GABRA5;GABRA4;GABRA3;GABRG3;GABRG2	Apelin signaling pathway	2.39E-19	RYR1;RYR2;PRKAA1;PRKAA2;SERPINE1;PDE3B;ITPR1;PRKAG1;ITPR2;PRKAG2;ITPR3;ADCY2;ADCY1;SLC8A1;PRKAG3;ADCY5;NRAS;CCND1;AKT1;MAPK1;MAPK3;MAP2K1;PRKAB2;NOS2;PRKAB1;AGTR1;KRAS;RAF1;CALM1	Gingival fluid	1.63E-09	CRP;IL10;IL1A;IL6;IL1B;TNFSF11;TNF;MMP9;ELANE
CACNA2D1	Signalling to RAS Homo sapiens R-HSA-167044	5.15E-19	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;MAPK11;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Estrogen signaling pathway	2.39E-19	ATF2;ITPR1;ITPR2;PIK3CD;ITPR3;ADCY2;PIK3CB;ADCY1;ADCY5;NRAS;AKT1;MAPK1;KCNJ3;MAPK3;KCNJ5;MAP2K1;JUN;KCNJ6;KCNJ9;MMP2;FOS;OPRM1;MMP9;PIK3CA;PGR;KRAS;RAF1;CALM1;ATF4	Microvessel	1.63E-09	IL6;TGFB1;ACE;MMP2;IL1B;ALB;AKT1;MMP9;AQP1
CACNA2D2	FRS-mediated FGFR2 signaling Homo sapiens R-HSA-5654700	9.74E-19	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;F	Amphetamine addiction	3.72E-19	GRIA1;ATF2;GRIA2;JUN;CACNA1D;FOS;CACNA1C;GRIN2C;GRIN2B;SLC6A3;ADCY5;GRIN1;GRIN2D;GRIN2A;GRIN3B;PPP3R2;GRIN3A;DRD1;CALM1;GRIA3;ATF4;GRIA4	SH-SY5Y cell	1.67E-09	NTRK1;PRNP;MAP2K1;JUN;PARP1;HSPA5;CHRNA4;OPRM1;SLC6A3;CASP9;CASP3;AKT1;TP53;MAPK3

			GF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1						
CACNA2D3	FRS-mediated FGFR4 signaling Homo sapiens R-HSA-5654712	9.74E-19	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Epstein-Barr virus infection	3.87E-19	IFNA1;PIK3CD;PIK3CB;TNF;ICAM1;IKBKB;CASP9;CCND1;MYC;CASP3;AKT1;RAC1;JAK3;JAK1;IFNAR2;JUN;CHUK;IFNB1;STAT1;DDX58;STAT3;HLA-A;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;FAS;CALR;TP53;HLA-DRB1;HLA-DQB1;TLR2;IFNAR1	Blood plasma	1.96E-09	VWF;F10;SERPINC1;PROS1;SERPINE1;F11;HTR2C;CCK;F2;TFPI;ORM2;F3;FADS2;F7;MC2R;F8;PROC;F9;CRH;REN;FADS1
CACNA2D4	FRS-mediated FGFR3 signaling Homo sapiens R-HSA-5654706	9.74E-19	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Th17 cell differentiation	4.42E-19	IKBKB;PPP3R2;RXRA;MAPK1;JAK2;JAK3;JAK1;MAPK3;JUN;TGFB1;CHUK;STAT1;STAT3;NFATC1;FOS;IL2;NFKB1;IL4;NFKBIA;MAPK11;IL6;CD4;IFNG;IL1B;HLA-DRB1;HLA-DQB1	Cancer stem cell	5.00E-09	ABCB1;TGFB1;STAT3;VEGFA;CCND1;MYC;IL3RA;KIT;ERBB2;ABL1;AKT1;KRAS;TP53;MET
CACNB1	FRS-mediated FGFR1 signaling Homo sapiens R-HSA-5654693	9.74E-19	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;PTPN11;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RA	Growth hormone synthesis, secretion	6.23E-19	ATF2;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;ADCY2;CACNA1C;PIK3CB;ADCY1;CACNA1F;ADCY5;NRAS;AKT1;MAPK1;CACNA1S;JAK2;MAPK3;MAP2K1;STAT1;STAT3;FOS;MAPK11;PIK3CA;KRAS;RAF1;ATF4	Acute myeloid leukemia cell	9.49E-09	CASP9;NRAS;PARP1;FLT3;MYC;CASP3;IL3RA;KIT;STAT3;AKT1;TNF;TP53

			F1;FGFR4;FGFR2;FGFR1	and action					
CACNB2	Signalling to ERKs Homo sapiens R-HSA-187687	1.35E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;MAPK11;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Tuberculosis	8.12E-19	IFNA1;NOD2;TNF;CASP9;PPP3R2;CASP3;AKT1;MAPK1;JAK2;JAK1;MAPK3;IL10;TGFB1;NOS2;VDR;IFNB1;STAT1;NFKB1;IL1A;MAPK11;IL6;FCGR2A;IFNG;CD209;IL1B;TLR9;RAF1;CALM1;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Granulation tissue	1.10E-08	TGFB1;MMP2;IL1B;HBA1;TNF;MMP9;FGF2;VEGFA
CACNB3	ARMS-mediated activation Homo sapiens R-HSA-170984	1.49E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Melanoma	1.06E-18	PDGFRB;PDGFRA;MAP2K1;HGF;PIK3CD;BRAF;PIK3CB;FGF1;FGF2;FGF4;NRAS;CCND1;PIK3CA;FGF19;AKT1;MAPK1;KRAS;RAF1;MET;TP53;MAPK3;FGFR1	DAUDI cell	1.23E-08	CD4;CD40LG;IFNA1;IFNG;IFNB1;MYC;HLA-A;IL2;IFNAR1
CACNB4	Signalling to p38 via RIT and RIN Homo sapiens R-HSA-187706	1.49E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF	Toxoplasmosis	1.52E-18	TNF;CASP9;IKBKB;CASP3;AKT1;MAPK1;CCR5;JAK2;JAK1;MAPK3;IL10;TGFB1;CHUK;NOS2;STAT1;STAT3;NFKB1;NFKBIA;MAPK11;CD40LG;IFNG;PPIF;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Sympathetic nervous syste	1.40E-08	ACE;ADRB3;AGTR1;REN;ADRB2;ADRA1B;SLC6A2

			1;FGFR4;FGFR2;FGFR1				m		
CACNG1	Frs2-mediated activation Homo sapiens R-HSA-170968	1.72E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	IL-17 signaling pathway	2.96E-18	JUN;CXCL8;CHUK;IL13;FOS;PTGS2;TNF;MMP9;MAPK15;NFKB1;IKBKB;IL4;NFKBIA;MAPK11;IL6;MAPK7;IFNG;CASP3;IL1B;CCL2;MAPK1;MAPK6;MAPK4;MAPK3	Latex	1.75E-08	CRP;FDPS;IL6;CD4;CD40LG;VWF;IL1B;ALB;TNF
CACNG2	Prolonged ERK activation events Homo sapiens R-HSA-169893	2.27E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;NTRK1;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Acute myeloid leukemia	3.61E-18	MAP2K1;CHUK;FLT3;STAT3;PIK3CD;BRAF;PIK3CB;MPO;NFKB1;IKBKB;NRAS;CCND1;PIK3CA;MYC;KIT;AKT1;MAPK1;KRAS;RAF1;PPARD;MAPK3	Multiple myeloma cell	2.45E-08	CASP9;IL6;CCND1;CRBN;PARP1;MYC;CASP3;STAT3;VEGFA
CACNG3	GRB2 events in EGFR signaling Homo sapiens R-HSA-179812	6.56E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Cardiac muscle contraction	6.43E-18	RYR2;CACNA2D1;TNNC1;CACNA2D3;CACNA2D2;CACNA1D;CACNA2D4;CACNA1C;CACNA1F;SLC8A1;CACNB1;CACNG6;CACNB2;CACNG7;CACNB3;CACNG8;CACNB4;CACNA1S;CACNG1;CACNG2;CACNG3;CACNG4;CACNG5	Gastric ulcer	2.57E-08	HRH2;IL1B;PTGS2;MPO;TNF;FGF2;VEGFA
C	SHC1	6	RET;ITGB3;CSF2RB	Ne	7	PIK3CD;PIK3CB;IK	Hu	2	VCAM1;AKT1;CCL

ACNG4	events in EGFR signaling Homo sapiens R-HSA-180336	.56E-18	;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	urotrophin signaling pathway	.69E-18	BKB;RPS6KA3;NRAS;MAPK7;ABL1;AKT1;MAPK1;RAC1;MAPK3;NTRK1;MAP2K1;JUN;NTRK3;BRAF;PTPN11;NFKB1;NFKBIA;MAPK11;PIK3CA;KRAS;RAF1;CALM1;TP53;ATF4	man aortic endothelial cell	.57E-08	2;APOE;TNF;F3;ICAM1
CACNG5	SOS-mediated signalling Homo sapiens R-HSA-112412	6.56E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	Non-alcoholic fatty liver disease	8.51E-18	PRKAA1;CXCL8;PRKAA2;PRKAG1;PIK3CD;PRKAG2;PIK3CB;TNF;PRKAG3;IKBKB;RXRA;CASP3;AKT1;RAC1;PRKAB2;JUN;TGFB1;FOS;PRKAB1;NFKB1;IL1A;MAPK11;IL6;PIK3CA;IL1B;FAS;PPARG;PPARA;ATF4	nd 7/23	2.57E-08	SCN10A;SCN11A;SCN8A;SCN9A;SCN4A;SCN2A;SCN3A
CACNG6	SHC1 events in ERBB4 signaling Homo sapiens R-HSA-1250347	6.56E-18	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	FoxO signaling pathway	8.74E-18	PRKAA1;PRKAA2;PRKAG1;PIK3CD;PRKAG2;PIK3CB;PRKAG3;IKBKB;NRAS;CCND1;AKT1;MAPK1;MAPK3;IL10;MAP2K1;PRKAB2;TGFB1;CHUK;STAT3;BRAF;PRKAB1;MAPK11;IL6;PIK3CA;ATM;KRAS;RAF1	Female ur	3.14E-08	CRP;CALCA;IL6;TGFB1;VDR;AKR1C1;ALB;TNFSF11;PTH1R;SHBG;TNF;VEGFA
CACNG7	RAF/MAP kinase cascade Homo sapiens R-HSA-	6.56E-	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;P	Cellular senescen	1.02E-	CXCL8;SERPINE1;ITPR1;ITPR2;PIK3CD;CACNA1D;ITPR3;PIK3CB;NRAS;PPP3R2;CCND1;MYC;AKT1;MAPK1;MAPK	Peritoneal mesot	4.47E-	IL6;TGFB1;IL1B;SERPINE1;CCL2;TNF;AQP1

	5673001	18	DGFRA;MAP2K1;VWF;BRAF;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	ce	17	3;MAP2K1;TGFB1;NFATC1;HLA-A;NFKB1;IL1A;MAPK11;IL6;PIK3CA;ATM;KRAS;RAF1;CALM1;TP53	helium	08	
CACNG8	Serotonin receptors Homo sapiens R-HSA-390666	1.79E-17	HTR6;HTR7;HTR1E;HTR1F;HTR1D;HTR2B;HTR1A;HTR1B;HTR2C;HTR2A;HTR4	Non-small cell lung cancer	1.92E-17	RET;MAP2K1;HGF;STAT3;PIK3CD;BRAF;PIK3CB;CASP9;NRAS;RXRA;CCND1;PIK3CA;ERBB2;AKT1;MAPK1;KRAS;RAF1;JAK3;MET;TP53;MAPK3	BMMC cell	4.60E-08	IL4;IL6;IL13;KIT;AKT1;PTPN11;PTGS2;TNF;VEGFA
CALCA	GABA receptor activation Homo sapiens R-HSA-977443	1.80E-17	GABRB3;GABRA2;GABRQ;GABRB2;KCNJ5;GABRA1;GABRB1;KCNJ6;GABRA6;KCNJ9;GABRA5;GABRA4;GABRA3;ADCY2;ADCY1;GABRG3;GABRG2;ADCY5;KCNJ3	JAK-STAT signaling pathway	2.98E-17	IFNA1;PIK3CD;CSF2RB;PIK3CB;CSF2RA;CCND1;MYC;AKT1;JAK2;JAK3;JAK1;IFNAR2;PDGFRB;IL10;PDGFRA;IFNB1;STAT1;IL13;STAT3;PTPN11;IL2;IL4;IL6;IFNG;PIK3CA;IL7;IL3RA;RAF1;IFNAR1	Sciatic nerve	4.60E-08	NTRK1;JUN;SCN10A;NTRK3;SCN8A;TRPV1;FGF2;GRIN2B;ATF3
CALCB	FCERI mediated MAPK activation Homo sapiens R-HSA-2871796	1.83E-17	RET;ITGB3;CSF2RB;FGF1;FGF2;CSF2RA;FGF4;GRIN2A;NRAS;ERBB2;MAPK1;RAC1;JAK2;JAK3;JAK1;MAPK3;PDGFRB;PDGFRA;JUN;MAP2K1;VWF;BRAF;FOS;GRIN2C;GRIN2B;IL2;GRIN2D;GRIN1;FGF19;KIT;IL3RA;KRAS;TEK;CALM1;RAF1;FGFR4;FGFR2;FGFR1	GnRH signaling pathway	3.27E-17	MAP2K1;JUN;MMP2;ITPR1;ITPR2;ADCY2;CACNA1D;ITPR3;ADCY1;CACNA1C;CACNA1F;ADCY5;MAPK11;NRAS;MAPK7;MAPK1;PTK2B;KRAS;CACNA1S;RAF1;CALM1;ATF4;MAPK3	Fibroblast	5.85E-08	RET;GABRB3;HSPA5;TNFAIP6;PARP1;PARP2;CACNA1C;NR3C1;AR;IL6;SMPD1;FPGS;NEU1;CANX;ABL1;ATM;ATF4
CAL	G alpha (i) signalling	9.5	OPRD1;CHRM2;CXCL8;PTGDR2;CHRM4;PTGER3;OPRL	Cortisol	3.4	ATF2;ITPR1;ITPR2;ADCY2;CACNA1D;ITPR3;ADCY1;CACN	Fhm	7.4	CACNB1;GABRB2;GABRB1;SRD5A3;CACNA1A;GABRG1;

M1	events Homo sapiens R-HSA-418594	0E-17	1;ADCY2;ADCY1;ADCY5;CXCR1;ADORA3;CCL5;HRH4;ADORA1;BDKRB1;CCR5;DRD2;CCR4;DRD3;DRD4;P2RY12;ANXA1;HTR1E;HTR1F;HTR1D;HTR1A;HTR1B;OPRK1;OPRM1;ADRA2C;ADRA2B;ADRA2A;PF4	synthesis and secretion	7E-17	A1C;CACNA1F;CACNA1H;ADCY5;CACNA1G;CYP17A1;CACNA1I;MC2R;AGTR1;CACNA1S;PDE8B;PDE8A;ATF4		4E-08	SCN1A
CALR	Highly calcium permeable postsynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-629594	6.91E-16	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9	Inflammatory bowel disease	3.47E-17	IL10;JUN;TGFB1;STAT1;IL13;STAT3;NFATC1;NOD2;TNF;IL2;NFKB1;IL4;IL1A;IL6;IFNG;IL1B;TLR4;HLA-DRB1;HLA-DQB1;TLR2	Interstitial cell	7.44E-08	PDGFRA;TGFB1;CASP3;KIT;HTR2B;REN;PTGS2
CALY	PI3K Cascade Homo sapiens R-HSA-109704	2.37E-15	PRKAB2;PRKAA1;PRKAA2;PDE3B;PRKAG1;PRKAG2;PTPN11;PIK3CB;FGF1;FGF2;PRKAB1;PRKAG3;FGF4;PIK3CA;FGF19;TLR9;AKT1;FGFR4;FGFR2;FGFR1	Chronic myeloid leukemia	6.61E-17	MAP2K1;TGFB1;CHUK;PIK3CD;BRAF;PTPN11;PIK3CB;NFKB1;IKBKB;NFKBIA;NRAS;CCND1;PIK3CA;MYC;ABL1;AKT1;MAPK1;KRAS;RAF1;TP53;MAPK3	Whole plant	7.59E-08	IL10;IL4;ACE;F9;IFNG;CA2;KDR;CALR;MPO;PTGS1
CAMLG	Adrenoceptors Homo sapiens R-HSA-390696	2.69E-15	ADRB3;ADRB1;ADRA1D;ADRB2;ADRA2C;ADRA1B;ADRA2B;ADRA1A;ADRA2A	Natural killer cell mediated	9.55E-17	IFNA1;PIK3CD;PIK3CB;TNF;ICAM1;NRAS;PPP3R2;CASP3;RAC2;MAPK1;PTK2B;RAC1;MAPK3;IFNAR2;MAP2K1;IFNB1;BRAF;NFATC1;PTPN11;HLA-A;IFNG;PIK3CA;FA	B16-F10 cell	8.49E-08	CD4;CASP3;MMP2;AKT1;MMP9;TP53;IL2;VEGFA

				cytotoxicity		S;KRAS;RAF1;IFNAR1			
CANX	Nitric oxide stimulates guanylate cyclase Homo sapiens R-HSA-392154	3.41E-15	GUCY1A2;NOS2;PDE1B;PDE1A;PDE3B;PDE2A;ITPR1;PDE11A;PDE10A;KCNMA1;PDE3A;PDE5A;PDE9A	Aldosterone synthesis and secretion	1.15E-16	ATF1;ATF2;KCNJ5;NPR1;PDE2A;ITPR1;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;CACNA1F;CACNA1H;CACNA1G;ADCY5;CACNA1I;MC2R;CYP11B2;AGTR1;CACNA1S;CALM1;ATF4	Tibia	1.26E-07	CRP;CALCA;IL6;TGFB1;VDR;IL1B;TNFSF11;PTH1R;SLC7A11;TNF;FGF2;VEGFA
CASP1	Activation of NMDA receptor upon glutamate binding and postsynaptic events Homo sapiens R-HSA-442755	7.01E-15	GRIA1;GRIA2;BRAF;ADCY1;GRIN2C;GRIN2B;GRIN2D;GRIN1;RPS6KA3;GRIN2A;MAPK1;RAF1;CALM1;GRIA3;GRIA4	Th1 and Th2 cell differentiation	3.49E-16	JUN;CHUK;STAT1;IL13;NFATC1;FOS;IL2;NFKB1;IKBKB;IL4;NFKBIA;MAPK11;CD4;PPP3R2;IFNG;MAPK1;JAK2;JAK3;HLA-DRB1;JAK1;HLA-DQB1;MAPK3	Chorioallantois	4.09E-07	PTGER3;KDR;AKT1;TEK;FGF1;FGF2;MAPK3
CASP3	cGMP effects Homo sapiens R-HSA-418457	4.16E-14	PDE11A;PDE10A;PDE1B;PDE1A;PDE3B;PDE2A;KCNMA1;ITPR1;PDE3A;PDE5A;PDE9A	Glutamatergic synapse	3.57E-16	GRIA1;GRIA2;ITPR1;CACNA1A;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;GRIN2C;GRIN2B;GRIN2D;ADCY5;GRIN1;GRIN2A;GRIN3B;PPP3R2;GRIN3A;MAPK1;GRIA3;GRIA4;KCNJ3;MAPK3	Needle	4.24E-07	RET;CRP;CALCA;CD4;KIT;ERBB2;TMPRSS2;PGR;KRAS;HBA1;F2;TP53
CA	Activation of	5.	CHRNB2;CHRNA3;CHRNB4;CHRNB3;	Rheu	4.	JUN;CXCL8;FLT1;TGFB1;FOS;TNF;ICA	Germ	4.	RET;TGFB1;FGF2;FGF4;CD4;CD40LG;

SP9	Nicotinic Acetylcholine Receptors Homo sapiens R-HSA-629602	89E-14	CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9	matoid arthritis	47E-16	M1;VEGFA;IL1A;IL6;IFNG;IL1B;CCL5;CCL3;CTLA4;TNFSF11;CCL2;TEK;TLR4;HLA-DRB1;HLA-DQB1;TLR2		30E-07	MYC;KIT;ALB;ATM;KRAS;CALM1;TP53
CDC51	Postsynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-622327	5.89E-14	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9	Relaxin signaling pathway	6.79E-16	ATF2;PIK3CD;ADCY2;PIK3CB;ADCY1;ADCY5;NRAS;AKT1;MAPK1;MAPK3;MAP2K1;JUN;TGFB1;NOS2;MMP2;FOS;MMP9;NFKB1;VEGFA;NFKBIA;MAPK11;PIK3CA;KRAS;RAF1;ATF4	Wound fluid	4.33E-07	MMP2;MMP9;FGF2;ELANE;VEGFA
CCK	Acetylcholine Binding And Downstream Events Homo sapiens R-HSA-181431	5.89E-14	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA7;CHRNA6;CHRNA9	Parathyroid hormone synthesis, secretion and action	7.35E-16	ATF2;MAP2K1;VDR;PDE4D;PDE4C;ITPR1;ITPR2;ITPR3;BRAF;ADCY2;PTH1R;FOS;ADCY1;ADCY5;RXRA;PDE4B;TNFSF11;PDE4A;MAPK1;RAF1;ATF4;FGFR1;MAPK3	Cancellous bone	5.89E-07	CALCA;IL6;TGFB1;TNFSF11;NFATC1;PPARG;PTH1R;SLC7A11;FGF2
CCL2	Phospholipase C-mediated cascade; FGFR4 Homo sapiens R-HSA-5654228	1.22E-13	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;FGF1;FGF2;ADCY5;FGF4;FGF19;FGFR4;CALM1	Cushing syndrome	7.71E-16	ATF2;ITPR1;ITPR2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;CACNA1F;CACNA1H;CACNA1G;ADCY5;CYP17A1;CACNA1I;MC2R;PDE11A;CCND1;MAPK1;CACNA1S;PDE8	Gbm cell	8.19E-07	CASP3;STAT3;AKT1;MET;TP53;VEGFA

						B;PDE8A;MAPK3; MAP2K1;BRAF;AG TR1;CRH;ATF4			
CCL3	L1CAM interactions Homo sapiens R-HSA-373760	1.32E-13	MAP2K1;ITGB3;L1CAM;RPS6KA3;SCN10A;SCN11A;SCN8A;SCN9A;KCNQ3;SCN7A;MAPK1;ITGAV;SCN4A;SCN5A;RAC1;SCN2A;SCN3A;SCN1A;MAPK3;FGFR1	Colorectal cancer	1.05E-15	MAP2K1;JUN;TGFB1;PIK3CD;BRAF;PIK3CB;FOS;CASP9;NRAS;CCND1;PIK3CA;CASP3;MYC;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;TP53;MAPK3	Spinal nerve	8.19E-07	SCN10A;SCN11A;SCN9A;TRPV1;SCN3A;ATF3
CCL5	Formation of Fibrin Clot (Clotting Cascade) Homo sapiens R-HSA-140877	1.75E-13	VWF;F10;SERPINC1;PROS1;F11;TFPI;F2;F3;F7;PROCR;F8;PROC;F9;PF4	VEGF signaling pathway	1.59E-15	MAP2K1;PIK3CD;PIK3CB;PTGS2;VEGFA;CASP9;MAPK11;NRAS;PPP3R2;PIK3CA;KDR;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;MAPK3	BTO:0002979	8.98E-07	IL10;IL4;IL6;CD4;CD40LG;IL1B;ALB;TNF;ELANE
CCND1	Signaling by the B Cell Receptor (BCR) Homo sapiens R-HSA-983705	5.37E-13	ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;FGF1;FGF2;FGF4;IKBKB;CASP9;NRAS;ERBB2;AKT1;MAPK1;MAPK3;PDGFRB;PDGFRA;CHUK;PTPN11;NFKB1;NFKBIA;PIK3CA;FGF19;KIT;KRAS;CALM1;FGFR4;FGFR2;FGFR1	Breast cancer	1.82E-15	FLT4;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;NRAS;CCND1;MYC;ERBB2;AKT1;TNFSF11;MAPK1;MAPK3;MAP2K1;JUN;BRAF;FOS;PIK3CA;FGF19;KIT;PGR;KRAS;RAF1;TP53;FGFR1	adipose-derived stem cell	9.19E-07	NT5E;TGFB1;VWF;HGF;PPARG;HBA1;FGF2;VEGFA
CCR4	Highly calcium permeable nicotinic acetylcholine receptors Homo sapiens	9.95E-13	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA6	Regulation of actin cytoskele	2.00E-15	CHRM2;CHRM3;CHRM1;CHRM4;ITGB3;CHRM5;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;NRAS;RAC2;BDKRB1;MAPK1;ITGAV;RAC1;MAPK3;PDGFRB;PDGFRA;MAP2K1;LIMK1;BRAF;F2;PIK3CA;F	Esophageal cancer cell	1.28E-06	CCND1;CASP3;STAT3;AKT1;PTGS2;TP53

	R-HSA-629597			ton		GF19;KRAS;RAF1;FGFR4;FGFR2;FGFR1			
CCR5	PI5P, PP2A and IER3 Regulate PI3K/AKT Signaling Homo sapiens R-HSA-6811558	1.07E-12	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;MAPK3;FGFR1	Adipocytokine signaling pathway	2.17E-15	CPT1A;PRKAB2;PRKAA1;PRKAA2;CHUK;STAT3;PRKAG1;PRKAG2;PTPN11;TNF;PRKAB1;PRKAG3;NFKB1;IKBKB;NFKBIA;RXRA;AKT1;JAK2;PPARA	Marrow cell	1.28E-06	SELP;SERPINC1;SERPINE1;CTLA4;F2;TFPI
CD209	TRAF6 mediated induction of NFkB and MAP kinases upon TLR7/8 or 9 activation Homo sapiens R-HSA-975138	1.07E-12	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;TLR9;TLR8;MAPK1;TLR7;MAPK3	Prolactin signaling pathway	2.91E-15	MAP2K1;STAT1;STAT3;PIK3CD;PIK3CB;FOS;NFKB1;CYP17A1;MAPK11;NRAS;CCND1;PIK3CA;AKT1;TNFSF11;MAPK1;KRAS;JAK2;RAF1;MAPK3	3T3-L1 cell	1.40E-06	IL6;WARS;MYC;PDE3B;SERPINE1;STAT3;AKT1;CCL2;PPARG;PPARA;TNF;MAPK3
CD4	Transmembrane transport of small molecules Homo sapiens R-HSA-382551	1.08E-12	GABRB3;RYR1;GABRB2;RYR2;GABRB1;ABCB1;SLC22A5;ADCY2;ADCY1;SLC7A11;ATP2C1;SLC6A2;SLC6A3;SLC8A1;ADCY5;AQP1;GLRA1;GLRA2;GLRA3;FTH1;GABRA2;GABRQ;GABRA1;SLC12A3;SLC15A1;GABRA6;KCNJ11;GABRA5;GABRA4;HTR3E;GABRA3;AVPR2;SLC12A1;HTR3C;HTR3D;HTR3A;HTR3B	B cell receptor signaling pathway	4.01E-15	MAP2K1;JUN;CHUK;PIK3CD;NFATC1;PIK3CB;FOS;NFKB1;IKBKB;NFKBIA;NRAS;PPP3R2;PIK3CA;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;MAPK3	Lymphoid cell line	1.87E-06	CD4;CD40LG;MYC;FAS;IL2

			;TRPV1;GABRG3;GABRG2;ALB;SLC29A4;SLC29A1;CALM1;RAF1;SLC29A2;FTL						
CD40LG	Interaction between L1 and Ankyrins Homo sapiens R-HSA-445095	1.29E-12	SCN10A;SCN11A;SCN8A;SCN9A;KCNQ3;SCN7A;SCN4A;SCN5A;L1CAM;SCN2A;SCN3A;SCN1A	NOD-like receptor signaling pathway	5.28E-15	CXCL8;IFNA1;ITPR1;ITPR2;ITPR3;NOD2;TNF;IKBKB;CCL5;CASP1;CCL2;MAPK1;JAK1;MAPK3;IFNAR2;JUN;CHUK;IFNB1;STAT1;CYBB;CYBA;NFKB1;NFKBIA;MAPK11;IL6;IL1B;TLR4;IFNAR1	Fetal membrane	2.08E-06	NT5E;FLT1;MMP2;IL1B;HBA1;TNF;MMP9
CD55	MyD88 dependent cascade initiated on endosome Homo sapiens R-HSA-975155	1.66E-12	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;TLR9;TLR8;MAPK1;TLR7;MAPK3	Neutrophil extracellular trap formation	1.63E-14	NCF1;ITGB3;NCF4;PIK3CD;PIK3CB;MPO;CASP1;RAC2;AKT1;MAPK1;RAC1;ELANE;MAPK3;MAP2K1;VWF;CYBB;CYBA;NFKB1;SELP;MAPK11;FCGR2A;PIK3CA;PPIF;TLR8;TLR7;RAF1;TLR4;TLR2	Leukocyte	2.43E-06	RET;DDR1;IFNA1;HGF;PIK3CD;ADRB2;NOD2;MPO;NR3C2;NT5E;IL1B;CCL5;HRH4;CCL3;HLA-DRB1;TRDMT1;TLR2;PF4
CDH5	Toll Like Receptor 7/8 (TLR7/8) Cascade Homo sapiens R-HSA-168181	1.66E-12	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;TLR9;TLR8;MAPK1;TLR7;MAPK3	Bladder cancer	1.69E-14	MAP2K1;CXCL8;MMP2;BRAF;MMP9;VEGFA;NRAS;CCND1;MYC;ERBB2;MAPK1;KRAS;RAF1;TP53;MAPK3	Inferior vena cava	2.86E-06	SERPINC1;SERPINE1;ALB;REN;F2;EPHA2
CES	Integration of energy	1.9	CHRM3;PRKAB2;PRKAA2;KCNJ11;ITPR1;CACNA2D2;CA	Inflamma	1.7	PTGER4;NTRK1;PTGER2;ITPR1;HTR2B;ITPR2;HTR2C;PIK	Subm	3.3	PDGFRA;SCN10A;CD4;HTR7;KIT;HTR3A;HBA1;TNF;TP53

1	metabolism Homo sapiens R-HSA-163685	6E-12	CNA1A;ITPR2;PRKAG2;CACNA1D;ITPR3;ADCY2;CACNA1C;ADCY1;ADRA2C;CACNA1E;ADRA2A;ADCY5;CACNB2;CACNB3	tory mediator regulation of TRP channels	7E-14	3CD;ITPR3;ADCY2;TRPV1;HTR2A;PIK3CB;ADCY1;ADCY5;MAPK11;HRH1;PIK3CA;IL1B;BDKRB1;CALM1	uc osa	1E-06	
CHRM1	PI3K/AKT Signaling in Cancer Homo sapiens R-HSA-2219528	2.05E-12	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;FGFR4;FGFR2;FGFR1	Cocaine addiction	1.79E-14	ATF2;GRIA2;JUN;GRIN2C;GRIN2B;SLC6A3;NFKB1;ADCY5;GRIN1;GRIN2D;GRIN2A;GRIN3B;GRIN3A;DRD1;DRD2;ATF4	Amniotic fluid	3.92E-06	CRP;NT5E;CD40LG;IL1B;KIT;ALB;REN;TNF;F3
CHRM2	Platelet homeostasis Homo sapiens R-HSA-418346	2.53E-12	GUCY1A2;NOS2;PDE1B;PDE1A;PDE3B;PDE2A;ITPR1;ITPR2;ITPR3;PTPN11;SLC8A1;PDE11A;PDE10A;KCNMA1;PDE3A;PDE5A;CALM1;PDE9A	Gastric cancer	2.27E-14	ABCB1;PIK3CD;PIK3CB;FGF1;FGF2;FGF4;NRAS;RXRA;CCND1;MYC;ERBB2;AKT1;MAPK1;MAPK3;MAP2K1;TGFB1;HGF;BRAF;PIK3CA;FGF19;KRAS;RAF1;TP53;MET;FGFR2	Renal vein	4.93E-06	SERPINC1;ALB;REN;F2
CHRM3	PI3K/AKT activation Homo sapiens R-HSA-198203	2.72E-12	PDGFRB;NTRK1;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Renal cell carcinoma	3.39E-14	MAP2K1;JUN;TGFB1;HGF;PIK3CD;BRAF;PTPN11;PIK3CB;VEGFA;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAC1;RAF1;MET;MAPK3	Myoblast	4.94E-06	JUN;TGFB1;CCND1;MYC;CASP3;AKT1;PPARG;FGFR4;TNF;FGF2;FGFR1;MAPK3
CHR	Toll Like Receptor 9 (TLR9)	3.1	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBK	Long-ter	3.8	RYR1;GRIA1;GUCY1A2;GRIA2;MAP2K1;ITPR1;CACNA1A;	Talus	6.4	CRP;IL6;ACE;IL1B;ALB;SIK1;F2;TNF

M4	Cascade Homo sapiens R-HSA-168138	1E-12	B;NFKBIA;RPS6KA3;MAPK11;MAPK7;TLR9;TLR8;MAPK1;TLR7;MAPK3	mdepression	9E-14	ITPR2;ITPR3;BRAF;NRAS;CRH;MAPK1;KRAS;RAF1;GRIA3;MAPK3		5E-06	
CHRM5	Toll-Like Receptors Cascades Homo sapiens R-HSA-168898	3.29E-12	ATF1;ATF2;MAP2K1;JUN;CHUK;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;TLR9;TLR8;MAPK1;TLR7;TLR4;TLR3;TLR2;MAPK3	Longevity regulating pathway	4.12E-14	ATF2;PRKAB2;PRKAA1;PRKAA2;PRKAG1;PIK3CD;PRKAG2;ADCY2;PIK3CB;ADCY1;PRKAB1;NFKB1;PRKAG3;ADCY5;NRAS;PIK3CA;AKT1;PPARG;KRAS;TP53;ATF4	Penis	7.85E-06	AR;TGFB1;PDE5A;HBA1;FGF2;TP53
CHRNA10	Phospholipase C-mediated cascade: FGFR1 Homo sapiens R-HSA-5654219	3.32E-12	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;FGF1;FGF2;ADCY5;FGF4;CALM1;FGFR1	Insulin resistance	1.37E-13	CPT1A;PRKAB2;PRKAA1;PRKAA2;STAT3;PRKAG1;PIK3CD;PRKAG2;PTPN11;PIK3CB;TNF;PRKAB1;NFKB1;PRKAG3;NFKBIA;IKBKB;RPS6KA3;IL6;PIK3CA;AKT1;PPARA	Nasal lavage fluid	1.06E-05	IL4;HRH1;IL13;ALB;MPO;TNF
CHRNA2	Ion channel transport Homo sapiens R-HSA-983712	4.51E-12	GABRB3;RYR1;GABRB2;RYR2;GABRB1;ATP2C1;GLRA1;GLRA2;GLRA3;GABRA2;GABRQ;GABRA1;GABRA6;GABRA5;GABRA4;HTR3E;GABRA3;HTR3C;HTR3D;HTR3A;TRPV1;HTR3B;GABRG3;GABRG2;CALM1;RAF1	Regulation of lipolysis in adipocytes	1.40E-13	NPR1;PDE3B;PTGER3;PIK3CD;ADCY2;ADRB1;PIK3CB;ADCY1;ADRB2;PTGS2;ADCY5;PTGS1;ADRB3;PIK3CA;ADORA1;AKT1	Oral cancer cell	1.06E-05	PARP1;MMP2;CASP3;AKT1;MMP9;TP53
CHRNA3	Negative regulation of the PI3K/AKT network Homo	4.66E-	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FG	Endometrial can	3.51E-	MAP2K1;PIK3CD;BRAF;PIK3CB;CASP9;NRAS;CCND1;PIK3CA;MYC;ERBB2;AKT1;MAPK1;KRAS;RAF1;TP53;MAPK3	Resting cell	1.37E-	NFKBIA;CD4;NCF1;NCF4;IL2

	sapiens R-HSA-199418	12	FR2;MAPK3;FGFR1	cer	13			05	
CHRNA4	Phospholipase C-mediated cascade; FGFR2 Homo sapiens R-HSA-5654221	6.27E-12	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;FGF1;FGF2;FGF4;ADCY5;CALM1;FGFR2	Alcoholism	5.78E-13	ATF2;SLC6A3;ADCY5;GRIN2A;NRAS;MAPK1;DRD1;DRD2;MAPK3;MAP2K1;BRAF;GRIN2C;GRIN2B;GRIN2D;GRIN1;GRIN3B;GRIN3A;ADORA2A;ADORA2B;CRH;KRAS;RAF1;CALM1;SLC29A1;ATF4;SLC29A2	T-98G cell	1.37E-05	CASP9;MMP2;CASP3;AKT1;TP53
CHRNA5	Downstream signaling events of B Cell Receptor (BCR) Homo sapiens R-HSA-1168372	8.09E-12	PIK3CD;PIK3CB;FGF1;FGF2;FGF4;CASP9;IKBKB;NRAS;ERBB2;AKT1;MAPK1;MAPK3;PDGFRB;PDGFRA;CHUK;PTPN11;NFKB1;NFKBIA;PIK3CA;FGF19;KIT;KRAS;FGFR4;FGFR2;FGFR1	Glucagon signaling pathway	1.14E-12	ATF2;CPT1A;PRKAB2;PRKAA1;PRKAA2;PDE3B;ITPR1;PRKAG1;ITPR2;PRKAG2;ITPR3;ADCY2;PRKAB1;PRKAG3;PPP3R2;AKT1;SIK1;CALM1;PPARA;ATF4	Phagocyte	1.40E-05	SELP;SERPINC1;ITGB3;SERPINE1;CTLA4;F2
CHRNA6	Nuclear Receptor transcription pathway Homo sapiens R-HSA-383280	1.15E-11	THRB;THRA;VDR;NR1I3;NR1I2;NR1H4;NR3C1;NR3C2;AR;RXRA;PPARG;PGR;PPARA;PPARD	Phospholipase D signaling pathway	1.34E-12	PDGFRB;PDGFRA;MAP2K1;CXCL8;AVPR2;PIK3CD;ADCY2;PTPN11;PIK3CB;ADCY1;F2;ADCY5;NRAS;PIK3CA;CXCR1;KIT;AGTR1;AKT1;MAPK1;PTK2B;KRAS;RAF1;MAPK3	U2-OS cell	1.44E-05	CCND1;CASP3;MMP2;AKT1;ATM;MMP9;TP53
CHRNA7	Constitutive Signaling by Aberrant PI3K in Cancer	1.21E-11	PDGFRB;PDGFRA;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;PIK3CA;FGF19;KIT;ERBB2;FGFR4;FGFR2;FGFR1	Human papillomavi	1.40E-11	PTGER4;IFNA1;ITGB3;PIK3CD;PIK3CB;PTGS2;TNF;IKBKB;NRAS;CCND1;CASP3;AKT1;MAPK1;ITGAV;JAK1;MAPK3;IFNAR2;PDGFRB;	Kidney cancer cel	1.83E-05	PARP1;CCND1;CASP3;AKT1;TP53;VEGFA

	Homo sapiens R-HSA-2219530	1		rus infection	2	MAP2K1;CHUK;VWF;IFNB1;STAT1;HLA-A;NFKB1;VEGFA;PIK3CA;FAS;ATM;KRAS;RAF1;TP53;TLR3;IFNAR1	l	5	
CHRNA9	PI-3K cascade: FGFR1 Homo sapiens R-HSA-5654689	1.44E-11	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Thyroid cancer	1.79E-12	RET;NTRK1;MAP2K1;BRAF;NRAS;RXRA;CCND1;MYC;MAPK1;KRAS;PPARG;TP53;MAPK3	Leiomyosarcoma cell line	2.21E-05	HRH1;ADORA1;ADRB2;ADRA1B
CHRNB2	PI-3K cascade: FGFR3 Homo sapiens R-HSA-5654710	1.44E-11	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Pathogenic Escherichia coli infection	2.24E-12	CXCL8;TNF;IKBKB;CASP9;TUBA1A;CASP3;ABL1;CASP1;MAPK1;RAC1;MAPK3;JUN;CHUK;TUBB;PTPN11;FOS;F2;TUBB4B;NFKB1;NFKBIA;MAPK11;IL6;FCGR2A;IL1B;FAS;TLR4	Venom duct	2.21E-05	GGCX;CHRNA4;CACNA1B;SCN3A
CHRNB3	PI3K events in ERBB4 signaling Homo sapiens R-HSA-1250342	1.44E-11	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Type II diabetes mellitus	2.38E-12	KCNJ11;CACNA1B;CACNA1A;PIK3CD;CACNA1D;CACNA1C;PIK3CB;CACNA1E;TNF;CACNA1G;IKBKB;PIK3CA;MAPK1;MAPK3	Chronic lymphocytic leukemia cel	3.11E-05	IL4;CD40LG;AKT1;FAS;ATM;TP53;IL2

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CHRNB4	PIP3 activates AKT signaling Homo sapiens R-HSA-1257604	1.44E-11	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Pertussis	2.69E-12	IL10;JUN;CXCL8;NOS2;FOS;TNF;NFKB1;IL1A;MAPK11;IL6;CASP3;IL1B;CASP1;MAPK1;CALM1;TLR4;MAPK3	L-929 cell	3.11E-05	DPP4;FCGR2A;IFNA1;IFNB1;TNF;IL2;ICAM1
CHUK	PI-3K cascade: FGFR4 Homo sapiens R-HSA-5654720	1.44E-11	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Salmonella infection	2.91E-12	CXCL8;PIK3CD;PIK3CB;TNF;IKBKB;TUBA1A;MYC;CASP3;CASP1;AKT1;MAPK1;RAC1;MAPK3;JUN;MAP2K1;CHUK;TUBB;FOS;TUBB4B;NFKB1;NFKBIA;MAPK11;IL6;PIK3CA;IL1B;TLR9;RAF1;TLR4;TLR2	g/g	3.11E-05	IL10;IL6;CTLA4;HTR2A;TNF;SLC6A2;TP53
CKS1B	PI-3K cascade: FGFR2 Homo sapiens R-HSA-5654695	1.44E-11	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Fc epsilon RI signaling pathway	5.16E-12	MAP2K1;IL13;PIK3CD;PIK3CB;TNF;IL4;MAPK11;NRAS;PIK3CA;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;MAPK3	Uroepithelium	3.73E-05	AR;CCND1;PIK3CA;ERBB2;AKT1;TRPV1;PTGS2;TP53;VEGFA
CPT1A	Import of palmitoyl-CoA into the mitochondrial matrix Homo sapiens R-HSA-200425	1.75E-11	CPT1A;PRKAB2;RXRA;PRKAA2;CPT2;PRKAG2;SLC25A20;PPARD	Necroptosis	6.21E-12	IFNAR2;IFNA1;PARP1;IFNB1;STAT1;STAT3;CYBB;TNF;IL1A;IFNG;FTH1;SMPD1;IL1B;CASP1;FAS;JAK2;PPIA;JAK3;TLR4;TLR3;FTL;IFNAR1;JAK1	HMEpC cell	3.78E-05	ST14;CCND1;MYC;ERBB2;AKT1;TP53
CP	MyD88-independ	1.	ATF1;ATF2;MAP2K1;JUN;CHUK;PTPN	Small	6.	CHUK;NOS2;PIK3CD;PIK3CB;PTGS2;N	Myo	3.	RYR1;ATF2;RYR2;KCNMA1

T2	ent TLR3/TLR4 cascade Homo sapiens R-HSA-166166	77E-11	11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;MAPK3	cell lung cancer	90E-12	FKB1;CKS1B;CASP9;IKBKB;NFKBIA;RXRA;CCND1;PIK3CA;CASP3;MYC;AKT1;ITGAV;TP53	metrium	91E-05	
CRAT	Toll Like Receptor 3 (TLR3) Cascade Homo sapiens R-HSA-168164	1.77E-11	ATF1;ATF2;MAP2K1;JUN;CHUK;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;MAPK3	Cytokine-cytokine receptor interaction	7.75E-12	IL1RN;CXCL8;IFNA1;CSF2RB;TNF;CSF2RA;CXCR1;CCL5;CCL3;TNFSF11;CCL2;CCR5;CCR4;IL10;IFNAR2;TGFB1;IFNB1;IL13;IL2;IL4;IL1A;IL6;CD4;CD40LG;IFNG;IL7;IL1B;IL3RA;FAS;PF4;IFNAR1	Bronchial epithelial cell line	3.99E-05	IL6;IL1B;CCL5;TNF;ICAM1
CRBN	TRIF-mediated TLR3/TLR4 signaling Homo sapiens R-HSA-937061	1.77E-11	ATF1;ATF2;MAP2K1;JUN;CHUK;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;MAPK3	Sphingolipid signaling pathway	8.96E-12	OPRD1;MAP2K1;PIK3CD;PIK3CB;TNF;NFKB1;MAPK11;NRAS;PIK3CA;ADORA3;SMPD1;ADORA1;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;TP53;MAPK3	Corpus cavernosum	3.99E-05	PDE1B;PDE1A;KCNMA1;PDE4A;PDE5A
CRH	GPVI-mediated activation cascade Homo sapiens R-HSA-114604	2.04E-11	PIK3CD;CSF2RB;PTPN11;PIK3CB;CSF2RA;IL2;PIK3CA;IL3RA;RAC2;AKT1;RAC1;JAK2;JAK3;JAK1	Thyroid hormone signaling pathway	1.23E-11	MAP2K1;THRB;THRA;STAT1;ITGB3;PIK3CD;PIK3CB;CASP9;NRAS;RXRA;CCND1;PIK3CA;MYC;AKT1;MAPK1;ITGAV;KRAS;RAF1;TP53;MAPK3	Jugular vein	3.99E-05	HTR7;SERPINC1;ALB;CCK;F2

CROT	Phospholipase C-mediated cascade; FGFR3 Homo sapiens R-HSA-5654227	2.24E-11	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;FGF1;FGF2;ADCY5;FGF4;CALM1	HIF-1 signaling pathway	1.53E-11	MAP2K1;FLT1;NOS2;SERPINE1;STAT3;CYBB;PIK3CD;PIK3CB;NFKB1;VEGFA;IL6;IFNG;PIK3CA;ERBB2;AKT1;MAPK1;TEK;TLR4;MAPK3	Saphenous vein	3.99E-05	HTR7;MMP2;SERPINE1;HTR1B;MMP9
CRP	GAB1 signalosome Homo sapiens R-HSA-180292	2.28E-11	PDGFRB;PDGFRA;CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	Insulin signaling pathway	1.68E-11	MAP2K1;PRKAB2;PRKAA1;PRKAA2;PDE3B;PRKAG1;PIK3CD;PRKAG2;BRAF;PIK3CB;PRKAB1;PRKAG3;IKBKB;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAF1;CALM1;MAPK3	Myotube	4.08E-05	RYR1;IL6;CHRNA4;MYC;AKT1;PPARG;CACNA1S;TNF;FGF2;PPARD;MAPK3
CSF2RA	Activated TLR4 signalling Homo sapiens R-HSA-166054	2.52E-11	ATF1;ATF2;MAP2K1;JUN;CHUK;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;TLR2;MAPK3	Complement and coagulation cascades	1.84E-11	VWF;F10;SERPINC1;PROS1;SERPINE1;F11;F2;TFPI;F3;F7;PROCR;F8;F9;PROC;BDKRB1;CD55;MBL2	Osteoclast	4.41E-05	FDPS;CALCA;GGPS1;CA2;TNFSF11;ITGAV;NFATC1;PTH1R
CSF2RB	Presynaptic nicotinic acetylcholine receptors Homo sapiens R-HSA-622323	5.13E-11	CHRNB2;CHRNA3;CHRNB4;CHRNB3;CHRNA2;CHRNA5;CHRNA4;CHRNA6	Platelet activation	1.96E-11	P2RY12;GUCY1A2;VWF;ITGB3;ITPR1;ITPR2;PIK3CD;ITPR3;ADCY2;PIK3CB;ADCY1;F2;ADCY5;PTGS1;MAPK11;FCGR2A;PIK3CA;AKT1;MAPK1;MAPK3	Alveolar bone	4.71E-05	IL1A;IL6;TGFB1;MMP2;IL1B;TNFSF11;TNF;MMP9;FGF4
CT	Unblocking of	5.	GRIA1;GRIA2;GRIN2A;GRIN2C;GRIN2	Focal	2.	FLT1;FLT4;ITGB3;PIK3CD;PIK3CB;CCN	Fron	4.	ATF1;ATF2;PRSS1;MT-

LA4	NMDA receptor, glutamate binding and activation Homo sapiens R-HSA-438066	51E-11	B;GRIA3;GRIN2D;GRIN1;GRIA4	adhesion	24E-11	D1;ERBB2;KDR;RAC2;AKT1;MAPK1;ITGAV;RAC1;MAPK3;PDGFRB;PDGFRA;JUN;MAP2K1;VWF;HGF;BRAF;VEGFA;PIK3CA;RAF1;MET	talobe	81E-05	ND1;AQP1;ICAM1;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;GABRG3;PRKAB1;GABRG2;GABRG1;AR;SCN10A;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;GRIN2A;PPP3R2;LTA4H;APOE;SCN3A;ELANE;JUN;ACE;PDE2A;PRG2;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2B;GRIN2D;GRIN3A;CALY;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;DDR1;RYR1;GABRB2;RYR2;GABRB1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;SLC6A2;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;ANXA1;WARS;CAMLG;PARP1;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;KCNMA1;CANX;KIT;TLR9;SLC29A4;TLR7;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2

									;PCNA;SERPINC1;PTGER1;NR1I2;ADCY2;ADCY1;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;GABRD;XDH;CD55;GABRA2;P2RY12;GABRA1;CRBN;GABRA6;GABRA5;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;GABRA3;STAT3;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;CHRM1;NCF1;NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;CYBA;LIG3;CACNB1;CACNB2;CACNB3;CACNB4;SCN8A;GPD1;PPIF;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA5;CHRNA4;GLO1;NPR2;ITPR1;CACNA1B;ITPR2;CACNA1A;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;CACNA1E;CACNA1H;CACNA1G;DPP4;CACNA1I;HRH1;HRH2;ABL1;DRD

									1;DRD2;GRIA3;DRD5;GRIA4;FDPS;PRNP;TGFB1;HSPA5;HTR1F;SRD5A1;SRD5A3;HTR1B;NFKB1;IL4;NFKBIA;IL6;GGCX;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;FLT4;HTR2A;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA1;CPT2;CA2;CASP3;CA4;CA7;PDE4B;PDE4A;ITGAV;SCN5A;CCDC51;CHUK;GGPS1;VWF;DDX58;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3C;ADRA2B;ADRA2A;ADORA2A;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;OPRL1;ATP2C1;CACNG6;CACNG7;CACNG8;SLC25A29;MAPK7;ERBB2;MAPK1;PTK2B;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;CACNG3;MAPK4;KCNJ3;MAPK3;NTRK1;KCNJ11;KCNJ9;NTRK3;SLC12A1;LIMK1;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;PDE7A
CXC	MyD88: Mal cascade	6.9	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBK	Glioma	2.5	PDGFRB;PDGFRA;MAP2K1;PIK3CD;BRAF;PIK3CB;NRAS;	Vasde	5.2	HRH1;HTR7;PTGER3;OPRL1;ADORA1;OPRM1;ADRA1B

L8	initiated on plasma membrane Homo sapiens R-HSA-166058	3E-11	B;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR2;MAPK3		7E-11	CCND1;PIK3CA;AKT1;MAPK1;KRAS;RAF1;CALM1;TP53;MAPK3	ferens	0E-05	
CXCR1	Toll Like Receptor TLR1:TLR2 Cascade Homo sapiens R-HSA-168179	6.93E-11	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR2;MAPK3	Phagosome	1.26E-10	NCF1;ITGB3;TUBB;NCF4;CYBB;CYBA;HLA-A;TUBB4B;MPO;TUBA1A;FCGR2A;CD209;CANX;ITGAV;CALR;RAC1;TLR4;HLA-DRB1;MBL2;HLA-DQB1;TLR2	Promastigote	5.83E-05	IL10;IL4;CD4;IFNG;APOE;TNF
CYBA	Toll Like Receptor TLR6:TLR2 Cascade Homo sapiens R-HSA-168188	6.93E-11	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR2;MAPK3	Choline metabolism in cancer	1.97E-10	PDGFRB;PDGFRA;MAP2K1;JUN;SLC22A5;PIK3CD;PIK3CB;FOS;NRAS;PIK3CA;RAC2;AKT1;MAPK1;KRAS;RAC1;RAF1;MAPK3	Lumbar spine	6.57E-05	CRP;CALCA;IL6;VDR;ALB;HBB;TNFSF11;SHBG
CYBB	Toll Like Receptor 2 (TLR2) Cascade Homo sapiens R-HSA-181438	6.93E-11	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR2;MAPK3	Progesterone-mediated oocyte maturation	2.74E-10	MAP2K1;PDE3B;PIK3CD;BRAF;ADCY2;PIK3CB;ADCY1;ADCY5;RPS6KA3;MAPK11;PIK3CA;AKT1;MAPK1;PGR;KRAS;RAF1;MAPK3	Myenteric plexus	7.14E-05	HTR7;KIT;CCK;HTR3A;FOS;TRPV1;HTR4
C	Opioid	8	PDE1C;PDE1B;PDE	Sig	2	MAP2K1;STAT3;PI	Os	7	CALCA;NT5E;TGFB

YP11B2	Signalling Homo sapiens R-HSA-111885	.83E-11	4D;PDE1A;PDE4C;ITPR1;ITPR2;ITPR3;ADCY2;OPRM1;ADCY1;ADCY5;PDE4B;PDE4A;MAPK1;CALM1	naling pathways regulating pluripotency of stem cells	.78E-10	K3CD;PIK3CB;FGF2;MAPK11;NRAS;PIK3CA;MYC;AKT1;MAPK1;KRAS;RAF1;FGFR4;JAK2;JAK3;FGFR2;FGFR1;JAK1;MAPK3	teocyte	.14E-05	1;VDR;TNFSF11;PTH1R;CCDC51
CYP17A1	Toll Like Receptor 4 (TLR4) Cascade Homo sapiens R-HSA-166016	1.18E-10	ATF1;ATF2;MAP2K1;JUN;CHUK;PTPN11;FOS;NOD2;NFKB1;NFKBIA;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;TLR4;TLR3;TLR2;MAPK3	Spinocerebellar ataxia	2.78E-10	GRIA1;RYR1;GRIA2;ITPR1;CACNA1A;ITPR2;PIK3CD;ITPR3;PIK3CB;GRIN2C;GRIN2B;GRIN2D;GRIN1;GRIN2A;GRIN3B;GRIN3A;PIK3CA;PPIF;AKT1;GRIA3	A-431 cell	7.21E-05	JUN;STAT1;CASP3;ERBB2;AKT1
DDR1	MAP kinase activation in TLR cascade Homo sapiens R-HSA-450294	1.26E-10	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	MicroRNAs in cancer	6.01E-10	ABCB1;ITGB3;PIK3CD;PIK3CB;PTGS2;IKBKB;NRAS;MAPK7;CCND1;MYC;CASP3;ERBB2;ABL1;MAPK1;MAPK3;PDGFRB;PDGFRA;ST14;MAP2K1;STAT3;MMP9;NFKB1;VEGFA;PIK3CA;ATM;KRAS;RAF1;TP53;MET	Trigeminal nerve	8.67E-05	NTRK1;NTRK3;CACNA1A;FOS;OPRM1;TRPV1
DDR2	TRAF6 Mediated Induction of	1.55E	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7	Africantrypa	7.37E	IL10;IL6;VCAM1;IFNG;IL1B;TLR9;HBB;FAS;HBA1;TNF;ICAM1	Cyst	1.21E	CALCA;CD40LG;AVPR2;PGR;KRAS;TP53;MT-ND1;CES1

	proinflammatory cytokines Homo sapiens R-HSA-168180	-10	;MAPK1;MAPK3	nosomiasis	-10			-04	
DDX58	PLC-gamma1 signalling Homo sapiens R-HSA-167021	2.63E-10	NTRK1;PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Salivary secretion	7.66E-10	CHRM3;GUCY1A2;ITPR1;ITPR2;ADRA1D;ADCY2;ADRB1;ITPR3;ADCY1;ADRB2;ADRA1B;ADRA1A;ADCY5;ADRB3;KCNMA1;CALM1	Frontal gland	1.37E-04	FDPS;WARS;GGPS1
DPP4	Cell surface interactions at the vascular wall Homo sapiens R-HSA-202733	3.22E-10	PROS1;ITGB3;PTPN11;PIK3CB;SLC7A11;L1CAM;F2;SELP;PROCR;NRAS;PROC;PIK3CA;ITGAV;KRAS;TEK;PPIA;PF4	Diabetic cardiomyopathy	9.30E-10	RYR2;ACE;TGFB1;PARP1;NCF1;MMP2;NCF4;CYBB;PIK3CD;CYBA;PIK3CB;MMP9;NFKB1;MAPK11;CPT2;PIK3CA;AGTR1;RAC2;PPIF;AKT1;REN;RAC1;PPARA	Hybridoma cell line	1.37E-04	IL6;CD40LG;ALB
DRD1	CREB phosphorylation through the activation of Ras Homo sapiens R-HSA-442742	3.74E-10	RPS6KA3;GRIN2A;MAPK1;BRAF;GRIN2C;RAF1;CALM1;GRIN2B;GRIN2D;GRIN1	Viral carcinogenesis	9.30E-10	ATF2;JUN;STAT3;PIK3CD;HLA-A;PIK3CB;NFKB1;NFKBIA;POLB;NRAS;CCND1;PIK3CA;CASP3;MAPK1;KRAS;RAC1;CCR5;TP53;CCR4;JAK3;ATF4;JAK1;MAPK3	tsA-201 cell	1.37E-04	CACNA1B;OPRL1;SCN4A
DRD2	Post NMDA receptor activation events Homo sapiens	3.76E-1	RPS6KA3;GRIN2A;MAPK1;BRAF;ADCY1;GRIN2C;RAF1;CALM1;GRIN2B;GRIN2D;GRIN1	Shigellosis	1.71E-0	CXCL8;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;TNF;IKBKB;CCL5;CASP1;AKT1;MAPK1;RAC1;MAPK3;JUN;CHUK;IFNB1;NFKB1;NFKBIA;	ECV-304 cell	1.45E-0	VCAM1;KDR;TNF;VEGFA

	R-HSA-438064	0			9	MAPK11;PIK3CA;IL1B;ATM;TP53;TLR4		4	
DRD3	Gamma-carboxylation of protein precursors Homo sapiens R-HSA-159740	5.32E-10	F7;PROC;F9;GGCX;F10;PROS1;F2	ErbB signaling pathway	1.80E-09	MAP2K1;JUN;PIK3CD;BRAF;PIK3CB;NRAS;PIK3CA;MYC;ERBB2;ABL1;AKT1;MAPK1;KRAS;RAF1;MAPK3	Stellate cell	1.45E-04	PDGFRB;IL6;TGFB1;MMP2
DRD4	Activation of PPARGC1A (PGC-1alpha) by phosphorylation Homo sapiens R-HSA-2151209	5.32E-10	MAPK11;PRKAB2;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3	Insulin secretion	2.14E-09	ATF2;CHRM3;RYR2;KCNJ11;ADCY2;CACNA1D;ITPR3;CCK;ADCY1;CACNA1C;CACNA1F;ADCY5;KCNMA1;CACNA1S;ATF4	Venule	1.45E-04	IL1B;ALB;MPO;AQP1
DRD5	NCAM1 interactions Homo sapiens R-HSA-419037	7.37E-10	CACNB1;CACNA1I;PRNP;CACNB2;CACNB3;CACNB4;CACNA1D;CACNA1C;CACNA1S;CACNA1H;CACNA1G	Leukocyte transendothelial migration	2.24E-09	VCAM1;NCF1;MMP2;NCF4;CYBB;PIK3CD;CYBA;PTPN11;PIK3CB;MMP9;ICAM1;CDH5;MAPK11;PIK3CA;RAC2;PTK2B;RAC1	Reticulum	1.54E-04	RYR1;RYR2;ITPR1;ATP2C1;SLC8A1
EDNRA	Regulation of insulin secretion Homo sapiens	7.44E-	CHRM3;KCNJ11;ITPR1;CACNA2D2;ITPR2;CACNA1A;ITPR3;CACNA1D;CACNA1C;ADRA2C;CACNA1E;ADRA2A;A	Amoebiasis	3.12EE-	IL10;TGFB1;CXCL8;NOS2;PIK3CD;PIK3CB;ADCY1;TNF;NFKB1;IL6;IFNG;PIK3CA;CASP3;IL1B;TLR4;TLR2	Brainstem	2.05EE-	CHRNB3;OPRL1;HTR2A;FGF1

	R-HSA-422356	10	DCY5;CACNB2;CACNB3		09			04	
ELANE	Disease Homo sapiens R-HSA-1643685	9.68E-10	SDC2;PIK3CD;CSF2RB;PIK3CB;FGF1;FGF2;CSF2RA;FGF4;IKBKB;CASP9;NRAS;MC2R;MYC;ERBB2;AKT1;RAC1;CCR5;PDGFRB;PDGFRA;MAP2K1;TGFB1;CHUK;KCNJ11;LIG1;STAT1;STAT3;AVPR2;PTPN11;HLA-A;NFKB1;NFKBIA;CD4;PIK3CA;FGF19;ALB;CANX;KIT;KRAS;CALR;CALM1;FGFR4;TLR4;PPIA;TLR3;FGFR2;TLR2;FGFR1	NF-kappa B signaling pathway	4.18E-09	VCAM1;CXCL8;CHUK;PARP1;DDX58;PTGS2;TNF;NFKB1;ICAM1;NFKBIA;IKBKB;CD40LG;IL1B;TNFSF11;ATM;TLR4	SK-N-SH cell	2.05E-04	CASP3;AKT1;SLC6A2;TP53
EPHA2	Toll Like Receptor 10 (TLR10) Cascade Homo sapiens R-HSA-168142	1.07E-09	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	Epithelial cell signaling in Helicobacter pylori infection	1.15E-08	JUN;CXCL8;CHUK;PTPN11;NFKB1;IKBKB;NFKBIA;MAPK11;CXCR1;CASP3;CCL5;RAC1;MET	Amnion	2.38E-04	IFNA1;IFNB1;ABL1;PTGS2;PTGS1
ERBB2	Toll Like Receptor 5 (TLR5) Cascade Homo sapiens	1.07E-	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	Thermogenesis	1.24E-	ATF2;CPT1A;PRKAB2;PRKAA1;PRKAA2;NPR1;PRKAG1;PRKAG2;ADCY2;ADCY1;PRKAB1;PRKAG3;ADCY5;RPS6KA	2t	2.68E-	IL4;IFNG;IL2

	R-HSA-168176	09			08	3;MAPK11;NRAS;SLC25A29;ADRB3;CPT2;PPARG;KRAS;SLC25A20;FGFR1		04	
ETFDH	MyD88 cascade initiated on plasma membrane Homo sapiens R-HSA-975871	1.07E-09	ATF1;ATF2;MAP2K1;JUN;CHUK;FOS;NOD2;NFKB1;IKBKB;NFKBIA;RPS6KA3;MAPK11;MAPK7;MAPK1;MAPK3	Hematopoietic cell lineage	1.58E-08	FLT3;ITGB3;TNF;CSF2RA;IL4;IL1A;IL6;CD4;IL7;IL1B;IL3RA;KIT;HLA-DRB1;CD55;HLA-DQB1	Anaplastic large cell lymphoma cell line	2.68E-04	FGF19;STAT3;JAK3
F10	Gamma-carboxylation, transport, and amino-terminal cleavage of proteins Homo sapiens R-HSA-159854	1.43E-09	F7;PROC;F9;GGCX;F10;PROS1;F2	Allograft rejection	1.65E-08	IL10;IL4;CD40LG;IFNG;FAS;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	BTO:0001439	2.82E-04	VWF;CHRNA4;SCN9A;PLA2G10;LTA4H;F2
F11	DAG and IP3 signaling Homo sapiens R-HSA-1489509	2.56E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Viral myocarditis	1.76E-08	CASP9;CD40LG;CCND1;CASP3;RAC2;ABL1;RAC1;HLA-A;CD55;HLA-DRB1;ICAM1;HLA-DQB1	Middle ear	2.82E-04	PGRMC1;CD40LG;IL1B;ALB;TNF;TLR2
F	Role of	2	PDGFRB;PDGFRA;	He	2	IFNA1;ITGB3;PIK3	Gu	2	IL10;CD4;CD40LG;

2	LAT2/NTAL/LAB on calcium mobilization Homo sapiens R-HSA-2730905	.62E-09	CHUK;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;PIK3CA;FGF19;KIT;ERBB2;AKT1;MAPK1;FGFR4;FGFR2;FGFR1;MAPK3	rpes simplex virus 1 infection	.02E-08	CD;PIK3CB;TNF;IKBKB;CASP9;CCL5;CASP3;AKT1;CCL2;JAK2;JAK1;IFNAR2;CHUK;STAT1;IFNB1;DDX58;PTPN11;HLA-A;NFKB1;NFKBIA;IL6;PIK3CA;IFNG;IL1B;TLR9;FAS;CALR;TP53;HLA-DRB1;TLR3;HLA-DQB1;IFNAR1;TLR2	tmucosa	.82E-04	TNF
F3	Reversible hydration of carbon dioxide Homo sapiens R-HSA-1475029	3.37E-09	CA12;CA1;CA3;CA2;CA4;CA7;CA14	Pancreatic secretion	2.40E-08	CHRM3;RYR2;PRSS1;PLA2G2A;ITPR1;ITPR2;ITPR3;ADCY2;CCK;ADCY1;ADCY5;CA2;PLA2G10;KCNMA1;RAC1	Flower	2.92E-04	IL6;ALB;APOE;F2;TNF
F7	Adaptive Immune System Homo sapiens R-HSA-1280218	4.75E-09	NCF1;NCF4;ITPR1;ITPR2;PIK3CD;ITPR3;PIK3CB;FGF1;FGF2;FGF4;ICAM1;IKBKB;CASP9;NRAS;ERBB2;AKT1;CTLA4;MAPK1;ITGAV;RAC1;MAPK3;PDGFRB;PDGFRA;VCAM1;CHUK;HSPA5;CYBB;PTPN11;CYBA;HLA-A;NFKB1;NFKBIA;CD4;CD40LG;PIK3CA;FGF19;CANX;KIT;KRAS;CALR;CALM1;RAF1;FGFR4;HLA-DRB1;FGFR2;HLA-DQB1;FGFR1	Thyroid hormone synthesis	2.75E-08	ATF2;HSPA5;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;ASGR2;ADCY5;TPO;CANX;ALB;ATF4	Human brain microvascular endothelial cell	3.77E-04	CDH5;VCAM1;TNF;ICAM1
F	Platelet	4	ORM1;TGFB1;HSP	Au	4	IL10;IL4;TPO;CD40	T-	3	CASP9;CASP3;AKT

8	degranulation Homo sapiens R-HSA-114608	.82E-09	A5;VWF;PROS1;HGF;ITGB3;SERPINE1;ORM2;VEGFA;SELP;F8;ALB;CALM1;PPIA;PF4	toimmunethyroid disease	.63E-08	LG;IFNA1;CTLA4;FAS;HLA-A;IL2;HLA-DRB1;HLA-DQB1	24cell	.77E-04	1;TP53
F9	EGFR interacts with phospholipase C-gamma Homo sapiens R-HSA-212718	4.99E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Graft-versus-host disease	4.70E-08	IL1A;IL6;IFNG;IL1B;FAS;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	Tachyzoite	3.77E-04	IL10;IL4;CD4;IFNG
FADS1	Erythrocytes take up oxygen and release carbon dioxide Homo sapiens R-HSA-1247673	5.30E-09	CA1;CA2;CA4;HBB;HBA1;AQP1	Nitrogen metabolism	7.44E-08	CA12;CA1;CA3;CA2;CA4;CA7;CA14	Vitreous humor	3.77E-04	IL6;ALB;CCL2;VEGFA
FADS2	PLC beta mediated events Homo sapiens R-HSA-112043	5.67E-09	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;MAPK1;ITPR3;ADCY2;ADCY1;CALM1;ADCY5	Legionellosis	1.03E-07	CASP9;NFKBIA;IL6;CXCL8;CASP3;IL1B;CASP1;TNF;TLR4;NFKB1;TLR2	Bladder wall	4.26E-04	HTR7;ADRB3;KIT;PDE5A;TRPV1
fas	G-protein mediated events	7.34	PDE1C;PDE1B;PDE1A;ITPR1;ITPR2;MAPK1;ITPR3;ADCY2;ADCY1;CALM1;A	mTOR signal	2.14	MAP2K1;PRKAA1;PRKAA2;CHUK;PIK3CD;BRAF;PIK3CB;TNF;IKBKB;RPS6KA	HT-1080	4.26	MMP2;SERPINE1;AKT1;MMP9;TP53

	Homo sapiens R-HSA-112040	E-09	DCY5	ing pathway	E-07	3;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAF1;MAPK3	cell	E-04	
FCGR2A	Extrinsic Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140834	8.22E-09	F7;F9;F10;TFPI;F3	AMPK signaling pathway	2.18E-07	CPT1A;PRKAB2;PRKAA1;PRKAA2;PRKAG1;PIK3CD;PRKAG2;PIK3CB;PRKAB1;ADRA1A;PRKAG3;CCND1;PIK3CA;AKT1;PPARG	Abdominal adipose tissue	4.88E-04	CRP;ADRB3;SERPINE1;AKT1;PPARG;PPARA;SHBG
FDPS	Dopamine receptors Homo sapiens R-HSA-390651	8.22E-09	DRD1;DRD2;DRD3;DRD4;DRD5	Cytosolic DNA-sensing pathway	3.01E-07	IKBKB;NFKBIA;IL6;IFNA1;CHUK;DDX58;IFNB1;IL1B;CCL5;CASP1;NFKB1	Dental pulp	4.93E-04	NT5E;TGFB1;MMP2;TRPV1;FGF2;VEGFA
FGF1	Muscarinic acetylcholine receptors Homo sapiens R-HSA-390648	8.22E-09	CHRM2;CHRM3;CHRM1;CHRM4;CHRM5	Asthma	5.45E-07	IL10;IL4;CD40LG;IL13;PRG2;TNF;HLA-DRB1;HLA-DQB1	Peripheral blood	5.40E-04	DPP4;NTRK1;LMAN1;VDR;TNFSF11;CYBB;PTGS2;HLA-DRB1;CES1
FGF19	G alpha (q) signalling events Homo sapiens R-HSA-416476	8.63E-09	CHRM3;CHRM1;ANXA1;PTGER1;CHRM5;ITPR1;HTR2B;ITPR2;HTR2C;ITPR3;ADRA1D;CCK;HTR2A;ADRA1B;F2;ADRA1A;EDNRA;HRH1;PIK3CA;AGTR1;BDKRB1	Oocyte meiosis	5.65E-07	MAP2K1;ITPR1;ITPR2;ITPR3;ADCY2;ADCY1;ADCY5;RPS6KA3;AR;MAPK11;PPP3R2;MAPK1;PGR;CALM1;MAPK3	Yolk sac	5.61E-04	CDH5;KIT;ALB;KDR;TEK;VEGFA
F	Respons	9	ORM1;TGFB1;HSP	Fc	6	MAP2K1;NCF1;LI	PC	6	CASP9;HSPA5;PAR

GF2	e to elevated platelet cytosolic Ca2+ Homo sapiens R-HSA-76005	.62E-09	A5;VWF;PROS1;HGF;ITGB3;SERPINE1;ORM2;VEGFA;SELP;F8;ALB;CALM1;PPIA;PF4	gamma R-mediated phagocytosis	.23E-07	MK1;PIK3CD;PIK3CB;FCGR2A;PIK3CA;RAC2;AKT1;MAPK1;RAC1;RAF1;MAPK3	-12 cell	.03E-04	P1;PTK2B;RAF1
FGF4	G beta:gamma signalling through PI3Kgamma Homo sapiens R-HSA-392451	1.53E-08	PIK3CA;IL3RA;PIK3CD;AKT1;CSF2RB;PIK3CB;JAK2;CSF2RA;JAK3;IL2;JAK1	Type I diabetes mellitus	7.30E-07	IL1A;IFNG;IL1B;FAS;HLA-A;TNF;IL2;HLA-DRB1;HLA-DQB1	RAJI cell	6.32E-04	CD40LG;CD209;MYC;IL2
FGFR1	Transport of gamma-carboxylated protein precursors from the endoplasmic reticulum to the Golgi apparatus Homo sapiens R-HSA-159763	1.56E-08	F7;PROC;F9;F10;PROS1;F2	Hepatocellular carcinoma	7.45E-07	MAP2K1;TGFB1;HGF;PIK3CD;BRAF;PIK3CB;NRAS;CCND1;PIK3CA;MYC;AKT1;MAPK1;KRAS;RAF1;TP53;MET;MAPK3	UMR-106 cell	6.32E-04	CALCA;VDR;TNFSF11;PTH1R
FG	Signal transduct	1.	MAP2K1;ITGB3;MAPK1;ITGAV;RAC1;	Transc	1.	ATF1;NTRK1;CXCL8;FLT1;FLT3;TMPR	Germ	7.	TGFB1;FGF2;CYP17A1;FGF4;CASP9;A

FR2	ion by L1 Homo sapiens R-HSA-445144	74E-08	L1CAM;MAPK3;FGFR1	riptional misregulation in cancer	09E-06	SS2;MPO;MMP9;NFKB1;IL6;RXRA;MYC;ATM;PPARG;TP53;MET;ELANE;GRIA3	cell	63E-04	R;CA2;MYC;CASP3;KIT;AKT1;ATM;PGR;CALM1;SHBG;TP53
FGFR4	MAPK targets/ Nuclear events mediated by MAP kinases Homo sapiens R-HSA-450282	2.45E-08	ATF1;ATF2;RPS6KA3;MAPK11;JUN;MAPK7;MAPK1;FOS;MAPK3	Axon guidance	2.27E-06	LIMK1;PIK3CD;PTPN11;PIK3CB;L1CAM;NRAS;PPP3R2;PIK3CA;ABL1;RAC2;MAPK1;KRAS;RAC1;RAF1;MET;EPHA2;MAPK3	Lens epithelium	7.98E-04	HRH1;VDR;CHRM5;KCNMA1
FLT1	Common Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140875	2.68E-08	PROCR;F8;PROC;F10;SERPINC1;PROS1;F2;PF4	Viral protein interaction with cytokine and cytokine receptor	5.49E-06	IL10;IL6;CXCL8;CXCR1;CCL5;CCL3;CCL2;CCR5;TNF;CCR4;IL2;PF4	Lymphocyte	9.81E-04	FLT3;FPGS;AGTR1;OPRL1;CCL3;HBB;CTLA4;ADRA1A

FLT3	Intrinsic Pathway of Fibrin Clot Formation Homo sapiens R-HSA-140837	2.68E-08	F8;PROC;F9;VWF;F10;SERPINC1;F11;F2	RIG-I-like receptor signaling pathway	6.91E-06	IKBKB;NFKBIA;MAPK11;CXCL8;IFNA1;CHUK;DDX58;IFNB1;TNF;NFKB1	A7r5 cell	9.91E-04	ITPR1;ITPR3;KCNQ5;CACNA1C
FLT4	SALM protein interactions at the synapse Homo sapiens R-HSA-8849932	2.68E-08	GRIA1;GRIN2A;GRIN2C;GRIN2B;GRIA3;GRIN2D;GRIN1;GRIA4	Circadian rhythm	7.50E-06	PRKAA1;PRKAB2;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3	NG-108-15 cell	9.91E-04	CACNA1I;HTR3A;ADRA2B;CACNA1H
folA	G-protein beta:gamma signalling Homo sapiens R-HSA-397795	3.02E-08	PIK3CA;IL3RA;PIK3CD;AKT1;CSF2RB;PIK3CB;JAK2;JAK3;CSF2RA;IL2;JAK1	Amyotrophic lateral sclerosis	1.04E-05	GRIA1;GRIA2;HSPA5;NOS2;TUBB;SIGMAR1;ITPR3;GRIN2C;TUBB4B;GRIN2B;TNF;GRIN2D;GRIN1;CASP9;MAPK11;GRIN2A;PPP3R2;TUBA1A;CASP3;CASP1;RAC1;ATF6;TP53;ATF4	Temporal lobe	0.00105	ATF1;ATF2;RPS6KA3;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG2;GABRG1;AR;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;ATF4;EPHA2;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;NEU2;GRIN2A;PPP3R2;LTA4H;APOE;JUN;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2B;GRIN2D;GRIN3A;ATM;CALR;SCN2A;GABRB3;DDR1;GABRB2;RYR2;GABRB1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;

									IKBKB;SMPD1;RAC1;JAK2;JAK1;ANXA1;WARS;CAMLG;PARP1;FOS;F3;PTGR2;KCNMA1;CANX;KIT;SLC29A4;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;PGRMC1;RXRA;GABRA2;P2RY12;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;GRIN1;VEGFA;CRAT;CHRM3;CHRM1;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;CYBA;LIG3;CACNB1;CACNB2;CACNB3;CACNB4;SCN8A;GPD1;PPIF;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA4;GLO1;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;CACNA1E;CACNA1H;CACNA1G;CACNA1I;HRH1;HR

									H2;ABL1;DRD1;GRIA3;DRD5;GRIA4;FDPS;PRNP;TGFB1;HSPA5;SRD5A1;HTR1A;HTR1B;NFKB1;NFKBIA;IL6;GGCX;FGFR2;MCFD2;FLT1;THRB;THRA;HTR2A;PIK3CB;ADRA1A;CKS1B;CASP9;CPT2;CA2;CA4;PDE4B;PDE4A;ITGAV;GGPS1;VWF;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3C;ADRA2B;ADRA2A;PIK3CA;IL3RA;SCN4A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;OPRL1;ATP2C1;CACNG7;CACNG8;MAPK7;MAPK1;PTK2B;PDE6B;PDE6A;CACNG2;MAPK6;CACNG3;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;MAPK15;CD4;KRAS;PDE7B;TEK;PDE7A
FOS	Negative regulation of FGFR4 signaling Homo sapiens R-HSA-5654733	3.38E-08	FGF19;MAPK1;PTPN11;BRAF;FGF1;FGFR4;FGF2;FGF4;MAPK3	Parkinson disease	1.15E-05	HSPA5;TUBB;ITPR1;ITPR2;ITPR3;TUBB4B;SLC6A3;ADCY5;CASP9;TUBA1A;ADORA2A;CASP3;PPIF;DRD1;CALM1;DRD2;ATF6;TP53;ATF4	Adrenocortical carcinoma cell line	0.00107	MC2R;CYP11B2;CYP17A1
F	Metaboli	3	ACHE;PRKAA2;PRK	Bas	1	POLB;PARP3;PCNA	Bo	0	TLR9;TNFSF11;NF

PGS	sm of lipids and lipoproteins Homo sapiens R-HSA-556833	.80E-08	AG2;PIK3CD;PIK3CB;CROT;PTGS2;PTGS1;CYP17A1;NEU2;FADS2;RXRA;CPT2;SMPD1;NEU1;LTA4H;SLC25A20;APOE;FADS1;FDPS;PRKAB2;CPT1A;PHYH;SRD5A2;GGPS1;SRD5A1;AKR1C1;PTGES3;SRD5A3;PLA2G2A;NR1H4;AKR1C3;PIK3CA;CYP11B2;ALB;GPD1;PLA2G10;PPARG;PPARA;CRAT;PPARD	e excision repair	.17E-05	;LIG1;PARP1;PARP2;LIG3	ne marrow-derived macrophage	.001007	ATC1
FRK	Removal of aminoterminal propeptides from gamma-carboxylated proteins Homo sapiens R-HSA-159782	3.81E-08	F7;PROC;F9;F10;PROS1;F2	Gastric acid secretion	1.46E-05	CHRM3;CA2;HRH2;ITPR1;ITPR2;ADCY2;ITPR3;ADCY1;CALM1;ADCY5	U-251 MG cell	0.001007	MMP2;AKT1;TP53
FTH1	MAPK3 (ERK1) activation Homo sapiens R-HSA-110056	3.81E-08	IL6;MAP2K1;PTPN11;JAK2;MAPK3;JAK1	Intestinal immune network for IgA produ	1.82E-05	IL10;IL4;IL6;TGFB1;CD40LG;IL2;HLA-DRB1;HLA-DQB1	vx2	0.001007	HBA1;F2;VEGFA

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FTL	Activation of the AP-1 family of transcription factors Homo sapiens R-HSA-450341	3.81E-08	MAPK11;ATF2;JUN;MAPK1;FOS;MAPK3	Aldosterone-regulated sodium reabsorption	2.59E-05	PIK3CA;PIK3CD;MAPK1;KRAS;PIK3CB;NR3C2;MAPK3	Pollen	0.001107	IL10;IL4;HRH1;CD4;CD40LG;IL13;ALB
GABRA1	SHC-mediated cascade: FGFR4 Homo sapiens R-HSA-5654719	4.02E-08	NRAS;FGF19;PTPN11;KRAS;FGF1;FGFR4;FGF2;FGF4	Autophagy	2.97E-05	MAP2K1;PRKAA1;PRKAA2;ITPR1;PIK3CD;PIK3CB;NRAS;PIK3CA;AKT1;MAPK1;KRAS;RAF1;MAPK3	Periodontal ligament	0.001114	IL6;TGFB1;IL1B;TNFSF11;TNF;FGF2
GABRA2	Negative feedback regulation of MAPK pathway Homo sapiens R-HSA-5674499	4.83E-08	MAP2K1;MAPK1;BRAF;RAF1;MAPK3	Melanogenesis	3.39E-05	MAP2K1;NRAS;KIT;MAPK1;ADCY2;KRAS;ADCY1;RAF1;CALM1;ADCY5;MAPK3	Bladder	0.001229	CRP;PRSS1;ANXA1;WARS;PCNA;GGPS1;STAT1;PTGES3;AKR1C1;AKR1C3;TMPRSS2;FOS;HLA-A;FTH1;ALB;CANX;ITGAV;CALR;RAC1;PPIA;HLA-DQB1;FTL
GABRA3	Metabolism Homo sapiens R-HSA-1430728	4.94E-08	ACHE;CHRM3;PRSS1;ACY1;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;AQP1;FADS2;CA1;CA3;CPT2;CA2;SMPD1;FPGS;CA4;CA7;AKT1;FADS1;CA14;PRKAB2	Ferroptosis	5.20E-05	PRNP;FTH1;GSS;CYBB;SLC7A11;TP53;FTL	Glandular epithelium	0.001447	AR;PGR;PTGS2;VEGFA

			;CPT1A;PHYH;GGPS1;CACNA2D2;HBA1;ADRA2C;ADRA2A;CACNB2;CACNB3;PIK3CA;GPD1;PLA2G10;PPARG;PPARA;PPARD;CES1;ABCB1;PRKAA2;LRP1;GLO1;SDC2;ITPR1;ETFDH;ITPR2;CACNA1A;ADCY2;ITPR3;CACNA1D;ADCY1;CACNA1C;PTGS2;TYMS;CACNA1E;ADCY5;PTGS1;CYP17A1;NEU2;TPO;NT5E;RXRA;NEU1;LTA4H;SLC25A20;APOE;XDH;CA12;FDPS;SRD5A2;KCNJ11;SRD5A1;GSS;AKR1C1;PTGES3;SRD5A3;PLA2G2A;NR1H4;AKR1C3;CYP11B2;ALB;CALM1;CRAT				m		
GABRA4	Peptide ligand-binding receptors Homo sapiens R-HSA-375276	5.32E-08	OPRD1;ANXA1;CXCL8;AVPR2;OPRL1;OPRK1;CCK;OPRM1;F2;EDNRA;MC2R;CXCR1;CCL5;AGTR1;CCL3;BDKRB1;CCL2;CCR5;CCR4;PF4	Cell adhesion molecules	6.66E-05	VCAM1;SDC2;HLA-A;L1CAM;ICAM1;SELP;CDH5;CD4;CD40LG;CTLA4;ITGAV;HLA-DRB1;HLA-DQB1	okt8	0.0015	CD40LG;HLA-A;IL2
GABRA5	Interleukin-6 signaling Homo sapiens R-HSA-1059683	8.22E-08	IL6;STAT1;STAT3;PTPN11;JAK2;JAK1	Tight junction	6.70E-05	PRKAB2;JUN;PRKAA1;PCNA;PRKAA2;PRKAG1;PRKAG2;CACNA1D;PRKAB1;PRKAG3;TUBA1A;CCND1;ERBB2;RAC1	Prostate gland epithelium	0.00157	RET;P2RY12;PRNP;PRSS1;ST14;VDR;PLA2G2A;AKR1C3;TMPRSS2;ADRA1D;LIG3;ADRB2;F3;ADRA1A;CKS1B;DPP4;AR;PDE11A;S100A4;PDE5A;PDE9A;TLR2

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GABRA6	Erythrocytes take up carbon dioxide and release oxygen Homo sapiens R-HSA-1237044	1.61E-07	CA1;CA2;CA4;HBB;HBA1;AQP1	Antigen processing and presentation	1.11E-04	CD4;IFNG;HSPA5;CANX;HLA-A;CALR;TNF;HLA-DRB1;HLA-DQB1	Leydig cell	0.00172	IL1A;AR;SRD5A1;SHBG;PDE8A;CYP17A1
GABRB1	O2/CO2 exchange in erythrocytes Homo sapiens R-HSA-1480926	1.61E-07	CA1;CA2;CA4;HBB;HBA1;AQP1	Arachidonic acid metabolism	6.65E-04	PTGES3;PLA2G10;PLA2G2A;AKR1C3;LTA4H;PTGS2;PTGS1	Peripheral blood stem cell	0.00177	CD4;FLT3;ABL1;IL2
GABRB2	Diseases of signal transduction Homo sapiens R-HSA-5663202	1.67E-07	PDGFRB;PDGFRA;TGFB1;CHUK;STAT1;STAT3;PIK3CD;PTPN11;PIK3CB;FGF1;FGF2;FGF4;CASP9;NRAS;PIK3CA;MYC;FGF19;KIT;ERBB2;AKT1;KRAS;FGFR4;FGFR2;FGFR1	Steroid hormone biosynthesis	6.65E-04	SRD5A2;SRD5A1;CYP11B2;AKR1C1;SRD5A3;AKR1C3;CYP17A1	aae3	0.00019	PTGER4;KIT;ERBB2;PGR;HBA1;TP53
GABRB3	Mitochondrial biogenesis Homo sapiens R-HSA-1592230	2.26E-07	ATF2;MAPK11;PRKAB2;PRKAA2;RXRA;PRKAG1;PRKAG2;PPARA;PRKAB1;PRKAG3	Ovarian steroidogenesis	0.00141	AKR1C3;ADCY2;ADCY1;PTGS2;ADCY5;CYP17A1	Neural crest	0.002	RET;NTRK1;PDGFRA;EDNRA;CALCA;TGFB1;NTRK3;KIT;FGF2;FGFR1

GABRD	Adrenaline,noradrenaline inhibits insulin secretion Homo sapiens R-HSA-400042	2.29E-07	CACNB2;CACNB3;CACNA2D2;CACNA1D;CACNA1C;ADRA2C;ADRA2A;ADCY5	Bile secretion	0.001154	ABCB1;RXRA;CA2;NR1H4;ADCY2;ADCY1;AQP1;ADCY5	Pheochromocytoma cell	0.002202	NTRK1;FOS;SLC6A2
GABRE	Ca-dependent events Homo sapiens R-HSA-111996	2.29E-07	PDE1C;PDE1B;PDE1A;MAPK1;ADCY2;ADCY1;CALM1;ADCY5	Adherens junction	0.001165	ERBB2;RAC2;MAPK1;RAC1;MET;MAPK3;FGFR1	Rheumatoid arthritis disease specific synovial fibroblast	0.002202	IL6;IL1B;TNF
GABRG1	Signaling by FGFR1 in disease Homo sapiens R-HSA-5655302	2.35E-07	NRAS;PIK3CA;STAT1;STAT3;KRAS;FGF1;FGF2;FGF4;FGFR1	Systemic lupus erythematosus	0.00117	IL10;GRIN2A;CD40LG;FCGR2A;IFNG;TNF;GRIN2B;ELANE;HLA-DRB1;HLA-DQB1	F-9 cell	0.00221	JUN;FOS;JDP2;FGF4
G	MAP2K	2	NRAS;MAP2K1;V	p5	0	CASP9;CCND1;CAS	Blo	0	PRSS1;NCF1;PROS

ABRG2	and MAPK activation Homo sapiens R-HSA-5674135	.35E-07	WF;ITGB3;MAPK1;BRAF;KRAS;RAF1;MAPK3	3 signaling pathway	.00194	P3;SERPINE1;FAS;ATM;TP53	od platelet	.0023	1;SERPINE1;MPO;MT-ND1;AQP1;RPS6KA3;HTR6;FTH1;KDR;AKT1;PDE8B;PDGFRB;PDGFRA;PRKAB2;MAP2K1;SLC15A1;CPT1A;CYBB;CYBA;HLA-A;PRKAB1;AR;PPIF;S100A4;RAF1;PPIA;FTL;EPHA2;ABCB1;GLO1;ITPR1;ITPR2;ITPR3;CACNA1C;CACNA1E;PPP3R2;LTA4H;APOE;ELANE;GRIA3;FDPS;PRNP;ACE;TGFB1;VCAM1;HSPA5;PDE2A;PRG2;BRAF;NFKB1;SELP;IL7;ALB;PDE3A;CALR;CALM1;FGFR4;FGFR2;FGFR1;RYR1;RYR2;MCFD2;ORM1;FLT1;ACY1;FLT3;FLT4;PDE3B;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;SLC6A2;ORM2;PRKAG3;SLC6A3;SLC6A4;IKBKB;CASP9;POLB;CA1;TUBA1A;CPT2;CA2;CASP3;RAC2;CASP1;ITGAV;RAC1;SCN5A;JAK2;JAK3;JAK1;CCDC51;ANXA1;WARS;CHUK;GGPS1;VWF;CAMLG;PARP1;TUBB;PDE4D;SIGMAR1;PDE4C;HBA1;F2;MMP9;ADRA2A;PIK3CA;IFNG;CANX;KIT;TLR9;TL

									R7;PDE5A;SLC29A1;MET;TLR4;PRKAA1;PRKAA2;PCNA;SERPINC1;ETFDH;ADCY2;PTGS2;ATP2C1;TFPI;ADCY5;PTGS1;CACNG6;LMAN1;NRAS;NT5E;PGRMC1;CCL5;MAPK1;PTK2B;SLC25A20;GABRE;MAPK6;XDH;CD55;MAPK4;MAPK3;P2RY12;CRBN;STAT1;GSS;PTGES3;STAT3;SLC12A1;PTPN11;TUBB4B;MAPK15;FCGR2A;CD40LG;KRAS;CRAT;FRK;PF4
GABRG3	RHO GTPases Activate NADPH Oxidases Homo sapiens R-HSA-5668599	2.93E-07	NCF1;NCF4;RAC2;CYBB;CYBA;RAC1	PPAR signaling pathway	0.0021	FADS2;CPT1A;RXRA;CPT2;PPARG;PPARA;PPARD	Satellite cell	0.0024	TGFB1;HGF;FGF2;MET;ATF3
GABRP	Signaling by FGFR in disease Homo sapiens R-HSA-1226099	3.01E-07	NRAS;PIK3CA;STAT1;STAT3;KRAS;FGF1;FGFR4;FGF2;FGFR2;FGF4;FGFR1	Renin-angiotensin system	0.0021	ACE2;ACE;AGTR1;REN	Portal vein	0.00247	IL6;SERPINC1;ALB;F2
GABRQ	Cellular responses to stress Homo sapiens	3.54E-	PRKAA1;CXCL8;PRKAA2;PRKAG1;PRKAG2;PRKAG3;RPS6KA3;MAPK7;MAPK1;MAPK3;PRKAB2;JUN;HSPA5;IFNB1;	Huntingtondisease	0.0034	GRIA1;GRIA2;TUBB;CACNA1B;ITPR1;TUBB4B;GRIN2B;GRIN1;CASP9;TUBA1A;CASP3;PPIF;PPARG;TP53;GRIA3;	Monocytic leu	0.0026	SCN8A;TLR9;MMP9

	R-HSA-2262752	07	PTGES3;STAT3;CYBB;CYBA;FOS;PRKAB1;NFKB1;VEGFA;IL1A;MAPK11;IL6;ATM;TP53	e	4	GRIA4	kemia cell	5	
GGCX	PKB-mediated events Homo sapiens R-HSA-109703	3.77E-07	PRKAA1;PRKAB2;PRKAA2;PDE3B;PRKAG1;PRKAG2;AKT1;PRKAB1;PRKAG3	Carbohydrate digestion and absorption	0.005445	PIK3CA;PIK3CD;AKT1;CACNA1D;PIK3CB	Preadipocyte cell line	0.002665	THRA;GPD1;PPARG
GGPS1	Cross-presentation of particulate exogenous antigens (phagosomes) Homo sapiens R-HSA-1236973	4.33E-07	NCF1;NCF4;CYBB;CYBA;ITGAV	Wnt signaling pathway	0.00744	SFRP4;JUN;PPP3R2;CCND1;MYC;RAC2;NFATC1;RAC1;TP53;PPARD	MDCK-2 cell	0.002888	ABCB1;ADRA2C;ADRA2B;ADRA2A
GLO1	Trafficking of AMPA receptors Homo sapiens R-HSA-399719	5.45E-07	GRIA1;GRIA2;CACNG8;CACNG2;CACNG3;GRIA3;CACNG4;GRIA4	Staphylococcus aureus infection	0.008355	IL10;SELP;FCGR2A;HLA-DRB1;ICAM1;MBL2;HLA-DQB1	Monocuclear cell	0.00334	SERPINC1;ITGB3;SERPINE1;CTLA4;F2
G	Glutamat	5	GRIA1;GRIA2;CAC	Ph	0	PIK3CA;ITPR1;ITPR	Ad	0	NFKBIA;CD4;IL2

LRA1	e Binding, Activation of AMPA Receptors and Synaptic Plasticity Homo sapiens R-HSA-399721	.45E-07	NG8;CACNG2;CACNG3;GRIA3;CACNG4;GRIA4	osphatidylinositol signaling system	.00932	2;PIK3CD;ITPR3;PIK3CB;CALM1	ult T-cell lymphoma cell	.00338	
GLRA2	Negative regulation of FGFR1 signaling Homo sapiens R-HSA-5654726	7.11E-07	MAPK1;PTPN11;BRAF;FGF1;FGF2;FGF4;MAPK3;FGFR1	Cell cycle	0.01076	TGFB1;PCNA;CCND1;PRKDC;MYC;ABL1;ATM;TP53	Insect labium	0.00338	PROS1;AKR1C1;SIK1
GLRA3	CREB phosphorylation through the activation of CaMKII Homo sapiens R-HSA-442729	8.19E-07	GRIN2A;GRIN2C;CALM1;GRIN2B;GRIN2D;GRIN1	Proximal tubule bicarbonate reclamation	0.01755	CA2;CA4;AQP1	Pelvis	0.00037	CRP;PGRMC1;AKR1C1;KIT;TP53
GP	RAF-independent MAPK1/3 activation Homo sapiens	8.27E-0	MAP2K1;IL6;MAPK1;PTPN11;JAK2;MAPK3;JAK1	alpha-Linolenic acid	0.02194	FADS2;PLA2G2A;PLA2G10	Cerebrospinal flui	0.00409	ORM1;SERPINC1;APOE;F2;ORM2

	R-HSA-112409	7		metabolism			d		
GPD1	MAPK1 (ERK2) activation Homo sapiens R-HSA-112411	9.55E-07	IL6;MAPK1;PTPN11;JAK2;JAK1	Mitophagy	0.02456	NRAS;JUN;KRAS;TP53;ATF4	Bone matrix	0.00409	CALCA;TGFB1;NFATC1;FGF2;MMP9
GRIA1	Prostanoid ligand receptors Homo sapiens R-HSA-391908	9.55E-07	PTGER4;PTGER1;PTGDR2;PTGER2;PTGER3	TGF-beta signaling pathway	0.02682	TGFB1;IFNG;MYC;MAPK1;TNF;MAPK3	NCCIT cell	0.00423	GABRB1;PCNA;MAPK4
GRIA2	Diseases associated with the TLR signaling cascade Homo sapiens R-HSA-5602358	1.14E-06	IKBKB;NFKBIA;CHUK;TLR4;NFKB1;TLR3;TLR2	Phototransduction	0.02963	PDE6B;PDE6A;CALM1	Preosteoclast	0.00423	TNFSF11;NFATC1;MMP9
GRIA3	Diseases of Immune System Homo sapiens R-HSA-5260271	1.14E-06	IKBKB;NFKBIA;CHUK;TLR4;NFKB1;TLR3;TLR2	Bacterial invasion of epithelial cells	0.03911	PIK3CA;PIK3CD;PIK3CB;RAC1;MET	SAOS-2 cell	0.00441	CASP3;MMP2;TNFSF11;TP53

GRIA4	Negative regulation of FGFR2 signaling Homo sapiens R-HSA-5654727	1.18E-06	MAPK1;PTPN11;BRAF;FGF1;FGF2;FGFR2;FGF4;MAPK3	Synaptic vesicle cycle	0.040999	CACNA1B;CACNA1A;SLC6A2;SLC6A3;SLC6A4	Ureter	0.004441	CHRM3;SLC12A3;TGFB1;CHRM4
GRIN1	Regulation of IFNA signaling Homo sapiens R-HSA-912694	1.55E-06	IFNAR2;IFNA1;STAT1;IFNB1;PTPN11;JAK1;IFNAR1	Peroxisome	0.049066	PHYH;NOS2;CROT;XDH;CRAT	Lung fibroblast	0.004522	SDC2;HGF;CACNA1B;CACNA1C;PTGS1
GRIN2A	C-type lectin receptors (CLRs) Homo sapiens R-HSA-5621481	1.74E-06	CHUK;ITPR1;ITPR2;ITPR3;NFATC1;NFKB1;NFKBIA;IKBKB;NRAS;CD209;IL1B;KRAS;RAF1;CALM1	Mineral absorption	0.057556	VDR;FTH1;SLC8A1;FTL	Myeloid progenitor cell	0.005022	FLT3;KIT;ABL1;PTPN11
GRIN2B	Ras activation uopn Ca2+ infux through NMDA receptor Homo sapiens R-HSA-442982	1.94E-06	GRIN2A;GRIN2C;CALM1;GRIN2B;GRIN2D;GRIN1	Primary immunodeficiency	0.064011	CD4;CD40LG;JAK3	Myoepithelium	0.005022	ERBB2;KIT;PGR;TP53
GRIN2C	SHC-mediated cascade: FGFR2 Homo sapiens	2.08E-	NRAS;PTPN11;KRAS;FGF1;FGF2;FGFR2;FGF4	Otherglycandegra	0.069695	NEU2;NEU1	Vagus nerve	0.005050	CHRNA4;HTR1A;CRH;FOS

	R-HSA-5654699	06		dation	3			2	
GRIN2D	CaM pathway Homo sapiens R-HSA-111997	2.08E-06	PDE1C;PDE1B;PDE1A;ADCY2;ADCY1;CALM1;ADCY5	Arginine biosynthesis	0.098611	ACY1;NOS2	Esophageal cancer cell line	0.005199	CCND1;CASP3;TP53
GRIN3A	Calmodulin induced events Homo sapiens R-HSA-111933	2.08E-06	PDE1C;PDE1B;PDE1A;ADCY2;ADCY1;CALM1;ADCY5	Terpenoid backbone biosynthesis	0.098611	FDPS;GGPS1	Connective tissue	0.005571	ATF1;ATF2;SERPINE1;HTR4;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D4;GABRG3;PRKAB1;AGTR1;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;RET;RYR2;GABRB1;ORM1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;ANXA1;PARP1;PARP2;IL13;FOS;HBA1;F2;F7;IL1A;F

									8;CANX;TLR9;PPARG;SLC29A1;TLR4;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;ADCY2;ADCY1;TYMS;ADCY5;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;CD55;GABRA2;GABRQ;GABRP;CRBN;STAT1;IFNB1;AKR1C1;PTGES3;GABRA3;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;CHRM4;PROS1;NCF4;NR3C1;FGF2;NR3C2;CDH5;FADS2;ADORA3;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;LIG3;CACNB1;CACNB2;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRNA4;NPR1;GLO1;CHRNA7;CACNA1B;ITPR2;CSF2RB;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;HRH4;ABL1;GRIA3;PRNP;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;SRD5A3;HTR1A;NFKB1;NFKBIA;PROC;GGCX;IL7;FGF19;ALB;F

									GFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1A;CASP9;POLB;CA3;CPT2;CASP3;CA4;CA7;CASP1;BDKRB1;ITGAV;CCDC51;CHUK;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;MMP9;PIK3CA;IFNG;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;PDE11A;ERBB2;CCL2;MAPK1;SCN7A;CACNG1;SLC25A20;MAPK6;CACNG3;MAPK4;TRDMT1;MAPK3;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NOS2;NTRK3;SLC12A1;LIMK1;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
GRIN3B	Senescence-Associated Secretory Phenotype (SASP) Homo sapiens R-HSA-2559582	2.40E-06	RPS6KA3;IL1A;JUN;IL6;CXCL8;MAPK7;STAT3;MAPK1;FOS;NFKB1;MAPK3	Protein digestion and absorption	0.10552	DPP4;ACE2;PRSS1;SLC15A1;SLC8A1	22Rv-1 cell	0.00559	AR;GABRE
G	Tie2	2	NRAS;PIK3CA;PTP	Mi	0	PCNA;LIG1	En	0	CA1;CA4

SS	Signaling Homo sapiens R-HSA-210993	.86E-06	N11;KRAS;PIK3CB;TEK	smatch repair	.106344		torhinal cortex	.00559	
GUCY1A2	CLEC7A (Dectin-1) induces NFAT activation Homo sapiens R-HSA-5607763	3.36E-06	ITPR1;ITPR2;ITPR3;NFATC1;CALM1	Sphingolipid metabolism	0.115581	NEU2;SMPD1;NEU1	Gastrodouodenal mucosa	0.005599	HRH2;CCK
HBA1	mTOR signalling Homo sapiens R-HSA-165159	3.59E-06	PRKAA1;PRKAB2;PRKAA2;PRKAG1;PRKAG2;AKT1;PRKAB1;PRKAG3	Folate biosynthesis	0.130404	FPGS;AKR1C3	Peritubular cell	0.005599	AR;SHBG
HBB	Energy dependent regulation of mTOR by LKB1-AMPK Homo sapiens R-HSA-380972	3.59E-06	PRKAA1;PRKAB2;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3	Caffeine metabolism	0.136897	XDH	Vascular tissue	0.005568	VWF;REN;APOE;VEGFA
HGF	Negative regulation of FGFR3 signaling Homo sapiens	4.64E-0	MAPK1;PTPN11;BRAF;FGF1;FGF2;FGF4;MAPK3	Endocrine and oth	0.137225	VDR;PTH1R;SLC8A1	Keratinocyte	0.006227	DDR1;CHRNA3;WARS;CHRNA7;ITGB3;CHRM5;CANX;CALR;ATP2C1

	R-HSA-5654732	6		er factor-regulated calcium reabsorption					
HLA-A	FGFR1 mutant receptor activation Homo sapiens R-HSA-1839124	7.50E-06	PIK3CA;STAT1;STAT3;FGF1;FGF2;FGF4;FGFR1	Biosynthesis of unsaturated fatty acids	0.138688	FADS2;FADS1	CEM cell	0.006227	CD4;FAS;SLC29A1
HLA-DQB1	SHC-mediated cascade: FGFR1 Homo sapiens R-HSA-5654688	7.85E-06	NRAS;KRAS;FGF1;FGF2;FGF4;FGFR1	Linoleic acid metabolism	0.155555	PLA2G2A;PLA2G10	NCI-H1299 cell	0.006227	ATP2C1;GABRE;TP53
HLA-DRB	Cellular Senescence Homo sapiens R-HSA-2559583	9.20E-0	JUN;CXCL8;IFNB1;STAT3;FOS;NFKB1;RPS6KA3;IL1A;MAPK11;IL6;MAPK7;MAPK1;ATM;TP53;MAPK3	Glycerophospholipi	0.21443	ACHE;GPD1;PLA2G10;PLA2G2A	Macrophage	0.00064	IL1B;GPD1;CASP1;CES1

1		6		d metabolism					
HRH1	Interleukin-1 signaling Homo sapiens R-HSA-446652	9.29E-06	IKBKB;IL1A;IL1RN;MAP2K1;CHUK;IL1B;NOD2;NFKB1	DNA replication	0.217011	PCNA;LIG1	Preosteoblast	0.00064	TGFB1;TNFSF11;FGF2;FGFR2
HRH2	Signaling by FGFR3 point mutants in cancer Homo sapiens R-HSA-8853338	1.06E-05	NRAS;PIK3CA;KRAS;FGF1;FGF2;FGF4	Protein processing in endoplasmic reticulum	0.235888	LMAN1;HSPA5;CANX;CALR;ATF6;ATF4	Ring stage	0.00064	ERBB2;KRAS;TP53;CACNA1G
HRH4	Signaling by FGFR3 in disease Homo sapiens R-HSA-5655332	1.06E-05	NRAS;PIK3CA;KRAS;FGF1;FGF2;FGF4	Ubiquinone and other terpenoid-quinone	0.236767	GGCX	High endothelial venule	0.00717	SELP;CD4;VCAM1;ICAM1

				biosynthesis					
HSPA5	POLB-Dependent Long Patch Base Excision Repair Homo sapiens R-HSA-110362	1.13E-05	POLB;LIG1;PARP1;PARP2	Inositol phosphate metabolism	0.260533	PIK3CA;PIK3CD;PIK3CB	Neural stem cell	0.007333	CCND1;MYC;CASP3;STAT3;AKT1;FGF2;TP53;VEGFA
HTR1A	IkBA variant leads to EDA-ID Homo sapiens R-HSA-5603029	1.13E-05	IKBKB;NFKBIA;CHUK;NFKB1	Non-homologous end-joining	0.273229	PRKDC	Aerial part	0.007488	CHRM2;NOS2;TNF
HTR1B	Interleukin-1 processing Homo sapiens R-HSA-448706	1.13E-05	IL1A;IL1B;CASP1;NFKB1	Fat digestion and absorption	0.280115	PLA2G2A;PLA2G10	WEHI-231 cell	0.007488	NFKBIA;CD40LG;MYC
HTR1D	Highly sodium permeable acetylcholine nicotinic	1.13E-0	CHRNB2;CHRNA3;CHRNB4;CHRNA4	Fatty acid degradat	0.280115	CPT1A;CPT2	Amastigote	0.008001	IL10;CD4;APOE;TNF

	receptors Homo sapiens R-HSA-629587	5		ion					
HTR1E	Translocation of GLUT4 to the plasma membrane Homo sapiens R-HSA-1445148	1.33E-05	PRKAB2;PRKAA2;PRKAG1;PRKAG2;AKT1;RAC1;CALM1;PRKAB1;PRKAG3	Nucleotide excision repair	0.316	PCNA;LIG1	Thyroid nodule	0.00801	RET;CALCA;NRAS;PPARG
HTR1F	Regulation of IFNG signaling Homo sapiens R-HSA-877312	1.37E-05	IFNG;STAT1;PTPN11;JAK2;JAK1	Etherlipid metabolism	0.3402	PLA2G10;PLA2G2A	Genital mucosa	0.00825	CD4;CCR5
HTR2A	FGFR4 ligand binding and activation Homo sapiens R-HSA-190322	1.37E-05	FGF19;FGF1;FGFR4;FGF2;FGF4	Cholesterol metabolism	0.3429	LRP1;APOE	Osteoclast stem cell	0.00825	TNFSF11;NFATC1
HTR2B	Nuclear Events (kinase and transcription factor activation) Homo sapiens R-HSA-198725	1.83E-05	ATF1;MAPK11;RPS6KA3;MAPK7;MAPK1;MAPK3	ECM-receptor interaction	0.36004	VWF;ITGB3;ITGAV	Porcine aortic endothelial cel	0.00825	FLT1;KDR

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HTR2C	Eicosanoid ligand-binding receptors Homo sapiens R-HSA-391903	2.02E-05	PTGER4;PTGER1;PTGDR2;PTGER2;PTGER3	Hippo signaling pathway	0.361755	TGFB1;CCND1;MYC;SERPINE1;FGF1	Tongue cancer cell line	0.00825	MMP2;MMP9
HTR3A	IKBKG deficiency causes anhidrotic ectodermal dysplasia with immunodeficiency (EDA-ID) (via TLR) Homo sapiens R-HSA-5603027	2.21E-05	IKBKB;NFKBIA;CHUK;NFKB1	One carbon pool by folate	0.38812	TYMS	U-373 MG cell	0.00825	IL1B;TP53
HTR3B	VEGF ligand-receptor interactions Homo sapiens R-HSA-194313	2.21E-05	FLT1;FLT4;KDR;VEGFA	Pyrimidine metabolism	0.39528	NT5E;TYMS	Vesicular gland	0.00825	PROS1;PTGS2
HTR3C	VEGF binds to VEGFR leading to receptor	2.21E-	FLT1;FLT4;KDR;VEGFA	Protein export	0.43116	HSPA5	Bile	0.0088	ACE2;ORM1;ORM2

	dimerization Homo sapiens R-HSA-195399	05						2	
HTR3D	RAF activation Homo sapiens R-HSA-5673000	2.36E-05	NRAS;MAP2K1;BRAF;KRAS;JAK2;RAF1	Collecting duct acid secretion	0.48483	CA2	Malpighian tubule	0.008822	CALCA;HTR7;CRH
HTR3E	Interferon Signaling Homo sapiens R-HSA-913531	2.47E-05	IFNAR2;VCAM1;IFNA1;STAT1;IFNB1;DDX58;PTPN11;HLA-A;ICAM1;IFNG;JAK2;HLA-DRB1;JAK1;HLA-DQB1;IFNAR1;MAPK3	Drug metabolism	0.48863	MPO;XDH;CES1	Venom gland	0.008822	PLA2G2A;LTA4H;F2
HTR4	Platelet Aggregation (Plug Formation) Homo sapiens R-HSA-76009	2.59E-05	VWF;ITGB3;AKT1;F2;ADRA2C;ADRA2B;ADRA2A	Endocytosis	0.57523	PDGFRA;CXCR1;HLA-A;CCR5;FGFR4;FGFR2	Umbilical vein	0.008891	FLT1;NCF1;KDR;FGFR1
HTR6	Ion homeostasis Homo sapiens R-HSA-5578775	2.88E-05	RYR1;RYR2;KCNJ11;ITPR1;ITPR2;ITPR3;CALM1;SLC8A1	Nicotinate and nicotinami	0.57682	NT5E	Cervical spine	0.008891	CRP;PGRMC1;AVPR2;CD55

				de metabolism					
HTR7	Nucleotide-like (purinergic) receptors Homo sapiens R-HSA-418038	2.88E-05	P2RY12;ADORA2A;ADORA2B;ADORA3;ADORA1	Tyrosine metabolism	0.5871	TPO	Conceptus	0.00891	IFNA1;AKR1C3;PGR;PTGS2
ICAM1	Gamma carboxylation, hypusine formation and arylsulfatase activation Homo sapiens R-HSA-163841	3.71E-05	F7;PROC;F9;F10;GGCX;PROS1;F2	Homologous recombination	0.63488	ATM	Interverteb ral disc	0.00906	IL6;TGFB1;CASP3;MMP2;TNF
IFNA1	GABA B receptor activation Homo sapiens R-HSA-977444	3.71E-05	KCNJ5;KCNJ6;KCNJ9;ADCY2;ADCY1;ADCY5;KCNJ3	Vasopressin-regulated water reabsorption	0.66085	AVPR2	Corpus callosum	0.00966	ATF1;ATF2;SERPINE1;ICAM1;RPS6KA3;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;PRKAB1;GABRG2;GABRG1;AR;SFRP4;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;GRIN2A;PPP3R2;LTA4H;APOE;JUN;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRI

									N2B;GRIN2D;GRIN3A;ATM;CALR;SCN2A;GABRB3;DDR1;RYR1;GABRB2;RYR2;GABRB1;ACY1;PRKAG1;HBB;PTH1R;CROT;SLC7A11;IKBKB;SMPD1;RAC1;JAK2;JAK1;ANXA1;WARS;CAMLG;PARP1;TNNC1;FOS;F3;PTGR2;KCNMA1;CANX;KIT;SLC29A4;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;PGRMC1;RXRA;GABRA2;P2RY12;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;GRIN1;VEGFA;CRAT;CHRM3;CHRM1;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;CYBA;LIG3;CACNB1;CACNB2;CACNB3;CACNB4;SCN8A;GPD1;PPIF;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRN

									A2;CHRNA4;GLO1;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;CACNA1E;CACNA1G;CACNA1I;ABL1;DRD1;DRD4;GRIA3;DRD5;GRIA4;FDPS;PRNP;TGFB1;HSPA5;SRD5A1;SRD5A3;NFKB1;NFKBIA;IL6;GGCX;FGFR2;MCFD2;FLT1;THRB;THRA;FLT3;HTR2C;PIK3CD;PIK3CB;ADRA1A;CKS1B;CASP9;CA1;CA3;CPT2;CA2;CASP3;CA4;PDE4B;PDE4A;ITGAV;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3C;ADRA2B;PIK3CA;IL3RA;PDE5A;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;CACNG7;SLC25A29;MAPK7;CCL2;MAPK1;PTK2B;PDE6B;PDE6A;MAPK6;CACNG3;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;MAPK15;CD4;FCGR2A;KRAS;PDE7A
IFNAR1	Activation of GABAB receptors Homo sapiens R-HSA-	3.71E-0	KCNJ5;KCNJ6;KCNJ9;ADCY2;ADCY1;ADCY5;KCNJ3	ABC transporters	0.6691	ABCB1	Schwann cell	0.0097	NTRK1;JUN;NTRK3;ERBB2;FGF2;ATF3

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IFNAR2	Interleukin-6 family signaling Homo sapiens R-HSA-6783589	3.78E-05	IL6;STAT1;STAT3;PTPN11;JAK2;JAK1	Proteasome	0.67714	IFNG	Gastrointestinal stromal tumor cell	0.010229	PDGFRB;PDGFRA;KIT
IFNB1	Negative regulation of MAPK pathway Homo sapiens R-HSA-5675221	4.40E-05	NRAS;MAP2K1;MAPK1;BRAF;KRAS;RAF1;MAPK3	Pyruvate metabolism	0.68499	GLO1	Mesonephron	0.010229	CDH5;KIT;KDR
IFNG	PERK regulates gene expression Homo sapiens R-HSA-381042	4.72E-05	CXCL8;HSPA5;CCL2;ATF6;ATF3;ATF4	Arginine and proline metabolism	0.70074	NOS2	Oocyst	0.010229	CD4;CD40LG;IFNG
IKBKB	SHC-mediated cascade: FGFR3 Homo sapiens R-HSA-	5.42E-0	NRAS;KRAS;FGF1;FGF2;FGF4	Cysteine and methi	0.70074	GSS	Hypothalamus	0.01005	ATF1;ATF2;SERPINE1;HTR4;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;

	5654704	5		onine metabolism					CACNA2D3;CACNA2D2;HLA-A;GABRG3;PRKAB1;GABRG2;GABRG1;AR;SFRP4;SCN10A;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;GRIN2A;NEU1;LTA4H;APOE;SCN3A;JUN;ST14;PDE2A;PRG2;BRAF;GRIN2C;L1CAM;GRIN2B;GRIN2D;GRIN3A;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;RYR1;GABRB2;RYR2;GABRB1;ACY1;IFNA1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK3;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F3;PTGR2;F7;F8;IL1B;KCNMA1;CANX;KIT;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;DDR2;TLR2;PTGER4;PCNA;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;

									GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;GLRA3;RXRA;GABRE;GABRD;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRA1;CRBN;GABRA5;STAT1;GABRA4;GSS;PTGES3;GABRA3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;HGF;CYBB;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;SCN8A;GPD1;PPIF;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;NPR2;ITPR1;CACNA1B;ITPR2;CACNA1A;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1G;CACNA1I;HRH1;HRH2;ABL1;DRD1;DRD2;GRIA3;G

									RIA4;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1A;NFKB1;NFKBIA;IL6;GGCX;IL7;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;ITGB3;PDE3B;HTR2C;ADRA1D;HTR2A;PIK3CB;CKS1B;CASP9;POLB;CPT2;CA2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;HTR3B;OPRM1;ADRA2C;ADRA2A;ADORA2A;PIK3CA;IL3RA;CRH;PDE5A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;CACNG7;SLC25A29;PDE11A;CCL5;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;SLC25A20;CACNG2;MAPK6;CACNG3;CACNG4;MAPK4;KCNJ3;MAPK3;KCNJ5;KCNJ6;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
IL10	Chemokine receptors bind	5.77	CXCL8;CXCR1;CCL5;CCL3;CCL2;CCR5;CCR4;PF4	N-Glycanbio	0.70	SRD5A3	Embryoid	0.01	CDH5;KIT;KDR;FGF2;VEGFA

	chemokines Homo sapiens R-HSA-380108	E-05		synthesis	74		body	056	
IL13	Surfactant metabolism Homo sapiens R-HSA-5683826	5.83E-05	ADORA2A;ADORA2B;CSF2RB;ADRA2C;CSF2RA;ADRA2A	Hedgehog signaling pathway	0.747584	CCND1	Abductor	0.011137	AKR1C1;PDE8B
IL1A	Regulation of TP53 Activity through Phosphorylation Homo sapiens R-HSA-6804756	5.88E-05	MAPK11;PRKAB2;PRKAA1;PRKAA2;PRKAG1;PRKAG2;ATM;PRKAB1;TP53;PRKAG3	Glutathione metabolism	0.753724	GSS	Adductor	0.011137	AKR1C1;PDE8B
IL1B	Non-integrin membrane-ECM interactions Homo sapiens R-HSA-3000171	6.11E-05	DDR1;TGFB1;SDC2;ITGB3;ITGAV;FGF2;DDR2	Basal cell carcinoma	0.787544	TP53	Chromaffin cell	0.011137	SCN9A;CACNA1C
IL1RN	ATF6-alpha activates chaperone genes Homo sapiens R-HSA-	6.39E-05	HSPA5;CALR;ATF6;ATF4	Aminoacyl-tRNA biosyn	0.802677	WARS2	Adult liver stem cell	0.011189	HGF;KIT;ALB

	381183			thesis					
IL2	Signaling by FGFR2 in disease Homo sapiens R-HSA-5655253	7.14E-05	NRAS;PIK3CA;KRAS;FGF1;FGF2;FGFR2;FGF4	Lysosome	0.820377	SMPD1;NEU1	Blastocyst	0.01343	TGFB1;MYC;CASP3;ALB;STAT3;FGF2;FGFR2;FGF4
IL3RA	Interferon gamma signaling Homo sapiens R-HSA-877300	8.57E-05	VCAM1;IFNG;STAT1;PTPN11;HLA-A;JAK2;HLA-DRB1;ICAM1;JAK1;HLA-DQB1	Metabolism of xenobiotics by cytochrome P450	0.845776	AKR1C1	Parietal lobe	0.01391	ATF1;ATF2;ICAM1;RPS6KA3;HTR6;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D2;PRKAB1;GABRG2;GABRG1;AR;SCN10A;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;ATF4;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;GRIN2A;PPP3R2;LTA4H;APOE;JUN;ST14;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2B;GRIN2D;GRIN3A;CALY;ATM;CALR;CALM1;SCN2A;GABRB3;DDR1;RYR1;GABRB2;RYR2;GABRB1;ACY1;PRKAG1;PRKAG2;PTH1R;CROT;SLC7A11;IKBKB;TUBA1A;SMPD1;RAC1;JAK2;JAK1;ANXA1;WARS;CAMLG;PARP1;TUBB;FOS;F3;PTGR2;KCNMA1;CANX;KIT;SLC29A4;SLC29A1;TLR4;JDP2;PPARD;SLC2

									9A2;DDR2;PCNA;PTGER1;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRA2;P2RY12;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;GRIN1;VEGFA;CRAT;CHRM3;CHRM1;CHRM5;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CACNB1;CACNB2;CACNB3;CACNB4;SCN8A;GPD1;PPIF;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA4;NPR1;GLO1;NPR2;ITPR1;ITPR2;CACNA1A;ADRB1;CACNA1D;ADRB2;CACNA1C;CACNA1E;CACNA1H;CACNA1G;CACNA1I;HRH1;HRH2;ABL1;DRD1;GRIA3;DRD5;GRIA4;FDPS;PRNP;TGFB1;HTR1E;HSPA5;HTR1F;SRD5A1;SRD5A3;HTR1A;HTR1B;NFKB1;NFKBIA;IL6;GGCX;

									FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;ADRA1D;HTR2A;PIK3CB;ADRA1B;ADRA1A;CKS1B;CASP9;POLB;CPT2;CA2;CASP3;CA4;CA7;PDE4B;PDE4A;ITGAV;MBL2;CHUK;GGPS1;VWF;DDX58;PDE4D;AVPR2;SIGMAR1;HTR3C;HTR3B;ADRA2C;ADRA2B;ADRA2A;PIK3CA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;OPRL1;ATP2C1;CACNG7;CACNG8;SLC25A29;MAPK7;MAPK1;PTK2B;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;CACNG3;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;CCK;CD4;KRAS;PDE7B;TEK;PDE7A
IL4	NOD1/2 Signaling Pathway Homo sapiens R-HSA-168638	8.67E-05	IKBKB;CASP9;MAPK11;CHUK;CASP1;NOD2	Olfactory transduction	0.95785	PDE1C;PDE1B;PDE1A;PDE2A;CALM1;SLC8A1	non-neuronal cell	0.01437	NTRK1;CHRNA4;NTRK3;TRPV1
IL6	Syndecan interactions Homo sapiens R-HSA-3000170	9.42E-05	TGFB1;ITGB3;SDC2;ITGAV;FGF2				Jejunum	0.01491	CACNB2;SLC29A1

IL7	FGFR1c ligand binding and activation Homo sapiens R-HSA-190373	9.84E-05	FGF1;FGF2;FGFR1;FGF4				C6 glioma cell	0.014911	AKT1;TP53
ITGAV	Signaling by activated point mutants of FGFR1 Homo sapiens R-HSA-1839122	9.84E-05	FGF1;FGF2;FGFR1;FGF4				Mesenchymal epithelium	0.014911	TGFB1;HGF
ITGB3	Signaling by FGFR4 in disease Homo sapiens R-HSA-5655291	9.84E-05	NRAS;PIK3CA;KRAS;FGFR4				Rat-2 cell	0.014911	FOS;TFPI
ITPR1	Interleukin-7 signaling Homo sapiens R-HSA-1266695	9.84E-05	IL7;HGF;JAK3;JAK1				Rhizome	0.014911	CASP3;TNF
ITPR2	Androgen biosynthesis Homo sapiens R-HSA-193048	9.84E-05	SRD5A2;SRD5A1;SRD5A3;CYP17A1				Thymoma cell	0.014911	IL1A;CD4

ITPR3	EPH-Ephrin signaling Homo sapiens R-HSA-2682334	1.03E-04	MMP2;SDC2;LIMK1;KDR;RAC1;MMP9;GRIN2B;EPHA2;GRIN1;VEGFA				Ec	0.01549	HTR7;HTR3A;FGF4
JAK1	RIP-mediated NFkB activation via ZBP1 Homo sapiens R-HSA-1810476	1.21E-04	IKBKB;NFKBIA;CHUK;NFKB1;TLR3				HEp-2 cell	0.01549	CASP9;IFNB1;CASP3
JAK2	ERK/MAPK targets Homo sapiens R-HSA-198753	1.21E-04	MAPK11;RPS6KA3;MAPK7;MAPK1;MAPK3				Sporozoite	0.01549	CD4;IFNG;IL2
JAK3	CD209 (DC-SIGN) signaling Homo sapiens R-HSA-5621575	1.21E-04	NRAS;CD209;KRAS;RAF1;NFKB1				Spinal cord	0.01564	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG2;GABRG1;AR;SFRP4;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;S

									DC2;PPP3R2;LTA4H;APOE;ELANE;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;GRIN3A;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;DDR1;RYR1;RYR2;ORM1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;SLC6A2;ORM2;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;ANXA1;WARS;CAMLG;PARP1;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;F9;IL1B;KCNMA1;CANX;KIT;TLR9;SLC29A4;TLR7;SLC29A1;TLR4;JDP2;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;PTGER1;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;CYP17A1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;XDH;CD55;GABRA2;P2RY12;GABRP;CRBN;F10;GABRA6;GABRA5;STAT1;IFNB1;GSS;AKR1C1;PTGES3;F11;STAT3;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;PF4;NEK11;CHRM1;NCF1;PROS1;

									NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;PDGFRB;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;CYBA;LIG3;CACNB1;PROCR;CACNB3;SCN8A;GPD1;PPIF;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA2;CHRNA4;GLO1;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;CSF2RB;ADRB2;HRH1;ABL1;GRIA3;DRD5;GRIA4;FDPS;PRNP;TGFB1;VCAM1;HSPA5;SRD5A1;SRD5A3;NFKB1;NFKBIA;IL6;PROC;GGCX;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRA;TNFAIP6;FLT3;FLT4;ADRA1D;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;CCDC51;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;ADRA2B;ADRA2A;ADORA2A;PIK3CA;IFNG;IL3RA;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;C

									ACNG6;CACNG7;SLC25A29;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;SLC25A20;PDE6A;MAPK6;MAPK4;KCNJ3;MAPK3;KCNJ9;NTRK3;SLC12A1;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;CD4;FCGR2A;KRAS;PDE7B;PDE7A
JDP2	Circadian Clock Homo sapiens R-HSA-400253	1.36E-04	ATF2;F7;CPT1A;RXRA;SERPINE1;SIK1;NR3C1;PPARA				Bone	0.01654	PCNA;LRP1;PRKDC;GLO1;SDC2;SERPINE1;HBB;ITPR3;TYMS;NR3C1;TFPI;PGRMC1;TUBA1A;CCND1;SMPD1;FTH1;MAPK1;ITGAV;PDE6B;APOE;RAC1;FADS1;JAK1;MAPK3;CA12;PDGFRB;FDPS;JUN;ANXA1;WARS;TGFB1;HSPA5;SRD5A1;PTGES3;MMP2;AKR1C3;FOS;CANX;CALR;CALM1;RAF1;PPIA;ATF4;FTL;DDR2;FGFR1
JUN	ATF6-alpha activates chaperones Homo sapiens R-HSA-381033	1.45E-04	HSPA5;CALR;ATF6;ATF4				Bipolar cell	0.0175	GLRA2;GLRA3;CACNA1F
KCNH2	CLEC7A (Dectin-1) signaling Homo	1.45E	NFKBIA;IKBKB;CHUK;IL1B;ITPR1;ITPR2;ITPR3;NFATC1;CALM1;NFKB1				Biofilm	0.018	IL6;IL1B;TNF;TLR2

	sapiens R-HSA-5607764	-04						48	
KCNJ11	Resolution of AP sites via the multiple-nucleotide patch replacement pathway Homo sapiens R-HSA-110373	1.54E-04	POLB;PCNA;LIG1;PARP1;PARP2				Callus	0.018848	TGFB1;TNFSF11;FGF2;VEGFA
KCNJ3	Fcgamma receptor (FCGR) dependent phagocytosis Homo sapiens R-HSA-2029480	1.64E-04	FCGR2A;PIK3CA;LIMK1;ITPR1;ABL1;ITPR2;MAPK1;ITPR3;PIK3CB;RAC1;MAPK3				Articular cartilage	0.018887	HSPA5;AQP1
KCNJ5	Base Excision Repair Homo sapiens R-HSA-73884	1.76E-04	POLB;PCNA;LIG1;PARP1;PARP2;LIG3				Bile duct	0.018887	CHRM3;AQP1
KCNJ6	Resolution of Abasic Sites (AP sites) Homo sapiens	1.76E-0	POLB;PCNA;LIG1;PARP1;PARP2;LIG3				Bone marrow stro	0.018887	IL7;TNFSF11

	R-HSA-73933	4					mall cell line		
KCNJ9	TP53 Regulates Metabolic Genes Homo sapiens R-HSA-5628897	1.98E-04	PRKAB2;PRKAA1;PRKAA2;PRKAG1;PRKAG2;AKT1;PRKAB1;TP53;PRKAG3				Eht	0.01887	ACE;REN
KCNMA1	FGFR2c ligand binding and activation Homo sapiens R-HSA-190375	2.05E-04	FGF1;FGF2;FGFR2;FGF4				Laryngeal cell line	0.01887	CD40LG;TP53
KCNQ3	Trafficking and processing of endosomal TLR Homo sapiens R-HSA-1679131	2.05E-04	TLR9;TLR8;TLR7;TLR3				Mesenteric vein	0.01887	SERPINC1;ALB
KCNQ5	Signaling by PTK6 Homo sapiens R-HSA-8848021	2.10E-04	NRAS;CCND1;ERBB2;STAT3;AKT1;KRAS;RAC1;NR3C1				Mesothelioma cell line	0.01887	CASP3;AKT1

KDR	Interferon alpha/beta signaling Homo sapiens R-HSA-909733	2.33E-04	IFNAR2;IFNA1;STAT1;IFNB1;PTPN11;HLA-A;JAK1;IFNAR1				Rosette	0.021559	CD4;CD40LG;ALB;IL2
KIT	Growth hormone receptor signaling Homo sapiens R-HSA-982772	2.38E-04	STAT1;STAT3;MAPK1;JAK2;MAPK3				Spindle cell	0.021889	PDGFRA;KIT;PGR;HBA1;TP53
KRAS	DARPP-32 events Homo sapiens R-HSA-180024	2.38E-04	PDE4D;PDE4C;PDE4B;PDE4A;CALM1				Female pudendum	0.021944	PDE5A;PGR;TP53
L1CAM	TRAF6 mediated NF-kB activation Homo sapiens R-HSA-933542	2.38E-04	IKBKB;NFKBIA;CHUK;DDX58;NFKB1				Foreskin fibroblast cell line	0.023211	TUBB;FGFR1
LIG1	FGFR1b ligand binding and activation Homo sapiens R-HSA-	2.68E-04	FGF1;FGF2;FGFR1				Calyx	0.023211	CHRM3;CACNA1B

	190370								
LIG3	LGI-ADAM interactions Homo sapiens R-HSA-5682910	2.82E-04	CACNG8;CACNG2;CACNG3;CACNG4				Enteric nervous system	0.02321	PRNP;KIT
LIMK1	Early Phase of HIV Life Cycle Homo sapiens R-HSA-162594	2.82E-04	CD4;LIG1;CCR5;PPIA				IMR-32 cell	0.02321	CHRNA4;TP53
LMAN1	Synthesis of Prostaglandins (PG) and Thromboxanes (TX) Homo sapiens R-HSA-2162123	2.82E-04	PTGES3;AKR1C3;PTGS2;PTGS1				Mature cell	0.02321	CD4;KIT
LRP1	ATF4 activates genes Homo sapiens R-HSA-380994	2.92E-04	CXCL8;CCL2;ATF6;ATF3;ATF4				SK-N-MC cell	0.02321	CASP3;ADRA1A
LTA4H	Costimulation by the CD28 family Homo	3.47E	CD4;PIK3CA;AKT1;CTLA4;PTPN11;RAC1;HLA-DRB1;HLA-DQB1				Muscle	0.023	RYR1;HBB;AQP1;ICAM1;RPS6KA3;TUBA1A;CA3;FTH1;AKT1;ITGAV;RAC1;ANXA1;WARS;PARP

	sapiens R-HSA-388841	-04						46	1;LIG1;TNNC1;MMP2;FOS;HLA-A;HBA1;CACNB1;PIK3CA;CANX;GPD1;PPIF;PGR;ATF5;PPARA;SLC29A1;PPIA;ATF4;FTL;DDR2;PRKAA1;PRKAA2;PCNA;LRP1;PRKDC;RXRA;MAPK7;ERBB2;ABL1;CACNG1;CACNA1S;PDE6A;CD55;FDPS;PRNP;CRBN;HSPA5;AKR1C1;PTGES3;NFKBIA;ALB;CALR;CALM1;FGFR4;HLA-DRB1
MAP2K1	ZBP1(DAI) mediated induction of type I IFNs Homo sapiens R-HSA-1606322	3.54E-04	IKBKB;NFKBIA;CHUK;NFKB1;TLR3				Urine	0.02436	ALB;F2;CD55
MAPK1	TAK1 activates NFkB by phosphorylation and activation of IKKs complex Homo sapiens R-HSA-445989	3.54E-04	IKBKB;NFKBIA;CHUK;NOD2;NFKB1				Pancreatic beta cell	0.02456	DPP4;KCNJ11;PDE3B;ATF6;HLA-DQB1
MAPK	FGFR1 ligand binding and	3.77	FGF1;FGF2;FGF4;FGFR1				Neuron	0.02	CACNA1A;ATP2C1;TLR3

11	activation Homo sapiens R-HSA-190242	E-04						693	
MAPK15	Synthesis of bile acids and bile salts via 27-hydroxycholesterol Homo sapiens R-HSA-193807	3.77E-04	RXRA;AKR1C1;NR1H4;AKR1C3				N1E-115 cell	0.02693	HTR7;HTR3A;CALM1
MAPK3	Binding and Uptake of Ligands by Scavenger Receptors Homo sapiens R-HSA-2173782	4.19E-04	LRP1;FTH1;ALB;HBB;HBA1;APOE;CALR;FTL				Neurofibrillary tangle	0.02693	PRNP;CA4;APOE
MAPK4	Caspase activation via extrinsic apoptotic signalig pathway Homo sapiens R-HSA-5357769	4.26E-04	CASP9;CASP3;FAS;TLR4;TLR3				Seminiferous tubule	0.02693	CASP3;KIT;TP53
MAPK	Sema4D in semaphorin	4.26	ERBB2;LIMK1;RAC2;RAC1;MET				Occipital lob	0.02	ATF1;ATF2;ICAM1;RPS6KA3;HTR6;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A

6	signaling Homo sapiens R-HSA-400685	E-04					e	722	;CACNA2D1;CACNA2D3;CACNA2D2;PRKAB1;GABRG2;GABRG1;AR;SCN10A;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;ATF4;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;GRIN2A;PPP3R2;LTA4H;APOE;SCN3A;JUN;ST14;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2B;GRIN2D;GRIN3A;CALY;ATM;CALR;CALM1;SCN2A;GABRB3;DDR1;RYR1;GABRB2;RYR2;GABRB1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;IKBKB;TUBA1A;SMPD1;RAC1;JAK2;JAK1;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;FOS;F3;PTGR2;KCNMA1;CANX;KIT;SLC29A4;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;DDR2;OPRD1;PCNA;PTGER1;NR1I3;NR1I2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRD;GABRA2;P2RY12;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;GRIN1;

									VEGFA;CRAT;CHRM3;CHRM1;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;CYBB;LIG3;CACNB1;CACNB2;CACNB3;CACNB4;SCN8A;GPD1;PPIF;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRNA2;CHRNA4;NPR1;GLO1;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;ADRB1;CACNA1D;ADRB2;CACNA1C;CACNA1E;CACNA1G;CACNA1I;HRH1;HRH2;ABL1;DRD1;GRIA3;DRD5;GRIA4;FDPS;PRNP;TGFB1;HSPA5;HTR1F;SRD5A1;SRD5A3;HTR1A;HTR1B;NFKB1;NFKBIA;GGCX;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;HTR2A;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA1;CPT2;CA2;CASP3;CA4;PDE4B;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;PDE4D;SIGMAR1;HTR3C;ADRA2C;ADRA2B;ADRA2A;PIK

									3CA;IL3RA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;OPRL1;ATP2C1;CACNG7;CACNG8;SLC25A29;MAPK7;MAPK1;PTK2B;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;CACNG3;MAPK4;KCNJ3;KCNJ9;NTRK3;LIMK1;PTPN11;CCK;CD4;KRAS;PDE7B;PDE7A
MAPK7	Platelet calcium homeostasis Homo sapiens R-HSA-418360	4.26E-04	ITPR1;ITPR2;ITPR3;CALM1;SLC8A1				Myeloma cell	0.02792	IFNAR2;IFNAR1
MBL2	Transport of nucleosides and free purine and pyrimidine bases across the plasma membrane Homo sapiens R-HSA-83936	4.61E-04	SLC29A4;SLC29A1;SLC29A2				Thyroid cancer cell	0.02792	CALCA;CACNA1H
MC2R	Spry regulation of FGF signaling Homo	4.93E	MAPK1;PTPN11;BRAF;MAPK3				BTO:0000049	0.027	ALB;REN

	sapiens R-HSA-1295596	-04					1	92	
MCFD2	MAP3K8 (TPL2)-dependent MAPK1/3 activation Homo sapiens R-HSA-5684264	4.93E-04	IKBKB;MAP2K1;CHUK;NFKB1				Fetal serum	0.02792	CD40LG;ALB
MET	BMAL1:CLOCK,NPAS2 activates circadian gene expression Homo sapiens R-HSA-1368108	4.93E-04	F7;RXRA;SERPINE1;SIK1;NR3C1;PPARA				NCI-H295R cell	0.02792	CYP11B2;CYP17A1
MMP2	Trafficking of GluR2-containing AMPA receptors Homo sapiens R-HSA-416993	6.32E-04	GRIA1;GRIA2;GRIA3;GRIA4				Pyloric cecum	0.02792	SLC15A1;CCK
MMP9	Activated point mutants of FGFR2 Homo sapiens R-HSA-2033519	6.32E-04	FGF1;FGF2;FGFR2;FGF4				Trophoblast cell line	0.02792	MMP2;MMP9
M	Ca2+	6	ITPR1;ITPR2;ITPR3				Ve	0	PGRMC1;SERPINC

PO	pathway Homo sapiens R-HSA-4086398	.65E-04	;PDE6B;NFATC1;PDE6A;CALM1				nous system	.02792	1
MT-ND1	Downstream TCR signaling Homo sapiens R-HSA-202424	6.76E-04	NFKBIA;IKBKB;CD4;CHUK;PIK3CA;PIK3CB;NFKB1;HLA-DRB1;HLA-DQB1				el2	0.02792	CHRM5;OPRL1
MYC	Potassium Channels Homo sapiens R-HSA-1296071	6.76E-04	KCNH2;KCNJ5;KCNJ6;KCNJ11;KCNJ9;KCNMA1;KCNQ3;KCNQ5;KCNJ3				p95	0.02792	ERBB2;ATM
NA	Metabolism of steroid hormones Homo sapiens R-HSA-196071	7.09E-04	SRD5A2;SRD5A1;CYP11B2;SRD5A3;CYP17A1				Substantia nigra	0.02894	CHRNB3;GSS;PDE4C;KCNMA1;CHRNA6
NCF1	AMPK inhibits chREBP transcriptional activation activity Homo sapiens R-HSA-163680	7.25E-04	PRKAB2;PRKAA2;PRKAG2				Choroid	0.02963	KDR;FGF2;VEGFA
NC	G alpha (z)	8.	ADCY2;ADCY1;ADRA2C;ADRA2B;AD				Swiss	0.	MYC;FOS;FGF2

F4	signalling events Homo sapiens R-HSA-418597	11E-04	RA2A;ADCY5				-3T3 cell	02963	
NEK11	Inwardly rectifying K+ channels Homo sapiens R-HSA-1296065	8.29E-04	KCNJ5;KCNJ6;KCNJ11;KCNJ9;KCNJ3				Syncytium	0.02963	CD4;CCL5;CCR5
NEU1	Nucleotide-binding domain, leucine rich repeat containing receptor (NLR) signaling pathways Homo sapiens R-HSA-168643	9.11E-04	IKBKB;CASP9;MAPK11;CHUK;CASP1;NOD2				Vascular system	0.02964	MCFD2;GLO1;SERPINE1;PTGS2;PTGS1;CDH5;NT5E;TUBA1A;CCND1;FTH1;LTA4H;CD55;PRNP;ANXA1;WARS;VWF;PTGES3;MMP2;FOS;HLA-A;PIK3CA;IL1B;CANX;SLC29A1;CALM1;ATF6;TP53;PPIA;ATF4;FTL;DDR2
NEU2	Scavenging by Class A Receptors Homo sapiens R-HSA-3000480	9.91E-04	FTH1;APOE;CALR;FTL				Ampulla	0.03298	KRAS;TP53
NFATC	Regulation of TP53 Activity Homo sapiens	0.001	MAPK11;PRKAB2;PRKAA1;PRKAA2;PRKAG1;AKT1;PRKAG2;ATM;PRKAB1;TP53;PRKAG3				Medullobl ast	0.032	MYC;TP53

1	R-HSA-5633007	16					omacell line	98	
NFKB1	Macroautophagy Homo sapiens R-HSA-1632852	0.001117	PRKAB2;PRKAA1;PRKAA2;PRKAG1;PRKAG2;PRKAB1;PRKAG3				Nerveplexus	0.032938	RET;HTR7
NFKBIA	FGFR2 ligand binding and activation Homo sapiens R-HSA-190241	0.00122	FGF1;FGF2;FGFR2;FGF4				b12	0.032938	CD4;CCR5
NOD2	ROS, RNS production in response to bacteria Homo sapiens R-HSA-1222556	0.00128	NCF1;NOS2;NCF4;CYBB;CYBA				bl20	0.032938	CA1;CACNB4
NOS2	Bile acid and bile salt metabolism Homo sapiens R-HSA-194068	0.00146	RXRA;AKR1C1;ALB;NR1H4;AKR1C3				Brain	0.03514	ATF1;ATF2;PRSS1;SERPINE1;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D2;HLA-A;PRKAB1;GABRG2;GABRG1;SFRP4;

									KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;GRIN2C;L1CAM;GRIN3A;CALY;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;RYR1;GABRB2;RYR2;GABRB1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;CROT;SLC7A11;SLC6A2;ORM2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;PTH2R;FOS;HBA1;F2;F3;PTGR2;F7;F8;ADRB3;IL1B;KCNMA1;CANX;KIT;TLR9;SLC29A4;PPARA;SLC29A1;TLR4;JDP2;HLA-DQB1;PPARD;SLC29A2;DDR2;PCNA;SERPINC1;NR1I3;ADCY2;ADCY1;TYMS;ADCY5;PTGS1;CYP17A1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;P2RY12;CA12;

									GABRA1;CRBN;GABRA6;GABRA5;STAT1;GABRA4;GSS;AKR1C1;PTGES3;F11;GABRA3;STAT3;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;FGF1;NR3C1;FGF2;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;CHRNB4;PHYH;LIG1;CYBB;CYBA;LIG3;CACNB1;CACNB2;CACNB3;CACNB4;SCN8A;GPD1;PPIF;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA2;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;CHRNA9;ITPR2;CACNA1A;ITPR3;CACNA1D;ADRB2;CACNA1C;CACNA1F;CACNA1E;CACNA1H;CACNA1G;CACNA1I;HRH1;ABL1;DRD2;GRIA3;GRIA4;FDPS;PRNP;TGFB1;VCAM1;HSPA5;SRD5A1;SRD5A3;HTR1A;NFKB1;NFKBIA;

									GGCX;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;FLT4;PDE3B;HTR2C;PIK3CD;HTR2A;PIK3CB;CKS1B;CASP9;POLB;CA1;CPT2;CA2;CASP3;CA4;PDE4B;PDE4A;ITGAV;SCN5A;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;PDE4C;HTR3B;OPRM1;MMP9;ADRA2A;ADORA2A;PIK3CA;IFNG;CRH;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;OPRL1;ATP2C1;TFPI;CACNG6;CACNG8;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PDE6C;PTK2B;PDE6B;SLC25A20;CACNG2;MAPK6;CACNG3;CACNG4;MAPK4;TRDMT1;KCNJ3;MAPK3;SLC12A3;KCNJ9;NTRK3;SLC12A1;LIMK1;PLA2G2A;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;TEK;PDE7A
NPR1	Generic Transcription Pathway Homo sapiens	0.0014	ATF2;PRKAA1;PRKAA2;PCNA;THRB;THRA;NR1I3;SERPINE1;NR1I2;PRKAG1;PRKAG2;NR3C1;PRKAG3;NR3C2;RXR				Uretra	0.0354	AR;HTR7;PDE5A

	R-HSA-212436	8	A;MYC;CASP1;AKT1;PRKAB2;JUN;PARP1;VDR;NR1H4;FOS;PRKAB1;AR;MAPK11;FAS;PPARG;PGR;ATM;PPARA;TP53;PPARD					5	
NPR2	HDR through MMEJ (alt-NHEJ) Homo sapiens R-HSA-5685939	0.0015	PARP1;PARP2;LIG3				Ankle joint	0.038336	IL1B;TNF
NR1H4	FGFR2b ligand binding and activation Homo sapiens R-HSA-190377	0.0015	FGF1;FGF2;FGFR2				Corpus striatum	0.038336	PDE10A;CA4
NR1I2	Signaling by FGFR3 fusions in cancer Homo sapiens R-HSA-8853334	0.0015	NRAS;PIK3CA;KRAS				Endometrial cancer cell line	0.038336	CCND1;AKT1
NR1I3	Adenylate cyclase activating pathway Homo sapiens	0.0015	ADCY2;ADCY1;ADCY5				Nasopharyngeal car	0.038336	CASP3;TP53

	R-HSA-170660						cinomacell line		
NR3C1	Extracellular matrix organization Homo sapiens R-HSA-1474244	0.00158	DDR1;PRSS1;TGFB1;VCAM1;SDC2;ITGB3;MMP2;SERPINE1;FGF2;MMP9;ICAM1;CASP3;KDR;ITGAV;ELANE;DDR2				SK-N-BE(2)C cell	0.03836	CHRNB3;OPRL1
NR3C2	Metabolism of proteins Homo sapiens R-HSA-392499	0.00161	GRIA1;ACHE;MCFD2;CALCA;PCNA;CXCL8;PROS1;CSF2RB;CSF2RA;NEU2;DPP4;LMAN1;TUBA1A;NEU1;CCL2;CD55;ACE;F10;PARP1;HSPA5;MMP2;STAT3;SRD5A3;F2;TUBB4B;ADRA2C;ADRA2A;ACE2;F7;F8;F9;PROC;GGCX;ADORA2A;ADORA2B;CANX;REN;CALR;ATF6;TP53;ATF3;ATF4				Sebum	0.03836	FADS2;SHBG
NRAS	Steroid hormones Homo sapiens R-HSA-209943	0.00189	SRD5A2;SRD5A1;CYP11B2;SRD5A3;CYP17A1				Subcutaneous tissue	0.03836	ALB;HBA1
NT5	TRAF6 mediated IRF7	0.0	TLR9;TLR8;TLR7				Neutrop	0.0	RAC2;MMP9;ELANE

E	activation in TLR7/8 or 9 signaling Homo sapiens R-HSA-975110	0.0202					hil	3856	
NTRK1	TCR signaling Homo sapiens R-HSA-202403	0.00233	NFKBIA;IKBKB;CD4;CHUK;PIK3CA;PIK3CB;NFKB1;HLA-DRB1;HLA-DQB1				Endochondral bone	0.03856	TGFB1;PTH1R;VEGFA
NTRK3	IKK complex recruitment mediated by RIP1 Homo sapiens R-HSA-937041	0.00247	IKBKB;CHUK;TLR4;TLR3				Neuro-2a cell	0.03856	PRNP;CASP3;AKT1
OPRD1	Sema4D induced cell migration and growth-cone collapse Homo sapiens R-HSA-416572	0.00247	LIMK1;ERBB2;RAC2;RAC1				Lung cancer cell	0.03941	NRAS;AVPR2;CACNA1A;CACNA1D;KRAS;TP53
OPRK1	Synthesis of bile acids and bile salts via	0.002	RXRA;AKR1C1;NR1H4;AKR1C3				Bud	0.039	TGFB1;FGF2;MET;FGFR2;FGF4;FGFR1

	7alpha-hydroxycholesterol Homo sapiens R-HSA-193368	47						41	
ORL1	Endogenous sterols Homo sapiens R-HSA-211976	0.00247	RXRA;CYP11B2;NR1H4;CYP17A1				Colonic adenocarcinoma cell	0.04099	CAMLG;NOS2;FTH1;TUBB;TYMS
ORM1	Visual phototransduction Homo sapiens R-HSA-2187338	0.00248	LRP1;SDC2;AKR1C1;AKR1C3;PDE6B;APOE;PDE6A;CALM1				T-lymphocyte	0.04123	IL10;CASP9;RPS6KA3;PGRMC1;MAP2K1;CHUK;PTGES3;CASP3;ITPR1;CCL3;NFATC1;PTPN11
ORM1	Fatty acid, triacylglycerol, and ketone body metabolism Homo sapiens R-HSA-535734	0.00256	PRKAB2;CPT1A;PRKAA2;NR1H4;PRKAG2;RXRA;CPT2;GPD1;PPARG;SLC25A20;PPARA;FADS1;PPARD				Breast cancer cell	0.04377	DDR1;LMAN1;HSPA5;GABRA5;TUBB;CHRNA7;SIGMAR1;AVPR2;ERBB2;PGR
ORM2	TP53 Regulates Transcription of Caspase	0.00266	CASP1;ATM;TP53				Gastric cancer	0.04400	CASP9;FGFR2

	Activators and Caspases Homo sapiens R-HSA-6803207	5					cell	5	
P2RY12	FGFR3 mutant receptor activation Homo sapiens R-HSA-2033514	0.002265	FGF1;FGF2;FGF4				Adrenocortical carcinoma cell	0.044055	MC2R;CYP11B2
P43681	Signaling by activated point mutants of FGFR3 Homo sapiens R-HSA-1839130	0.002265	FGF1;FGF2;FGF4				Gastrointestinal mucosa	0.044055	CCK;PTGS2
PARP1	NF-kB activation through FADD/RIP-1 pathway mediated by caspase-8 and -10 Homo sapiens R-HSA-933543	0.002265	IKBKB;CHUK;DDX58				HOS cell	0.044055	CCR5;MET

PARP2	ERKs are inactivated Homo sapiens R-HSA-202670	0.00265	MAPK7;MAPK1;MAPK3				Endothelial cell	0.04417	CDH5;PROCR;VCAM1;PTGS2
PARP3	PECAM1 interactions Homo sapiens R-HSA-210990	0.00265	ITGB3;PTPN11;ITGAV				Epiphyseal growth plate	0.04518	PTH1R;FGF2;VEGFA
PCNA	Antigen Presentation: Folding, assembly and peptide loading of class I MHC Homo sapiens R-HSA-983170	0.00288	HSPA5;CANX;HLA-A;CALR				Merozoite	0.04518	TPO;CD4;CD40LG
PDE10A	Activation of G protein gated Potassium channels Homo sapiens R-HSA-1296041	0.00288	KCNJ5;KCNJ6;KCNJ9;KCNJ3				NCI-H226 Br cell	0.04518	DPP4;FCGR2A;ICAM1
PDE	Inhibition of voltage	0.0	KCNJ5;KCNJ6;KCNJ9;KCNJ3				Ectoder	0.0	TGFB1;FGF1;FGF2;TP53;FGFR2;FGF4;FGFR1

11A	gated Ca2+ channels via Gbeta/gamma subunits Homo sapiens R-HSA-997272	0288					m	48005	
PDE1A	G protein gated Potassium channels Homo sapiens R-HSA-1296059	0.00288	KCNJ5;KCNJ6;KCNJ9;KCNJ3				Long bone	0.04929	TGFB1;TNFSF11;PTH1R;FGFR2
PDE1B	RIG-I/MDA5 mediated induction of IFN-alpha/beta pathways Homo sapiens R-HSA-168928	0.00304	IKBKB;NFKBIA;IFNA1;CHUK;DDX58;IFNB1;NFKB1				Superior vena cava	0.05003	SERPINC1;ALB
PDE1C	Role of phospholipids in phagocytosis Homo sapiens R-HSA-2029485	0.00326	FCGR2A;PIK3CA;ITPR1;ITPR2;ITPR3;PIK3CB				Trypomastigote	0.05003	CALR;TLR2
PDE	Retinoid metabolism and	0.0	LRP1;SDC2;AKR1C1;AKR1C3;APOE				Colon	0.0	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-

2A	transport Homo sapiens R-HSA-975634	0334						52155	ND1;HTR6;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;SCN10A;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A3;IKBKB;TUBA1A;SMPD1;JAK2;JAK3;JAK1;ANXA1;TNNC1;PTH2R;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;NR1I2;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;GABRA2;P2RY12;GABRA1;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;NCF4;FGF1;FGF2;SLC8A1;CDH5;FADS2;ADO

									RA3;FADS1;IFNAR2;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;GRIA3;GRIA4;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;ITGB3;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;AVPR2;SIGMAR1;HTR3B;ADRA2C;ADRA2A;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG6;CACNG7;CACNG8;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG3;KCNJ3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ9;NTRK3;SLC12A1;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22

									A5;PDE1C;PDE1B; PDE1A;SDC2;NEU2 ;NEU1;APOE;SCN3 A;PDE2A;PRG2;CA LY;CD209;PDE3A; ATM;CALR;CALM1 ;SCN2A;DDR1;RYR 2;ORM1;ACY1;IFN A1;PTGDR2;HBB;C ROT;SLC7A11;OR M2;RAC2;RAC1;CC R5;CCR4;IL10;PAR P3;WARS;CAMLG; PARP1;PARP2;TUB B;IL13;HBA1;IL1A; ADRB3;IL1B;CANX; KIT;TLR9;TLR4;TLR 3;DDR2;TLR2;OPR D1;PTGER4;PCNA; PTGER2;PTGER3;T MPRSS2;TYMS;CY P17A1;NT5E;PGR MC1;RXRA;CXCR1; CHRNA10;GABRE; GABRD;XDH;CD55; CA12;GABRP;IFNB 1;AKR1C1;PTGES3; AKR1C3;GRIN1;VE GFA;CD40LG;FAS; NEK11;NR3C1;MP O;NR3C2;CCND1;F PGS;SCN9A;PDE8B ;PDE8A;CA14;CHR NB2;PDGFRB;GUC Y1A2;PDGFRA;PHY H;CHRNB3;LIG1;H GF;CYBB;CYBA;LIG 3;PROCR;SCN8A;G PD1;PLA2G10;PPIF ;RAF1;PPIA;PDE9A ;CHRNA3;CHRNA5 ;CHRNA4;NPR1;CH RNA7;NPR2;CACN A1B;CACNA1A;AD

									RB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;TRPV1;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;SCN4A;ETFDH;OPRL1;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
PDE3A	EPHB-mediated forward signaling Homo sapiens R-HSA-3928662	0.00334	SDC2;LIMK1;RAC1;GRIN2B;GRIN1				Retina	0.05225	ATF1;ATF2;PRSS1;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT1;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;GABRG2;SFRP4;SCN10A;S

									IK1;ATF5;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1A;SDC2;NEU1;LTA4H;APOE;ELANE;JUN;ST14;ACE;PDE2A;BRAF;L1CAM;GRIN2D;PDE3A;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;CROT;SLC7A11;SLC6A2;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK3;JAK1;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;F7;F9;KCNMA1;CANX;KIT;TLR9;PPARG;TLR7;SLC29A1;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;PCNA;SERPINC1;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;GLRA3;RXRA;XDH;CD55;GABRA2;P2RY12;GABRA1;CRBN;F10;STAT1;IFNB1;GSS;AKR1C1;PTGES3;F11;GABRA3;STAT3;AKR1C3;TUBB4B;VEGFA;FAS;CR

									AT;FRK;NEK11;CHRM2;CHRM3;NCF1;PROS1;FGF1;NR3C1;FGF2;MPO;SLC8A1;CDH5;FADS2;CCND1;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;GPD1;PPIF;S100A4;RAF1;PPIA;PDE9A;FTL;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;CACNA1D;ADRB2;CACNA1F;CACNA1G;HRH1;ABL1;DRD4;GRIA3;GRIA4;FDPS;PRNP;TGFB1;VCAM1;HSPA5;NFKB1;NFKBIA;IL6;PROC;GGCX;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRA;FLT3;FLT4;PIK3CD;PIK3CB;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;PDE4C;ADRA2C;ADORA2A;PIK3CA;IFNG;PDE5A;S

									CN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;CACNG6;CACNG7;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PDE6C;PTK2B;SCN7A;PDE6B;SLC25A20;PDE6A;CACNG2;MAPK6;MAPK4;CACNG5;MAPK3;KCNJ5;NTRK3;SLC12A1;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;KRAS
PDE3B	PD-1 signaling Homo sapiens R-HSA-389948	0.00334	CD4;PTPN11;HLA-DRB1;HLA-DQB1				Amyloid plaque	0.05234	PRNP;IL1B;APOE
PDE4A	AKT phosphorylates targets in the cytosol Homo sapiens R-HSA-198323	0.00338	CASP9;CHUK;AKT1				CL-48 cell	0.05275	DDR1;WARS;SERPINC1;GPD1;ALB;PRKAG1;ETFDH;REN;TLR4
PDE4B	NF-kB is activated and signals survival Homo sapiens R-HSA-209560	0.00338	IKBKB;NFKBIA;NFKB1				Biliary epithelial cell	0.05628	HGF;S100A4
PD	FGFR3c ligand	0.	FGF1;FGF2;FGF4				Corp	0.	PROCR;CCK

E4C	binding and activation Homo sapiens R-HSA-190372	0.0338					uscardiacum	0.05628	
PDE4D	FGFR3 ligand binding and activation Homo sapiens R-HSA-190239	0.00338	FGF1;FGF2;FGF4				Immature cell	0.05628	CD4;KIT
PDE5A	p38MAPK events Homo sapiens R-HSA-171007	0.00338	MAPK11;NRAS;KRAS				Trachea	0.06005	DDR1;MCFD2;PRKAA1;PROS1;SDC2;ATP2C1;AQP1;DPP4;LMAN1;NT5E;PDE4B;MAPK1;CD55;GABRP;ANXA1;WARS;PARP1;STAT1;AKR1C1;PDE4D;STAT3;FOS;F3;CANX;CALM1;RAF1;MET;DDR2;FGFR1
PDE6A	Vasopressin regulates renal water homeostasis via Aquaporins Homo sapiens R-HSA-432040	0.0037	AVPR2;ADCY2;ADCY1;ADCY5;AQP1				Fibrosarcoma cell	0.06279	NRAS;MMP9
PDE6B	Antigen processing-Cross presentation	0.003	NCF1;NCF4;CYBB;ITGAV;CYBA;HLA-A;CALR				Cervical muc	0.062	CD40LG;SHBG

	Homo sapiens R-HSA-1236975	75					us	79	
PDE6C	VEGFR2 mediated vascular permeability Homo sapiens R-HSA-5218920	0.003885	CDH5;AKT1;RAC1;CALM1				Granulosa cell	0.062779	TNFAIP6;PTGER2
PDE7A	Synthesis of bile acids and bile salts Homo sapiens R-HSA-192105	0.003885	RXRA;AKR1C1;NR1H4;AKR1C3				Megakaryocyte cell line	0.062779	ITGB3;PF4
PDE7B	Inhibition of adenylate cyclase pathway Homo sapiens R-HSA-997269	0.004423	ADCY2;ADCY1;ADCY5				Np	0.062779	CA12;IL1B
PDE8A	Adenylate cyclase inhibitory pathway Homo sapiens R-HSA-170670	0.004423	ADCY2;ADCY1;ADCY5				Stalk cell	0.062779	FLT4;VEGFA
PDE	Signaling by ERBB2 Homo	0.0	NRAS;PIK3CA;ERBB2;AKT1;KRAS				Teargla	0.0	CD4;CD40LG

8B	sapiens R-HSA-1227986	0452					nd	62799	
PDE9A	Vesicle-mediated transport Homo sapiens R-HSA-5653656	0.0046	GRIA1;PRKAB2;MCFD2;PRKAA2;LRP1;PRKAG1;PRKAG2;HBB;HBA1;PRKAB1;PRKAG3;LMAN1;F8;FTH1;ALB;AKT1;APOE;CALR;RAC1;CALM1;CD55;FTL				Lung	0.06401	ATF1;ATF2;PRSS1;SERPINE1;MT-ND1;HTR6;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;ACE2;AR;SCN10A;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;CTLA4;JAK2;JAK3;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;GABRA2;P2RY12;GABRA1;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHR

									M1;NCF1;CHRM4;PROS1;NCF4;FGF1;FGF2;TNF;SLC8A1;FGF4;CDH5;FADS2;ADORA3;ADORA1;FADS1;IFNAR2;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;GRIA3;DRD5;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1B;NFKB1;GGCX;ALB;MCFD2;FLT1;FLT3;FLT4;ITGB3;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1B;ADRA1A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;AVPR2;SIGMAR1;HTR3A;HTR3B;ADRA2C;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG6;CACNG7;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG3;CACNG4;KCNJ3;KCNJ5;SLC12A3;KCNJ6;NTRK3;SLC12A1;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-

									A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;NEU1;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;DDR1;RYR1;RYR2;ORM1;ACY1;IFNA1;HBB;CROT;SLC7A11;ORM2;RAC2;RAC1;CCR5;CCR4;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER2;PTGER3;TMPRSS2;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CXCR1;GABRE;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;CD40LG;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;CHRNB4;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CALCA;CHRNA3;CHRNA4;NPR1;CHRNA

									7;NPR2;CACNA1A;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1F;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH2;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;SCN4A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
PDGFRA	Unfolded Protein Response (UPR) Homo sapiens R-HSA-381119	0.0048	CXCL8;HSPA5;CCL2;CALR;ATF6;ATF3;ATF4				Heart	0.0606	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;

									CACNA2D2;CACNA2D4;HLA-A;PRKAB1;ACE2;AR;SFRP4;SCN10A;AGTR1;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;PPP3R2;NEU1;LTA4H;APOE;SCN3A;ELANE;JUN;ST14;ACE;PDE2A;PRG2;BRAF;NFATC1;L1CAM;CD209;PDE3A;REN;ATM;CALR;CALM1;SCN2A;HLA-DRB1;GABRB3;RET;DDR1;RYR1;RYR2;GABRB1;ORM1;ACY1;IFNA1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC6A2;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK3;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F2;F3;PTGR2;F7;F8;F9;IL1B;KCNMA1;CANX;KIT;TLR9;SLC29A4;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;PTGER1;NR1I

									3;PTGER2;NR1I2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;XDH;CD55;P2RY12;CA12;GABRP;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM1;NCF1;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;CHRNB4;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;SCN8A;GPD1;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;CALCA;NPR1;GLO1;NPR2;CHRNA6;ITPR1;CACNA1B;ITPR2;CACNA1A;ITPR3;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1F;CSF2RA;CACNA1

									H;DPP4;TPO;HRH1;HRH2;ABL1;CACNA1S;DRD2;DRD5;FDPS;PRNP;TGFB1;VCAM1;HSPA5;SRD5A1;VDR;SRD5A3;NFKB1;NFKBIA;SELP;IL6;PROC;GGCX;CYP11B2;IL7;ALB;SHBG;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;ITGB3;PDE3B;HTR2B;ADRA1D;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;ADRA2C;ADRA2B;MMP9;ADRA2A;ADORA2A;PIK3CA;IFNG;IL3RA;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;CACNG6;SLC25A29;MAPK7;CCL5;ERBB2;CCL2;MAPK1;PDE6C;PTK2B;SCN7A;PDE6B;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;KCNJ5;LIMK1;PLA2G2A;PTPN11;CCK;MAPK15;WARS2;CD4;FCGR2A;PDE10A;KRAS;PD

									E7B;TEK;PDE7A
PDGFRB	Transcriptional Regulation by TP53 Homo sapiens R-HSA-3700989	0.00516	ATF2;PRKAB2;JUN;PRKAA1;PCNA;PRKAA2;PRKAG1;PRKAG2;FOS;PRKAB1;PRKAG3;MAPK11;CASP1;AKT1;FAS;ATM;TP53				Endoderm	0.0678	TGFB1;ALB;KDR;FGF2;FGF4
PF4	Disorders of transmembrane transporters Homo sapiens R-HSA-5619115	0.00519	KCNJ11;AVPR2;ALB				Style	0.06953	CRP;ACE
PGR	Signaling by EGFRvIII in Cancer Homo sapiens R-HSA-5637812	0.00519	NRAS;PIK3CA;KRAS				Brain cortex cell line	0.07245	TUBA1A;PCNA;HSPA5;TUBB;GSS;ALB;CALR;CALM1;PPIA
PGRMC1	Constitutive Signaling by EGFRvIII Homo sapiens R-HSA-5637810	0.00519	NRAS;PIK3CA;KRAS				Trophoblast stem cell	0.0765	PRKAA1;FGF4
PHYH	Elevation of cytosolic Ca2+ levels Homo sapiens	0.00519	ITPR1;ITPR2;ITPR3				Trophozoite	0.0765	CHRM2;CD40LG

	R-HSA-139853								
PIK3CA	Recycling of bile acids and salts Homo sapiens R-HSA-159418	0.005199	RXRA;ALB;NR1H4				dr9	0.07655	HLA-A;HLA-DRB1
PIK3CB	Cytosolic sensors of pathogen-associated DNA Homo sapiens R-HSA-1834949	0.00524	IKBKB;NFKBIA;CHUK;PRKDC;TLR3;NFKB1				Gallbladder	0.081107	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR6;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;AR;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;GRIN2A;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;CTLA4;JAK2;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;NR1I2;ADCY2;ADCY1;PTGS2;ADC

									Y5;PTGS1;GLRA1;LMAN1;NRAS;GLRA3;GABRA2;P2RY12;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;FGF1;FGF2;SLC8A1;FGF4;CDH5;FADS2;ADORA3;FADS1;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;TPO;ABL1;DRD1;DRD4;GRIA3;DRD5;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;SIGMAR1;HTR3A;HTR3B;ADRA2C;ADRA2A;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG6;CACNG7;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG2;CACNG5;KCNJ3;NTRK1;

									KCNJ5;SLC12A3;KCNJ6;NTRK3;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;SFRP4;KCNQ3;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;RYR1;RYR2;ORM1;ACY1;IFNA1;HBB;CROT;SLC7A11;ORM2;RAC2;RAC1;CCR5;CCR4;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;ADRB3;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER2;PTGER3;TMPRSS2;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;XDH;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;CD40LG;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB

									3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;SCN4A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PDE6C;PTK2B;SCN7A;PDE6B;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
PIK3C	Antigen activates B Cell Receptor (BCR)	0.005	ITPR1;ITPR2;PIK3CD;ITPR3;CALM1				Lateral ventr	0.082	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;AQP1;RPS6KA3;EDNRA;HTR7;S

D	leading to generation of second messengers Homo sapiens R-HSA-983695	45					icle	61	CN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;KCNQ3;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;SCN2A;RET;GABRB2;RYR2;GABRB1;PRKAG2;PTH1R;CROT;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;JAK2;CCR4;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;PTGR2;F7;IL1A;F8;CANX;TLR9;PPARG;TLR7;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;OPRD1;PTGER4;PCNA;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;CHRNA10;GABRE;GABRD;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRA1;GABRP;CRBN;GABRA6;IFNB1;GABRA4;GSS;AKR1C1;PTG

									ES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;SLC8A1;FGF4;NR3C2;CDH5;FADS2;CCND1;ADORA3;SCN9A;PDE8B;FADS1;CA14;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB4;GPD1;PLA2G10;PGR;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;CACNA1A;ADRB1;CSF2RB;CACNA1E;CACNA1H;CACNA1G;TPO;HRH1;HRH4;ABL1;DRD1;DRD2;GRIA3;FDPS;PRNP;VCAM1;HTR1E;HSPA5;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1A;CASP9;POLB;CA3;CPT2;CA

									2;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;PDE4D;SIGMAR1;PDE4C;HTR3B;PIK3CA;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA2;LRP1;NOD2;ATP2C1;TFPI;CACNG8;SLC25A29;PDE11A;MAPK7;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;FCGR2A;PDE10A;PDE7B;TEK;PDE7A
PLA2G10	Activation of RAS in B cells Homo sapiens R-HSA-1169092	0.00559	NRAS;KRAS				Hairy root	0.08368	FDPS;GGPS1
PLA2G2A	NGF-independant TRKA activation Homo sapiens R-HSA-187024	0.00559	NTRK1;ADORA2A				Ear	0.08396	TUBA1A;CA3;PIK3CA;FTH1;SCN7A;RAC1;FOS;PPIA
POLB	SMAC binds to IAPs Homo	0.00	CASP9;CASP3				Calcaneal	0.09	VDR;SHBG

	sapiens R-HSA-111463	559					bone	106	
PPARA	SMAC-mediated dissociation of IAP:caspase complexes Homo sapiens R-HSA-111464	0.005599	CASP9;CASP3				Fascicle	0.091006	KIT;HBA1
PPARD	SMAC-mediated apoptotic response Homo sapiens R-HSA-111469	0.005599	CASP9;CASP3				LNCaP cell	0.091006	AR;VDR
PPARG	Cytochrome c-mediated apoptotic response Homo sapiens R-HSA-111461	0.005599	CASP9;CASP3				Pancreatic beta cell line	0.091006	KCNJ11;CASP3
PPIA	Activation of caspases through apoptosome-mediated cleavage Homo sapiens R-HSA-	0.005599	CASP9;CASP3				Scrotum	0.091006	AR;SHBG

	111459								
PPIF	p75NTR signals via NF-kB Homo sapiens R-HSA-193639	0.006627	IKBKB;NFKBIA;NFKB1				Ascites	0.091177	PCNA;GLO1;CKS1B;CCND1;FTH1;AKT1;RAC1;KCNH2;JUN;ANXA1;WARS;HSPA5;GSS;AKR1C1;PTGES3;HLA-A;NFKB1;NFKBIA;PPIF;S100A4;CALR;CALM1;RAF1;MET;PPIA;FGFR2;ATF4;FTL
PPP3R2	GRB2 events in ERBB2 signaling Homo sapiens R-HSA-1963640	0.006627	NRAS;ERBB2;KRAS				Dentin	0.097444	TGFB1;MMP2;TNFSF11;MMP9
PRG2	Metabolism of Angiotensinogen to Angiotensins Homo sapiens R-HSA-2022377	0.006627	ACE2;ACE;REN				Sertoli cell	0.097444	IL1A;AR;TGFB1;SHBG
PRKAA1	PKA activation Homo sapiens R-HSA-163615	0.006627	ADCY2;ADCY1;ADCY5				Glioblastoma cell	0.098611	NOS2;KCNMA1
PRKAA2	Oxidative Stress Induced Senescence Homo sapiens	0.0066	MAPK11;JUN;IFNB1;MAPK1;FOS;TP53;MAPK3				Retinal pigment	0.0986	VCAM1;AQP1

	R-HSA-2559580	4					epithelium	1	
PRKAB1	Activation of Matrix Metalloproteinases Homo sapiens R-HSA-1592389	0.00717	PRSS1;MMP2;MMP9;ELANE				Myeloid cell line	0.09861	MYC;ABL1
PRKAB2	Ligand-dependent caspase activation Homo sapiens R-HSA-140534	0.00748	FAS;TLR4;TLR3				g2	0.09861	ATM;TP53
PRKAG1	PKA-mediated phosphorylation of CREB Homo sapiens R-HSA-111931	0.00748	ADCY2;ADCY1;ADCY5				Hippocampus	0.09889	ATF1;ATF2;SERPINE1;HTR4;MT-ND1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D4;GABRG3;PRKAB1;GABRG1;KCNQ3;KCNQ5;SIK1;ATF5;ATF6;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;REN;ATM;CALR;CALM1;SCN2A;RET;GABR

									B2;RYR2;GABRB1;IFNA1;PRKAG2;PTH1R;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;PTGR2;F7;IL1A;F8;CANX;TLR9;PPARG;TLR7;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;OPRD1;PTGER4;PCNA;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRD;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRA1;GABRP;CRBN;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;GABRA3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;SCN9A;PDE8A;FADS1;CA14;KCNH2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACN

									B1;CACNB2;CACNB4;GPD1;PLA2G10;PGR;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;CACNA1A;ADRB1;CSF2RB;CACNA1E;CACNA1H;CACNA1G;HRH1;HRH4;ABL1;DRD1;DRD2;FDPS;PRNP;VCAM1;HTR1E;HSPA5;SRD5A1;HTR1D;SRD5A3;NFKBIA;SELP;PROC;GGCX;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1A;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;MMP2;PDE4D;SIGMAR1;PDE4C;HTR3B;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ6;NTRK3;LI

									MK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;FCGR2A;PDE7B;TEK;PDE7A
PRKAG2	PKA activation in glucagon signalling Homo sapiens R-HSA-164378	0.00748	ADCY2;ADCY1;ADCY5				Scolopidium	0.100027	GRIA1;PDE6B;GRIA4
PRKAG3	Metabolism of fat-soluble vitamins Homo sapiens R-HSA-6806667	0.00771	LRP1;SDC2;AKR1C1;AKR1C3;APOE				Astrocytoma cell	0.105528	PRKAG1;CCL2;TP53
PRKDC	Aquaporin-mediated transport Homo sapiens R-HSA-445717	0.00771	AVPR2;ADCY2;ADCY1;AQP1;ADCY5				Umbilical vein endothelial cell	0.105528	ACE;VWF;PDE4D
PRNP	Cargo concentration in the ER Homo sapiens R-HSA-5694530	0.00801	GRIA1;LMAN1;MCFD2;F8				Fascia	0.106334	CA4;F2

PROC	FGFR2 mutant receptor activation Homo sapiens R-HSA-1839126	0.008011	FGF1;FGF2;FGFR2;FGF4				Hepa-RG cell	0.106344	NR1I3;NR1I2
PROCR	RSK activation Homo sapiens R-HSA-444257	0.008255	RPS6KA3;MAPK1				Spiral organ	0.106344	CHRNA4;NTRK3
PROS1	Activation of TRKA receptors Homo sapiens R-HSA-187015	0.008255	NTRK1;ADORA2A				Cerebellum	0.108388	ATF1;ATF2;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG2;GABRG1;AR;SCN10A;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;SCN3A;JUN;ST14;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;SCN2A;GABRB3;RET;DDR1;RYR1;GABRB2;RYR2;GABRB1;

									ORM1;ACY1;IFNA1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;KIT;TLR9;SLC29A4;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;DDR2;PTGER4;PCNA;SERPINC1;PTGER1;NR1I2;ADCY2;ADCY1;TYMS;ADCY5;PTGS1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;P2RY12;GABRQ;GABRA1;GABRP;CRBN;GABRA6;GABRA5;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;GABRA3;STAT3;NR1H4;TUBB4B;GRIN1;VEGFA;CD40LG;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9

									A;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;CACNB3;CACNB4;SCN8A;GPD1;PLA2G10;PPIF;PGR;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CALCA;CHRNA3;CHRNA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CACNA1H;CACNA1G;HRH1;ABL1;DRD1;CACNA1S;DRD4;GRIA3;DRD5;GRIA4;FDPS;PRNP;VCAM1;HTR1E;HSPA5;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;CYP11B2;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PD

									E4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3C;HTR3B;OPRM1;ADRA2C;ADRA2B;ADRA2A;PIK3CA;IL3RA;CRH;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;CACNG7;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;CACNG2;MAPK6;CACNG3;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;NOS2;KCNJ9;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
PRSS1	CLEC7A/inflammasome pathway Homo sapiens R-HSA-5660668	0.00825	IL1B;NFKB1				Kidney	0.10912	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR6;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;AR;SCN10A;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRK

									DC;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A2;PRKAG3;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;JAK2;JAK1;ANXA1;TNNC1;PTH2R;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;GLRA3;GABRA2;P2RY12;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHRM1;NCF1;PROS1;NCF4;FGF1;FGF2;SLC8A1;CDH5;FADS2;ADORA3;ADORA1;FADS1;IFNAR2;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;GRIA3;DR

									D5;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;ITGB3;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1B;ADRA1A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;AVPR2;SIGMAR1;HTR3B;ADRA2C;ADRA2B;ADRA2A;ADORA2A;PIK3CA;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;CACNG6;CACNG7;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG3;CACNG5;KCNJ3;NTRK1;KCNJ5;SLC12A3;KCNJ6;NTRK3;SLC12A1;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;NEU1;APOE;SCN3A;PDE2A;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;DDR1;RYR2;ORM1;ACY1;IFNA1;HBB;CROT;ORM2;RAC2;RAC1;CCR5;IL

									10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER1;PTGER2;PTGER3;TMPRSS2;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;CD40LG;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;SCN8A;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CALCA;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;TRPV1;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGF19;FGFR4;FGFR

									2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;OPRM1;MMP9;IFNG;PDE5A;SCN4A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
PTGDR2	Beta-catenin independent WNT signaling Homo sapiens R-HSA-3858494	0.00859	ITPR1;RAC2;ITPR2;ITPR3;NFATC1;PDE6B;RAC1;PDE6A;CALM1				Pharynx	0.11046	FDPS;ANXA1;WARS;PRKDC;HBB;HLA-A;HBA1;MMP9;TUBA1A;CCL5;FTH1;LTA4H;CALR;RAC1;PPIA;HLA-DRB1;FTL;CES1
PTGER1	Signaling by cytosolic FGFR1 fusion mutants Homo sapiens R-HSA-1839117	0.00882	PIK3CA;STAT1;STAT3				Cerebral cortex	0.11046	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG2;GABRG1;ACE2;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4

									;ABCB1;GRIN2A;PPP3R2;LTA4H;JUN;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2B;GRIN2D;GRIN3A;REN;GABRB3;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A3;IKBKB;TUBA1A;SMPD1;JAK2;JAK1;ANXA1;PTH2R;FOS;F2;F3;PTGR2;F7;F8;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;PPARD;SLC29A2;NR1I3;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;GLRA3;GABRA2;P2RY12;GABRA1;CRBN;GABRA6;GABRA5;STAT1;GABRA4;GSS;GABRA3;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;FGF2;SLC8A1;FGF4;CDH5;FADS2;ADORA3;ADORA1;FADS1;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;S100A4;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;GRIA3;DRD5;GRIA4;HTR1E;HTR1F;SRD5

									A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;MCFD2;FLT1;FLT3;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1B;ADRA1A;ITGAV;CCDC51;CHUK;GGPS1;VWF;SIGMAR1;HTR3B;ADRA2A;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;MET;PRKAA1;PRKAA2;LRP1;NOD2;CACNG7;CACNG8;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG2;CACNG3;CACNG4;CACNG5;KCNJ3;KCNJ5;SLC12A3;KCNJ6;KCNJ11;KCNJ9;NTRK3;SLC12A1;PTPN11;FCGR2A;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;SCN1A;CPT1A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;APOE;SCN3A;PDE2A;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;RYR1;RYR2;ORM1;ACY1;PTGDR2;HBB;CROT;SLC7A11;RAC2;RAC1;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR7;TLR

									4;TLR3;DDR2;TLR2;OPRD1;PTGER4;PCNA;PTGER3;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;FAS;NEK11;NR3C1;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;SCN8A;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;CACNA1A;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;CACNA1I;HRH1;HRH2;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;NFKBIA;SELP;IL6;PROC;IL7;FGF19;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CASP9;POLB;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4

									C;MMP9;PDE5A;SCN4A;ETFDH;OPRL1;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
PTGER2	SHC1 events in ERBB2 signaling Homo sapiens R-HSA-1250196	0.00882	NRAS;ERBB2;KRAS				Hindgut	0.11422	RET;CCK
PTGER3	Activation of IRF3/IRF7 mediated by TBK1/IKK epsilon Homo sapiens R-HSA-936964	0.00882	PTPN11;TLR4;TLR3				Nasal cavity	0.11422	AVPR2;FOS
PTGER4	Regulation of signaling by CBL Homo sapiens R-HSA-912631	0.00882	PIK3CA;PIK3CD;PIK3CB				Glial cell	0.11552	TP53
PTG	Arachidonic acid metaboli	0.0	PTGES3;AKR1C3;LTA4H;PTGS2;PTGS1				Innerea	0.1	CHRNA10

ES3	sm Homo sapiens R-HSA-2142753	0906					r	1552	
PTGR2	G alpha (12/13) signalling events Homo sapiens R-HSA-416482	0.0097	PIK3CA;RAC2;ADRA1D;RAC1;ADRA1B;ADRA1A				13c4	0.11552	ETFDH
PTGS1	Signaling by FGFR2 IIIa TM Homo sapiens R-HSA-8851708	0.01029	FGF1;FGF2;FGFR2				3t6	0.11552	FCGR2A
PTGS2	PCNA-Dependent Long Patch Base Excision Repair Homo sapiens R-HSA-5651801	0.01029	POLB;PCNA;LIG1				CAD cell	0.11552	SCN3A
PTH1R	Constitutive Signaling by Ligand-Responsive EGFR Cancer Variants Homo sapiens R-HSA-1236382	0.01029	NRAS;PIK3CA;KRAS				Cholangiocarcinoma cell	0.11552	STAT3

PTH2R	Signaling by Ligand-Responsive EGFR Variants in Cancer Homo sapiens R-HSA-5637815	0.010029	NRAS;PIK3CA;KRAS				DU-145 cell	0.115522	AR
PTK2B	Signaling by EGFR in Cancer Homo sapiens R-HSA-1643713	0.010029	NRAS;PIK3CA;KRAS				EC-9706 cell	0.115522	SIK1
PTPN11	RHO GTPases Activate WASPs and WAVEs Homo sapiens R-HSA-5663213	0.010089	ABL1;MAPK1;RAC1;MAPK3				FL83B cell	0.115522	CPT1A
Q9H015	Cation-coupled Chloride cotransporters Homo sapiens R-HSA-426117	0.011137	SLC12A3;SLC12A1				H9 cell	0.115522	CACNA2D4
RAC1	SLC transporter disorders Homo sapiens R-HSA-	0.011137	AVPR2;ALB				Hairy cell leukemi	0.115522	IFNA1

	5619102						a cell		
RAC2	APEX1-Independent Resolution of AP Sites via the Single Nucleotide Replacement Pathway Homo sapiens R-HSA-5649702	0.01137	POLB;LIG3				Inflammatory cell	0.11552	F3
RAF1	CREB phosphorylation Homo sapiens R-HSA-199920	0.01137	ATF1;RPS6KA3				Ischial spine	0.11552	AKR1C1
REN	Apoptotic factor-mediated response Homo sapiens R-HSA-111471	0.01137	CASP9;CASP3				Nucleus accumbens	0.11552	ADCY5
RET	Transcriptional regulation of white adipocyte differentiation	0.01235	RXRA;TGFB1;PPARG;PPARA;TNF;NFKB1				PC-12D cell	0.11552	FRK

	Homo sapiens R-HSA-381340								
RPS6KA3	Transport of vitamins, nucleosides, and related molecules Homo sapiens R-HSA-425397	0.01314	ALB;SLC29A4;SLC29A1;SLC29A2				PC3-MM2 cell	0.11552	RPS6KA3
RXRA	Translocation of ZAP-70 to Immunological synapse Homo sapiens R-HSA-202430	0.01362	CD4;HLA-DRB1;HLA-DQB1				PLC-PRF-5 cell	0.11552	ASGR2
RYR1	RHO GTPases activate PAKs Homo sapiens R-HSA-5627123	0.01362	LIMK1;RAC1;CALM1				PanIN cell	0.11552	KRAS
RYR2	SLC-mediated transmembrane transport Homo sapiens R-HSA-425407	0.01421	SLC12A3;SLC15A1;SLC22A5;SLC12A1;SLC7A11;SLC6A2;SLC6A3;SLC8A1;ALB;SLC29A4;CALM1;SLC29A1;SLC29A2				Pancreatic ductal adenoc	0.11552	ADCY2

							arcinomacell		
S100A4	Neurotransmitter Clearance In The Synaptic Cleft Homo sapiens R-HSA-112311	0.01491	ACHE;SLC6A3				Promyelocytic leukemia cell line	0.11552	MYC
SCN10A	Defective CSF2RB causes pulmonary surfactant metabolism dysfunction 5 (SMDP5) Homo sapiens R-HSA-5688849	0.01491	CSF2RB;CSF2RA				RL95-2 cell	0.11552	TUBB4B
SCN11A	Defective CSF2RA causes pulmonary surfactant metabolism	0.01491	CSF2RB;CSF2RA				ROS cell	0.11552	PTH1R

	dysfunction 4 (SMDP4) Homo sapiens R-HSA-5688890								
SCN1A	Sema4D mediated inhibition of cell attachment and migration Homo sapiens R-HSA-416550	0.01491	RAC1;MET				SET-2 cell	0.11552	JAK2
SCN2A	Linoleic acid (LA) metabolism Homo sapiens R-HSA-2046105	0.01491	FADS2;FADS1				Spinal root	0.11552	FTH1
SCN3A	CTLA4 inhibitory signaling Homo sapiens R-HSA-389513	0.01549	AKT1;CTLA4;PTPN11				Teniatecta	0.11552	CA14
SCN4A	TP53 Regulates Transcription of DNA Repair Genes Homo sapiens	0.016006	ATF2;JUN;ATM;FOS;TP53				a2	0.11552	ATP2C1

	R-HSA-6796648								
SCN5A	Class B/2 (Secretin family receptors) Homo sapiens R-HSA-373080	0.01634	CALCA;CALCB;CRH;PTH2R;PTH1R;CD55				ac2	0.11552	ADCY2
SCN7A	FCERI mediated Ca+2 mobilization Homo sapiens R-HSA-2871809	0.01713	ITPR1;ITPR2;ITPR3;NFATC1;CALM1				gk1.5	0.11552	CD4
SCN8A	Gap-filling DNA repair synthesis and ligation in GG-NER Homo sapiens R-HSA-5696397	0.01755	PCNA;LIG1;LIG3				Mantle cell lymphoma cell	0.12224	CCND1;AKT1
SCN9A	Signaling by Retinoic Acid Homo sapiens R-HSA-5362517	0.01848	CPT1A;RXRA;AKR1C3;PPARD				Peripheral blood lymphocyte	0.13044	FAS;NFATC1
S	Intrinsic	0	CASP9;CASP3;AKT				Ery	0	KIT;JAK2

DC2	Pathway for Apoptosis Homo sapiens R-HSA-109606	.01848	1;TP53				thyroid progenitor cell	.13044	
SELP	Glucagon-like Peptide-1 (GLP1) regulates insulin secretion Homo sapiens R-HSA-381676	0.01848	ITPR1;ITPR2;ITPR3;ADCY5				Vocal fold	0.13044	HGF;FGF2
SERPINC1	Activation of gene expression by SREBF (SREBP) Homo sapiens R-HSA-2426168	0.01848	FDPS;RXRA;GGPS1;PPARA				Somatic cell	0.13292	ACY1;MYC;ALB;ATM;TP53
SERPINE1	EGFR Transactivation by Gastrin Homo sapiens R-HSA-2179392	0.01887	NRAS;KRAS				Larynx	0.13345	RYR1;ANXA1;CCND1;FTH1;ITPR3;CALR;CES1;ATF4;JAK1;FTL
SFRP4	SHC-related events triggered by IGF1R Homo sapiens	0.01887	NRAS;KRAS				Aortic smooth m	0.13697	KCNMA1

	R-HSA-2428933						us cle		
SHBG	Glucocorticoid biosynthesis Homo sapiens R-HSA-194002	0.01887	CYP11B2;CYP17A1				Cornea	0.13697	FGFR2
SIGMAR1	Phosphorylation of CD3 and TCR zeta chains Homo sapiens R-HSA-202427	0.01965	CD4;HLA-DRB1;HLA-DQB1				Eosinophil	0.13697	PDGFRA
SIK1	TP53 Regulates Transcription of Cell Death Genes Homo sapiens R-HSA-5633008	0.02	CASP1;FAS;ATM;TP53				Acute megakaryoblastic leukemia cell line	0.13697	TUBB
SLC12A1	PPARA activates gene expression Homo sapiens R-HSA-	0.02023	CPT1A;RXRA;CPT2;NR1H4;PPARG;PPARA;FADS1				CCRF-CEM cell	0.13697	FPGS

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SLC12A3	Constitutive Signaling by AKT1 E17K in Cancer Homo sapiens R-HSA-5674400	0.021944	CASP9;CHUK;AKT1				Cecum	0.136997	PROCR
SLC15A1	Basigin interactions Homo sapiens R-HSA-210991	0.021944	SLC7A11;L1CAM;PPIA				Cerebrovascular system	0.136997	LRP1
SLC22A5	RHO GTPase Effectors Homo sapiens R-HSA-195258	0.022226	AR;NCF1;NCF4;LIMK1;RAC2;ABL1;CYBB;MAPK1;CYBA;RAC1;CALM1;MAPK3				Chorioarcinoma cell line	0.136997	MMP2
SLC25A20	Regulation of lipid metabolism by Peroxisome proliferator-activated receptor alpha (PPARalpha)	0.022298	CPT1A;RXRA;CPT2;NR1H4;PPARG;PPARA;FADS1				Companion cell	0.136997	FRK

	Homo sapiens R-HSA-400206								
SLC25A29	Integrin cell surface interactions Homo sapiens R-HSA-216083	0.0232	VCAM1;ITGB3;KDR;ITGAV;ICAM1				Epidermal cell line	0.136997	JUN
SLC29A1	Semaphorin interactions Homo sapiens R-HSA-373755	0.0232	ERBB2;LIMK1;RAC2;RAC1;MET				HS-68 cell	0.136997	CALY
SLC29A2	Diseases associated with surfactant metabolism Homo sapiens R-HSA-5687613	0.02321	CSF2RB;CSF2RA				Hi-5 cell	0.136997	SLC8A1
SLC29A4	Signal attenuation Homo sapiens R-HSA-74749	0.02321	MAPK1;MAPK3				Human lens epithelial cell lin	0.136997	ELANE

							e		
SLC6A2	IRAK1 recruits IKK complex Homo sapiens R-HSA-937039	0.023211	IKBKB;CHUK				LNCaP-C4-2 cell	0.136997	AR
SLC6A3	IRAK1 recruits IKK complex upon TLR7/8 or 9 stimulation Homo sapiens R-HSA-975144	0.023211	IKBKB;CHUK				Liposarcoma cell	0.136997	PPARG
SLC6A4	TRIF-mediated programmed cell death Homo sapiens R-HSA-2562578	0.023211	TLR4;TLR3				M5 melanoma cell	0.136997	MT-ND1
SLC7A11	GP1b-IX-V activation signalling Homo sapiens R-HSA-430116	0.023211	VWF;RAF1				Myometrial cell line	0.136997	PGR
SLC8A	eNOS activation Homo sapiens R-HSA-	0.023	AKT1;CALM1				NHDF cell	0.136	RAC1

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SMPD1	Tetrahydrobiopterin (BH4) synthesis, recycling, salvage and regulation Homo sapiens R-HSA-1474151	0.023211	AKT1;CALM1				Neocortex	0.136997	CA4
SRD5A1	Ligand-independent caspase activation via DCC Homo sapiens R-HSA-418889	0.023211	CASP9;CASP3				Neuroendocrine tumor cell line	0.136997	CCK
SRD5A2	Beta-oxidation of pristanoyl-CoA Homo sapiens R-HSA-389887	0.023211	CROT;CRAT				Perirhinal cortex	0.136997	CA4
SRD5A3	Purine catabolism Homo sapiens R-HSA-74259	0.023211	NT5E;XDH				Peritubular contr	0.136997	AR

							activ ile cell		
ST14	Calcitonin-like ligand receptors Homo sapiens R-HSA-419812	0.023211	CALCA;CALCB				RAMOS cell	0.136997	CD40LG
STAT1	Recycling pathway of L1 Homo sapiens R-HSA-437239	0.024436	RPS6KA3;MAPK1;L1CAM				Retinal ganglion cell line	0.136997	CASP3
STAT3	PTK6 Regulates RHO GTPases, RAS GTPase and MAP kinases Homo sapiens R-HSA-8849471	0.024436	NRAS;KRAS;RAC1				TSA cell	0.136997	KCNQ3
TEK	TNFR1-induced NFkappaB signaling pathway Homo sapiens R-HSA-5357956	0.024436	IKBKB;CHUK;TNF				Uterine serous carcinoma	0.136997	ERBB2

							cell		
TFPI	MAPK6/MAPK4 signaling Homo sapiens R-HSA-5687128	0.02444	JUN;MYC;MMP2;RAC1;MAPK6;MAPK4				at1cell	0.136997	KCNH2
TGFB1	Phase 1 - Functionalization of compounds Homo sapiens R-HSA-211945	0.02444	RXRA;CYP11B2;NR1H4;CES1;PTGS1;CYP17A1				brl1	0.136997	PDE7A
THRA	Scavenging of heme from plasma Homo sapiens R-HSA-2168880	0.025	LRP1;ALB;HBB;HBA1				foreign-bodygiantcell	0.136997	IL4
THRB	DNA Double-Strand Break Repair Homo sapiens R-HSA-5693532	0.02524	PCNA;PARP1;PRKDC;PARP2;ABL1;LIG3;ATM;TP53				r2c	0.136997	GRIN1
TLR2	Integrin alphaIIb beta3 signaling Homo sapiens R-HSA-354192	0.02693	VWF;ITGB3;AKT1				rn22	0.136997	FGF4

TLR3	Effects of PIP2 hydrolysis Homo sapiens R-HSA-114508	0.02693	ITPR1;ITPR2;ITPR3				x63ag8.653	0.136977	TRDMT1
TLR4	Peroxisomal lipid metabolism Homo sapiens R-HSA-390918	0.02693	PHYH;CROT;CRAT				Molaris	0.13725	FDPS;IL1B;TNFSF11
TLR7	RORA activates gene expression Homo sapiens R-HSA-1368082	0.02693	CPT1A;RXRA;PPARA				Electric organ	0.13868	CHRNA4;CALM1
TLR8	Pyruvate metabolism Homo sapiens R-HSA-70268	0.02693	RXRA;GLO1;PPARD				Meniscus	0.13868	PGRMC1;IL1B
TLR9	Uptake and function of anthrax toxins Homo sapiens R-HSA-5210891	0.02792	MAP2K1;CALM1				Vestibular hair cell	0.13868	CHRNA4;CHRNA9
TMPR	Processive synthesis on the C-	0.02	PCNA;LIG1				Lymph	0.14	FDPS;WARS;NCF1;PARP1;PTGES3;SIGMAR1;HLA-A;TYMS;TUBA1A;F

SS2	strand of the telomere Homo sapiens R-HSA-174414	792						44	TH1;FPGS;RAC2;PPIF;AKT1;PTK2B;CALR;RAC1;ATF5;PPIA;HLA-DRB1;ATF4;HLA-DQB1;FTL;MAPK3
TNF	DSCAM interactions Homo sapiens R-HSA-376172	0.02792	MAPK11;RAC1				Cementum	0.14706	TNFSF11;FGF2
TNFAIP6	MyD88 deficiency (TLR2/4) Homo sapiens R-HSA-5602498	0.02792	TLR4;TLR2				Mantle	0.14706	CD40LG;CCND1
TNFSF11	IRAK4 deficiency (TLR2/4) Homo sapiens R-HSA-5603041	0.02792	TLR4;TLR2				Theca cell	0.14706	AR;CYP17A1
TNNC1	RHO GTPases activate IQGAPs Homo sapiens R-HSA-5626467	0.02792	RAC1;CALM1				Rectum	0.149	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;CACNA2D4;HLA-A;GABRG3;PRKAB1;GABRG1;ACE2;S

									FRP4;KCNQ3;SIK1;ATF5;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1A;SDC2;NEU2;PPP3R2;NEU1;LTA4H;APOE;SCN3A;ELANE;JUN;ST14;ACE;PDE2A;PRG2;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;SCN2A;HLA-DRB1;RET;DDR1;RYR2;GABRB1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;KCNMA1;CANX;KIT;TLR9;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;OPRD1;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GAB

									RA2;P2RY12;CA12;GABRQ;GABRA1;GABRP;CRBN;F10;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;NR3C1;FGF2;MPO;SLC8A1;FGF4;NR3C2;CDH5;FADS2;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;CA14;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;PROCR;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1E;CACNA1H;CACNA1G;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;DRD4;GRIA3;DRD5;GRIA4;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1D;SRD5A3;H

									TR1A;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;IL7;FGF19;ALB;SHBG;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;PDE3B;HTR2B;HTR2C;PIK3CD;HTR2A;PIK3CB;ADRA1A;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3B;ADRA2C;MMP9;ADORA2A;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;CACNG6;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;CACNG4;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NOS2;NTRK3;SLC12A1;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7

									A
TP53	Activation of the phototransduction cascade Homo sapiens R-HSA-2485179	0.02792	PDE6B;PDE6A				At T-20 cell	0.15555	CRH;NR3C1
TPO	Sodium/Calcium exchangers Homo sapiens R-HSA-425561	0.02792	CALM1;SLC8A1				Keloid	0.15555	TGFB1;SERPINE1
TRDMT1	Metabolism of vitamins and cofactors Homo sapiens R-HSA-196854	0.02807	PRSS1;LRP1;SDC2;AKR1C1;FPGS;AKR1C3;APOE;PTGS2				Sweat	0.15555	AVPR2;REN
TRPV1	Death Receptor Signalling Homo sapiens R-HSA-73887	0.02871	IKBKB;CHUK;FAS;TNF				Osteoclastoma cell	0.15791	ITGB3
TUBA1A	EPH-ephrin mediated repulsion of cells Homo sapiens R-HSA-3928665	0.02871	MMP2;RAC1;MMP9;EPHA2				Pulmonary artery	0.15791	KCNMA1

TUBB	The role of Nef in HIV-1 replication and disease pathogenesis Homo sapiens R-HSA-164952	0.029663	CD4;RAC1;HLA-A				Thymocyte	0.157911	TNFSF11
TUBB4B	Synthesis of PA Homo sapiens R-HSA-1483166	0.029663	PLA2G2A;GPD1;PLA2G10				Urinary bladder cancer cell	0.157911	TGFB1
TYMS	Post-translational protein modification Homo sapiens R-HSA-597592	0.029966	GRIA1;MCFD2;PCNA;F10;PARP1;PROS1;SRD5A3;F2;NEU2;F7;LMAN1;F8;F9;PROC;GGCX;NEU1;CANX;CALR;TP53;CD55				BA/F3 cell	0.157911	JAK2
VCAM1	Regulation of actin dynamics for phagocytic cup formation Homo sapiens R-HSA-2029482	0.030067	FCGR2A;LIMK1;ABL1;MAPK1;RAC1;MAPK3				BEL-7402 cell	0.157911	CASP3

VDR	TP53 Regulates Transcription of Death Receptors and Ligands Homo sapiens R-HSA-6803211	0.032988	FAS;TP53				Bm	0.157911	IL7
VEGFA	Reduction of cytosolic Ca++ levels Homo sapiens R-HSA-418359	0.032988	CALM1;SLC8A1				Bronchoalveolar stem cell	0.157911	KRAS
VWF	Physiological factors Homo sapiens R-HSA-5578768	0.032988	NPR1;NPR2				Daphnid	0.157911	TRDMT1
WARS	Transport of inorganic cations/anions and amino acids/oligopeptides Homo sapiens R-HSA-425393	0.033443	SLC12A3;SLC15A1;SLC12A1;SLC7A11;CALM1;SLC8A1				Duodenal juice	0.157911	CCK

WARS2	Molecules associated with elastic fibres Homo sapiens R-HSA-2129379	0.035455	TGFB1;ITGB3;ITGAV				Glutealmuscle	0.157911	AKR1C1
XDH	POU5F1 (OCT4), SOX2, NANOG activate genes related to proliferation Homo sapiens R-HSA-2892247	0.038336	STAT3;FGF2				Leiomyomacell	0.157911	CACNG7
	FGFRL1 modulation of FGFR1 signaling Homo sapiens R-HSA-5658623	0.038336	FGF2;FGF4				Leydig cell line	0.157911	CYP17A1
	Downregulation of ERBB2:ERBB3 signaling Homo sapiens R-HSA-1358803	0.038336	ERBB2;AKT1				Mat-Ly-Lucell	0.157911	SCN7A
	Advance	0	MAPK1;MAPK3				M	0	CA4

	d glycosylation endproduct receptor signaling Homo sapiens R-HSA-879415	.0383 6					edial temporal lobe	.15791	
	Signal regulatory protein (SIRP) family interactions Homo sapiens R-HSA-391160	0.0383 6	PTK2B;PTPN11				Messa	0.15791	ABCB1
	alpha-linolenic (omega3) and linoleic (omega6) acid metabolism Homo sapiens R-HSA-2046104	0.0383 6	FADS2;FADS1				NCI-H1944 cell	0.15791	CPT2
	alpha-linolenic acid (ALA) metabolism Homo sapiens R-HSA-	0.0383 6	FADS2;FADS1				Posterior pharynx	0.15791	NEU2

	2046106								
	Regulation of TNFR1 signaling Homo sapiens R-HSA-5357905	0.03856	IKBKB;CHUK;TNF				Pyloric region	0.15791	CCK
	Cell-Cell communication Homo sapiens R-HSA-1500931	0.04063	CDH5;MAPK11;PIK3CA;PTK2B;PTPN11;PIK3CB;RAC1				RT-4 cell	0.15791	TP53
	Oncogene Induced Senescence Homo sapiens R-HSA-2559585	0.04181	MAPK1;TP53;MAPK3				Retinal pigment epithelium cell line	0.15791	VEGFA
	TRAF6 mediated IRF7 activation Homo sapiens R-HSA-933541	0.04181	IFNA1;DDX58;IFNB1				Sinus node	0.15791	CACNA1D
	Thrombin signalling through proteinas	0.041	MAPK1;F2;MAPK3				Skin carcino	0.157	PTGER3

	e activated receptors (PARs) Homo sapiens R-HSA-456926	81					macell line	91	
	Regulation of TP53 Activity through Association with Co-factors Homo sapiens R-HSA-6804759	0.044055	AKT1;TP53				Sprout	0.157911	PTGER2
	Mismatch repair (MMR) directed by MSH2:MSH3 (MutSbeta) Homo sapiens R-HSA-5358606	0.044055	PCNA;LIG1				Uterinehorn	0.157911	PGR
	Mismatch repair (MMR) directed by MSH2:MSH6 (MutSalpha) Homo sapiens R-HSA-	0.044055	PCNA;LIG1				hf1	0.157911	CHRM5

	5358565								
	TRAF3-dependent IRF activation pathway Homo sapiens R-HSA-918233	0.044051	DDX58;IFNB1				mp10	0.157911	PDE10A
	Golgi Cisternae Pericentriolar Stack Reorganization Homo sapiens R-HSA-162658	0.044051	MAPK1;MAPK3				pg13	0.157911	TP53
	Synthesis of bile acids and bile salts via 24-hydroxycholesterol Homo sapiens R-HSA-193775	0.044051	AKR1C1;AKR1C3				qt6	0.157911	THRA
	Regulation of pyruvate dehydrogenase (PDH) complex Homo sapiens R-HSA-204174	0.044051	RXRA;PPARD				Nerve	0.159222	JUN;TUBA1A;FTH1;HLA-A;AQP1

									ATF1;ATF2;IL1RN;SERPINE1;HTR4;AQP1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D4;GABRG3;PRKAB1;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;PDE1C;PDE1B;PDE1A;SDC2;NEU2;PPP3R2;LTA4H;APOE;SCN3A;JUN;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;REN;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;JAK2;CCR4;JAK1;ANXA1;CAMLG;PARP1;PARP2;TNNC1;IL13;FOS;HBA1;F2;F3;IL1A;F8;CANX;KIT;TLR9;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;ADCY2;ADCY1;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CHRNA10;GABRE;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C
	ECM proteoglycans Homo sapiens R-HSA-3000178	0.04417	TGFB1;ITGB3;SERPINE1;ITGAV				Oral mucosa	0.160001	

									1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CRAT;CHRM2;CHRM3;PROS1;CHRM5;FGF1;NR3C1;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;SCN9A;PDE8B;PDE8A;FADS1;CA14;KCNH2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;LIG3;CACNB1;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR3;CSF2RB;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;ABL1;DRD1;GRIA3;DRD5;FDPS;HTR1E;HSPA5;HTR1F;HTR1D;SRD5A3;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;HTR2A;PIK3CB;ADRA1A;CASP9;POLB;CA1;CPT2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;DDX58;MMP2;PDE4D;AVPR2;SIGMA

									R1;ADRA2C;PIK3CA;IFNG;IL3RA;PDE5A;MET;CRP;PRKAA1;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;KRAS;TEK
	Regulation of cholesterol biosynthesis by SREBP (SREBF) Homo sapiens R-HSA-1655829	0.04417	FDPS;RXRA;GGPS1;PPARA				Optic nerve	0.16016	CASP3;KCNMA1;FGF2
	CD28 co-stimulation Homo sapiens R-HSA-389356	0.04518	PIK3CA;AKT1;RAC1				Gastric juice	0.16413	HRH2;ALB
	Glucagon signaling in metabolic regulation Homo	0.04518	ADCY2;ADCY1;ADCY5				Prostate cancer cel	0.17001	PGRMC1;PTGES3;TNF;CACNA1G

	sapiens R-HSA-163359						line		
	Inactivation, recovery and regulation of the phototransduction cascade Homo sapiens R-HSA-2514859	0.045188	PDE6B;PDE6A;CALM1				BTO:0000868	0.172799	ST14;XDH
	Peptide hormone metabolism Homo sapiens R-HSA-2980736	0.046996	DPP4;ACHE;ACE2;ACE;REN				Animal cap	0.172799	TGFB1;FGF2
	EPHA-mediated growth cone collapse Homo sapiens R-HSA-3928663	0.04887	KDR;VEGFA;EPHA2				Mucoepidermoid carcinoma cell	0.178344	LIMK1
	The phototransduction cascade Homo	0.04887	PDE6B;PDE6A;CALM1				Umbilical cord	0.17883	PTPN11

	sapiens R-HSA-2514856							4	
	Synthesis of PIPs at the plasma membrane Homo sapiens R-HSA-1660499	0.0487	PIK3CA;PIK3CD;PIK3CB				7d4	0.178334	IL2
	Global Genome Nucleotide Excision Repair (GG-NER) Homo sapiens R-HSA-5696399	0.049006	PCNA;LIG1;PARP1;PARP2;LIG3				A-172 cell	0.178334	TP53
	Calnexin/calreticulin cycle Homo sapiens R-HSA-901042	0.050003	CANX;CALR				Cerebral gyrus	0.178334	CA4
	Mismatch Repair Homo sapiens R-HSA-5358508	0.050003	PCNA;LIG1				Digestive cell	0.178334	WARS2
	Processive synthesis on the lagging strand Homo	0.050003	PCNA;LIG1				Embryonic neural	0.178334	ATF5

	sapiens R-HSA-69183						stem cell		
	Prolactin receptor signaling Homo sapiens R-HSA-1170546	0.050003	PTPN11;JAK2				Empyema fluid	0.17834	CRP
	GRB2:SOS provides linkage to MAPK signaling for Integrins Homo sapiens R-HSA-354194	0.050003	VWF;ITGB3				Endocardium	0.17834	PTH1R
	p130Cas linkage to MAPK signaling for integrins Homo sapiens R-HSA-372708	0.050003	VWF;ITGB3				Epithelial lining fluid	0.17834	ELANE
	p75 NTR receptor-mediated signalling Homo sapiens R-HSA-193704	0.051211	IKBKB;NFKBIA;CASP3;RAC1;NFKB1				Floret	0.17834	CALM1
	Membrane Traffickin	0.0	GRIA1;PRKAB2;MCFD2;PRKAA2;PRKAG1;PRKAG2;PRKA				Gastroin	0.1	CCK

	g Homo sapiens R-HSA-199991	513	B1;PRKAG3;LMAN1;F8;FTH1;AKT1;RAC1;CALM1;CD55;FTL				testinal endocrine cell	7834	
	Generation of second messenger molecules Homo sapiens R-HSA-202433	0.05234	CD4;HLA-DRB1;HLA-DQB1				Kco	0.17834	KCNJ11
	Regulation of TP53 Degradation Homo sapiens R-HSA-6804757	0.05234	AKT1;ATM;TP53				Larval integument	0.17834	XDH
	Organelle biogenesis and maintenance Homo sapiens R-HSA-1852241	0.05555	ATF2;PRKAB2;PRKAA2;TUBB;PRKAG1;PRKAG2;TUBB4B;PRKAB1;PRKAG3;MAPK11;TUBA1A;RXRA;PPARA				MDCK-MDR1 cell	0.17834	ABCB1
	Regulation of TP53 Expression and Degradation Homo	0.05611	AKT1;ATM;TP53				Metacyclic form	0.17834	APOE

	sapiens R-HSA-6806003								
	TRAF6 mediated induction of TAK1 complex Homo sapiens R-HSA-937072	0.05628	TLR4;TLR3				Peritoneal macrophage	0.17834	TLR9
	PI3K events in ERBB2 signaling Homo sapiens R-HSA-1963642	0.05628	PIK3CA;ERBB2				Pleomorphic adenoma cell	0.17834	ERBB2
	Sema3A PAK dependent Axon repulsion Homo sapiens R-HSA-399954	0.05628	LIMK1;RAC1				Soft tissue sarcoma cell line	0.17834	FPGS
	Acyl chain remodelling of PI Homo sapiens R-HSA-1482922	0.05628	PLA2G2A;PLA2G10				a11	0.17834	PARP3

	Factors involved in megakaryocyte development and platelet production Homo sapiens R-HSA-983231	0.05629	IFNA1;IFNB1;ABL1;HBB;RAC1;JAK2;TP53				b85	0.17834	NEU2
	TNF receptor superfamily (TNFSF) members mediating non-canonical NF-kB pathway Homo sapiens R-HSA-5676594	0.06279	CD40LG;TNFSF11				gh1	0.17834	CACNG1
	N-glycan trimming in the ER and Calnexin/Calreticulin cycle Homo sapiens R-HSA-532668	0.06279	CANX;CALR				Hypophysis	0.17792	KCNJ5;THRB;GGPS1;PTGES3;FGFR4
	KSRP (KHSRP) binds and	0.06	MAPK11;AKT1				Hair cell	0.17	CASP3;KCNMA1;CHRNA9;CACNA1D

	destabilizes mRNA Homo sapiens R-HSA-450604	279						966	
	G1/S-Specific Transcription Homo sapiens R-HSA-69205	0.06279	PCNA;TYMS				MEL cell	0.18152	MYC;HBB
	activated TAK1 mediates p38 MAPK activation Homo sapiens R-HSA-450302	0.06279	MAPK11;NOD2				Olfactory epithelium	0.18152	PDE1C;ATF5
	Acyl chain remodelling of PG Homo sapiens R-HSA-1482925	0.06279	PLA2G2A;PLA2G10				Tadpole	0.18152	THRB;THRA
	Acyl chain remodelling of PS Homo sapiens R-HSA-1482801	0.06279	PLA2G2A;PLA2G10				Cuticle	0.190277	F10;F2;F3
	Cytochrome P450 - arranged	0.06	RXRA;CYP11B2;NR1H4;CYP17A1				Pancreatic	0.19	PRSS1;KRAS

	by substrate type Homo sapiens R-HSA-211897	347					juice	032	
	Homology Directed Repair Homo sapiens R-HSA-5693538	0.0676 3	PCNA;PARP1;PARP2;ABL1;LIG3;ATM				Spleen	0.191 28	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D4;HLA-A;GABRG3;PRKAB1;SFRP4;AGTR1;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;PPP3R2;NEU1;LTA4H;APOE;SCN3A;ELANE;JUN;ST14;ACE;PDE2A;PRG2;BRAF;NFATC1;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;HLA-DRB1;RET;DDR1;RYR1;GABRB2;RYR2;GABRB1;ORM1;ACY1;IFNA1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;C

									TLA4;RAC1;JAK2;CCR5;JAK3;CCR4;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;KCNMA1;CANX;KIT;TLR9;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;PTGER1;PTGER2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CXCR1;GABRE;CD55;P2RY12;CRBN;F10;STAT1;IFNB1;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CD40LG;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;FGF1;NR3C1;TNF;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8A;FADS1;CA14;IFNAR2;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CAC

									NB2;PROCR;CACNB3;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CALCA;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1G;DPP4;TPO;HRH1;HRH2;ABL1;DRD1;CACNA1S;DRD2;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;VDR;HTR1D;SRD5A3;NFKB1;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;ITGB3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1B;ADRA1A;CKS1B;CASP9;POLB;CA1;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;HTR3E;MMP2;PDE4D;SIGMAR1;PDE4C;HTR3B;ADRA2C;ADRA2B;MMP9;ADRA2A;ADORA2A;PIK3CA;IL3RA;PDE5A;

									MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;OPRL1;NOD2;ATP2C1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NTRK3;LIMK1;PLA2G2A;PTPN11;CCK;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Collagen degradation Homo sapiens R-HSA-1442490	0.06815	MMP2;MMP9;ELANE				Interstitial cell of Cajal	0.19294	PRSS1;TUBA1A;HSPA5;TUBB;CALR;CALM1;PPIA
	Dual Incision in GG-NER Homo sapiens R-HSA-5696400	0.06815	PCNA;PARP1;PARP2				Histiocytic lymphoma cell	0.19827	IL1B
	Nuclear signaling by ERBB4 Homo sapiens	0.068	PTPN11;PGR;JAK2				BLM cell	0.198	LIG1

	R-HSA-1251985	15						27	
	TP53 Regulates Transcription of Genes Involved in G2 Cell Cycle Arrest Homo sapiens R-HSA-6804114	0.069553	PCNA;TP53				C6/36 cell	0.198227	CD40LG
	Transcriptional activation of mitochondrial biogenesis Homo sapiens R-HSA-2151201	0.07244	ATF2;RXRA;PPARA				Cerebral organ	0.198227	MT-ND1
	Activation of NF-kappaB in B cells Homo sapiens R-HSA-1169091	0.076118	IKBKB;NFKBIA;CHUK;NFKB1				Ebl	0.198227	TUBB4B
	Na+/Cl- dependent neurotransmitter transporters Homo sapiens	0.07665	SLC6A2;SLC6A3				GaMG cell	0.198227	TP53

	R-HSA-442660								
	TP53 Regulates Transcription of Genes Involved in Cytochrome C Release Homo sapiens R-HSA-6803204	0.07655	ATM;TP53				Head kidney	0.19827	MC2R
	Regulation of TP53 Activity through Methylation Homo sapiens R-HSA-6804760	0.07655	ATM;TP53				MV4-11 cell	0.19827	FLT3
	HDL-mediated lipid transport Homo sapiens R-HSA-194223	0.07655	ALB;APOE				Metacestode	0.19827	MT-ND1
	Elastic fibre formation Homo sapiens R-HSA-1566948	0.07678	TGFB1;ITGB3;ITGAV				Microglia	0.19827	P2RY12
	Glycosphingolipid	0.	NEU2;SMPD1;NEU1				Oxynt	0.	TPO

	metabolism Homo sapiens R-HSA-1660662	0.07678					ic cell	1.98227	
	Pre-NOTCH Transcription and Translation Homo sapiens R-HSA-1912408	0.07678	JUN;CCND1;TP53				PNT-1A cell	0.1.98227	GABRE
	TNF signaling Homo sapiens R-HSA-75893	0.07678	IKBKB;CHUK;TNF				RGC-5 cell	0.1.98227	SIGMAR1
	COPII (Coat Protein 2) Mediated Vesicle Transport Homo sapiens R-HSA-204005	0.08298	GRIA1;LMAN1;MCFD2;F8				SGC-7901 cell	0.1.98227	CASP3
	Lagging Strand Synthesis Homo sapiens R-HSA-69186	0.08368	PCNA;LIG1				Uveal melanoma cell	0.1.98227	MET
	IL-6-type cytokine receptor	0.0	JAK2;JAK1				mc2	0.1	MC2R

	ligand interactions Homo sapiens R-HSA-6788467	8368						98277	
	eNOS activation and regulation Homo sapiens R-HSA-203765	0.08368	AKT1;CALM1				Acute promyelocytic leukemia cell	0.19917	PRG2;CKS1B
	Metabolism of nitric oxide Homo sapiens R-HSA-202131	0.08368	AKT1;CALM1				Pheochromocytoma cell line	0.19917	CALCA;CALCB
	Cellular response to heat stress Homo sapiens R-HSA-3371556	0.08412	HSPA5;PTGES3;MAPK1;ATM;MAPK3				Small intestine	0.20326	ATF1;ATF2;CHRM3;PROS1;NR3C1;AQP1;ICAM1;CDH5;FADS2;RPS6KA3;HTR6;EDNRA;CCND1;MYC;ADORA3;FTH1;FPGS;KDR;AKT1;PDE8A;FADS1;CA14;KCNH2;CHRNB2;PDGFRB;PDGF

									RA;SLC15A1;CPT1A;PHYH;CYBA;ACE2;PROCR;SCN10A;AGTR1;PPIF;PGR;S100A4;SIK1;RAF1;ATF4;IFNAR1;CHRNA3;ABCB1;SLC22A5;PRKDC;NPR1;GLO1;SDC2;ADRB2;ABL1;LTA4H;GRIA3;GRIA4;FDPS;PRNP;JUN;ST14;ACE;TGFB1;VCAM1;HSPA5;SRD5A1;VDR;NFKBIA;FGF19;ALB;CALR;CALM1;FGFR1;RET;DDR1;RYR1;MCFD2;ORM1;ACY1;PRKAG1;PRKAG2;HTR2C;HBB;HTR2A;CROT;SLC6A4;CKS1B;CASP9;POLB;TUBA1A;CA3;CA2;CASP3;CA4;RAC2;CASP1;ITGAV;RAC1;JAK1;MBL2;ANXA1;WARS;CHUK;GGPS1;VWF;CAMLG;PARP1;DDX58;TNNC1;TUBB;MMP2;SIGMAR1;FOS;HBA1;F2;ADRA2C;F3;IL3RA;CANX;KIT;TLR4;HLA-DQB1;PTGER4;PCNA;LRP1;PTGER3;ETFDH;TMPRSS2;TYMS;TFPI;ADCY5;LMAN1;SLC25A29;PGRMC1;RXRA;CCL5;CCL2;PTK2B;PDE6B;SLC25A20;MAPK6;XDH;KCNJ3;GABRA2;P2RY12;CA1

									2;GABRA1;KCNJ5;CRBN;STAT1;GSS;PTGES3;STAT3;PLA2G2A;AKR1C3;PTPN11;TUBB4B;GRIN1;VEGFA;KRAS;TEK;CRAT
	Voltage gated Potassium channels Homo sapiens R-HSA-1296072	0.08585	KCNH2;KCNQ3;KCNQ5				Enteroendocrine cell	0.20807	DPP4;CCK
	Transcriptional activity of SMAD2/SMAD3:SMAD4 heterotrimer Homo sapiens R-HSA-2173793	0.09056	PARP1;MYC;SERPINE1				Secretory cell	0.20807	ATF6;ELANE
	Nef-mediates down modulation of cell surface receptors by recruiting them to clathrin adapters Homo sapiens	0.09106	CD4;HLA-A				Ovary cell line	0.21701	KCNH2;HSPA5

	R-HSA-164938								
	Regulation of Insulin-like Growth Factor (IGF) transport and uptake by Insulin-like Growth Factor Binding Proteins (IGFBPs) Homo sapiens R-HSA-381426	0.091006	MMP2;F2				Achene	0.217722	MT-ND1
	Diseases of metabolism Homo sapiens R-HSA-5668914	0.095366	MC2R;CSF2RB;CSF2RA				BJABcell	0.217722	FAS
	Stimuli-sensing channels Homo sapiens R-HSA-2672351	0.096004	RYR1;RYR2;TRPV1;RAF1;CALM1				Blastcell	0.217722	ITGB3
	ISG15 antiviral mechanism Homo sapiens	0.0997	DDX58;STAT1;JAK1;MAPK3				Coloncyte	0.2177	PTGS2

	R-HSA-1169408	44						72	
	Antiviral mechanism by IFN-stimulated genes Homo sapiens R-HSA-1169410	0.09744	DDX58;STAT1;JAK1;MAPK3				Endometrial gland	0.21772	PGR
	Phospholipid metabolism Homo sapiens R-HSA-1483257	0.09754	ACHE;PIK3CA;GPD1;PLA2G10;PLA2G2A;PIK3CD;PIK3CB				FM3A cell	0.21772	LIG1
	CD28 dependent PI3K/Akt signaling Homo sapiens R-HSA-389357	0.09861	PIK3CA;AKT1				Glioblastoma multiforme cell	0.21772	TP53
	Telomere C-strand (Lagging Strand) Synthesis Homo sapiens R-HSA-174417	0.09861	PCNA;LIG1				HEC-1-B cell	0.21772	PGR
	Nephrin interactions	0.0	PIK3CA;PIK3CB				Headan	0.2	TP53

	Homo sapiens R-HSA-373753	9861					dneckcancercell	1772	
	Post-chaperonin tubulin folding pathway Homo sapiens R-HSA-389977	0.09861	TUBA1A;TUBB4B				Hypopharynx	0.21772	TP53
	Asparagine N-linked glycosylation Homo sapiens R-HSA-446203	0.10059	NEU2;GRIA1;LMAN1;F8;MCFD2;NEU1;CANX;SRD5A3;CALR;CD55				IMCDcell	0.21772	AVPR2
	Signaling by TGF-beta Receptor Complex Homo sapiens R-HSA-170834	0.10122	TGFB1;PARP1;MYC;SERPINE1				Mammaryepithelialcelline	0.21772	TGFB1
	Apoptosis Homo sapiens R-HSA-109581	0.10233	CASP9;CASP3;AKT1;FAS;TP53;TLR4;TLR3				Mastcelline	0.21777	CCL2

		9						2	
	Signaling by Wnt Homo sapiens R-HSA-195721	0.10554	MYC;RAC2;ITPR1;AKT1;ITPR2;NFATC1;ITPR3;PDE6B;RAC1;PDE6A;CALM1				NS20Y cell	0.21772	OPRM1
	Regulation of TP53 Activity through Acetylation Homo sapiens R-HSA-6804758	0.10634	AKT1;TP53				Psammomabody	0.21772	CALCA
	Acyl chain remodelling of PE Homo sapiens R-HSA-1482839	0.10634	PLA2G2A;PLA2G10				Pterygium	0.21772	TP53
	Cholesterol biosynthesis Homo sapiens R-HSA-191273	0.10634	FDPS;GGPS1				Retinoblastomacell line	0.21772	TP53
	Programmed Cell Death Homo sapiens R-HSA-5357801	0.1099	CASP9;CASP3;AKT1;FAS;TP53;TLR4;TLR3				Rto	0.21772	PF4
	Pyruvate	0	RXRA;GLO1;PPAR				Sa	0	CHRM2

	metabolism and Citric Acid (TCA) cycle Homo sapiens R-HSA-71406	.110399	D				pling	.217722	
	Biological oxidations Homo sapiens R-HSA-211859	0.1121616	RXRA;ACY1;CYP11B2;GSS;NR1H4;CES1;PTGS1;CYP17A1				Tail fin	0.217722	THRB
	Pyrimidine metabolism Homo sapiens R-HSA-73848	0.1142242	NT5E;TYMS				Thoracic spine	0.217722	CRP
	Degradation of the extracellular matrix Homo sapiens R-HSA-1474228	0.1154444	PRSS1;CASP3;MMP2;MMP9;ELANE				p1	0.217722	JAK2
	Abacavir transmembrane transport Homo sapiens R-HSA-2161517	0.1155252	ABCB1				Cochlear hair cell	0.225988	KCNMA1;CACNA1D
	APOBEC3	0	PPIA				Inn	0	CHRNA10;CACNA1

	G mediated resistance to HIV-1 infection Homo sapiens R-HSA-180689	.115552					erhair cell	.225598	D
	PTK6 Expression Homo sapiens R-HSA-8849473	0.115552	NR3C1				Outerhair cell	0.225598	KCNQ5;CALM1
	GRB7 events in ERBB2 signaling Homo sapiens R-HSA-1306955	0.115552	ERBB2				Leukemia cell	0.228006	PHYH;NRAS;MPO
	FasL/ CD95L signaling Homo sapiens R-HSA-75157	0.115552	FAS				Palate	0.23449	GABRB3;TGFB1;FGFR1
	Alpha-oxidation of phytanate Homo sapiens R-HSA-389599	0.115552	PHYH				Accessory sex gland	0.23667	AR
	Formation of tubulin folding	0.12	TUBA1A;TUBB4B				Bodywall	0.23	PTGES3

	intermediates by CCT/TriC Homo sapiens R-HSA-389960	2.24					muscle	67	
	Acyl chain remodelling of PC Homo sapiens R-HSA-1482788	0.12224	PLA2G2A;PLA2G10				Cardinal vein	0.23667	FLT4
	Nucleotide Excision Repair Homo sapiens R-HSA-5696398	0.12223	PCNA;LIG1;PARP1;PARP2;LIG3				Chondrocyte cell line	0.23667	IL1B
	Regulation of HSF1-mediated heat shock response Homo sapiens R-HSA-3371453	0.12954	HSPA5;MAPK1;ATM;MAPK3				Cysticercus	0.23667	MT-ND1
	Complement cascade Homo sapiens R-HSA-166658	0.12954	CRP;PROS1;CD55;MBL2				Elementary body	0.23667	CD40LG
	Regulation of	0.	PROS1;CD55				Epiph	0.	AKR1C1

	Complement cascade Homo sapiens R-HSA-977606	1304					ysis	2367	
	G1/S Transition Homo sapiens R-HSA-69206	0.136555	PCNA;CCND1;MYC;TYMS;CKS1B				Germinal epithelium	0.23667	PGR
	Vasopressin-like receptors Homo sapiens R-HSA-388479	0.136997	AVPR2				Meconium	0.23667	ALB
	Synthesis of Dolichyl-phosphate Homo sapiens R-HSA-446199	0.136997	SRD5A3				Myoepithelial cell	0.23667	S100A4
	Sensing of DNA Double Strand Breaks Homo sapiens R-HSA-5693548	0.136997	ATM				Nervecord	0.23667	HTR7
	PTK6 Regulates Cell Cycle	0.13	CCND1				Oropharyngeal	0.23	TP53

	Homo sapiens R-HSA-8849470	697					nx	67	
	TNFR1-mediated ceramide production Homo sapiens R-HSA-5626978	0.13697	TNF				Osteoblast cell line	0.2367	TNFSF11
	Lectin pathway of complement activation Homo sapiens R-HSA-166662	0.13697	MBL2				Sclera	0.2367	CAMLG
	Scavenging by Class F Receptors Homo sapiens R-HSA-3000484	0.13697	CALR				Sto	0.2367	FGF2
	NADE modulates death signalling Homo sapiens R-HSA-205025	0.13697	CASP3				TE-671 cell	0.2367	CHRNA4
	SMAD2/3 Phosphorylation Motif Mutants	0.1369	TGFB1				Temporomandi	0.2367	DDR2

	in Cancer Homo sapiens R-HSA-3304356	7					bular joint		
	Metabolic disorders of biological oxidation enzymes Homo sapiens R-HSA-5579029	0.13697	MC2R				Adrenal gland	0.24027	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR6;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG2;GABRG1;ACE2;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A2;SLC6A3;IKBKB;TUBA1A;SMPD1;JAK2;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;GABRA2;P2RY12;GABRA1;CRBN;F10;GABRA6;STAT1;GABRA

									4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHRM1;NCF1;PROS1;NCF4;FGF1;FGF2;SLC8A1;FGF4;CDH5;FADS2;ADORA3;FADS1;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;GRIA3;GRIA4;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;MCFD2;FLT1;FLT3;FLT4;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1B;ADRA1A;ITGAV;CCDC51;CHUK;GGPS1;VWF;SIGMAR1;HTR3B;ADRA2C;ADORA2A;PIK3CA;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG6;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG2;CACNG3;KCNJ3;NTRK1;KCNJ5;KCNJ6;KCNJ11;NTRK3;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;SCN1A;CPT1A;HLA-

									A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;MC2R;NEU1;APOE;SCN3A;PDE2A;CALY;CD209;PDE3A;ATM;CALR;CALM1;RYR1;RYR2;ORM1;ACY1;PTGDR2;HBB;CROT;ORM2;RAC2;RAC1;CCR5;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR7;TLR4;TLR3;DDR2;TLR2;OPRD1;PTGER4;PCNA;PTGER2;PTGER3;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;PDGFRB;GUCY1A2;PDGFRA;CHRNB4;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;CHRNA9;CACNA

									1A;CACNA1D;CSF2RB;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;CACNA1I;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;IL2;NFKBIA;SELP;IL6;PROC;CYP11B2;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;SCN5A;DDX58;MMP2;PDE4D;MMP9;IFNG;PDE5A;SCN4A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Mineralocorticoid biosynthesis Homo sapiens R-HSA-193993	0.13697	CYP11B2				Colorectum	0.244	PIK3CA;CACNA1G
	Beta-oxidation of very long	0.13	CRAT				Primordiu	0.24	TGFB1;KIT;AKT1;FGF2

	chain fatty acids Homo sapiens R-HSA-390247	697					m	557	
	Synthesis of 15-eicosatetraenoic acid derivatives Homo sapiens R-HSA-2142770	0.13697	PTGS2				B-50 cell	0.255222	CALM1
	Pyrimidine biosynthesis Homo sapiens R-HSA-500753	0.13697	TYMS				Corn silk	0.255222	VEGFA
	Uptake and actions of bacterial toxins Homo sapiens R-HSA-5339562	0.13868	MAP2K1;CALM1				MKN-45 cell	0.255222	MET
	Prefoldin mediated transfer of substrate to CCT/TriC Homo sapiens	0.13868	TUBA1A;TUBB4B				Osteophyte	0.255222	TGFB1

	R-HSA-389957								
	Extension of Telomeres Homo sapiens R-HSA-180786	0.14706	PCNA;LIG1				RKO cell	0.25522	TP53
	Activation of BH3-only proteins Homo sapiens R-HSA-114452	0.15555	AKT1;TP53				Sternum	0.25522	CRP
	Myogenesis Homo sapiens R-HSA-525793	0.15555	MAPK11;ABL1				Y-79 cell	0.25522	PDE6A
	CDO in myogenesis Homo sapiens R-HSA-375170	0.15555	MAPK11;ABL1				pro-B-lymphocyte cell line	0.25522	IL7
	YAP1- and WWTR1 (TAZ)-stimulated gene expression Homo	0.15555	RXRA;PPARA				Liver	0.26122	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR6;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4

	sapiens R-HSA-2032785								;GABRG3;PRKAB1;ACE2;AR;SCN10A;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;GRIN2A;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A2;PRKAG3;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;JAK2;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;NR1I2;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;GABRA2;P2RY12;CRBN;F10;GABRA6;STAT1;GSS;F11;GABRA3;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;NCF1;PROS1;NCF4;FGF1;FGF2;TNF;SLC8A1;CDH5;FADS2;ADORA3;FADS1;IFNAR2;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA

									2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;GRIA3;DRD5;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;ITGB3;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1B;ADRA1A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;SIGMAR1;HTR3C;HTR3A;ADRA2C;ADRA2B;ADRA2A;ADORA2A;PIK3CA;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;CACNG6;CACNG7;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG5;KCNJ3;NTRK1;KCNJ5;KCNJ6;KCNJ11;NTRK3;SLC12A1;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;NEU1;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;ATM;CALR;CALM1;DDR1;RYR2;ORM1;ACY1;PTGDR2;HBB;CROT;ORM2;RAC2;RAC1

									;CCR5;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER1;PTGER2;TMPRSS2;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CHRNA10;GABRE;GABRD;XDH;CD55;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;VEGFA;CD40LG;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;SCN8A;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA2;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;CACNA1A;CACNA1D;CSF2RB;ADRB2;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CP

									T2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PDE6C;PTK2B;SCN7A;PDE6B;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	DNA Repair Homo sapiens R-HSA-73894	0.156571	POLB;PCNA;PARP1;LIG1;PRKDC;PARP2;ABL1;ATM;LIG3;TP53				Gill	0.262077	CALCA;CA2
	FGFR3b ligand binding and activation Homo sapiens R-HSA-190371	0.157911	FGF1				Skeletal muscle	0.265355	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;HLA-A;GABRG3;PRKAB1;GABRG1;ACE2;AR;SFRP4;SCN10A;AGTR1;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;SLC22A

									5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;PPP3R2;NEU1;LTA4H;APOE;SCN3A;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;SCN2A;HLA-DRB1;RET;DDR1;RYR1;RYR2;GABRB1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;ORM2;PRKAG3;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;IL13;PTH2R;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;KIT;TLR9;SLC29A4;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;PTGER1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;GLRA3;RXRA;CXCR1;CHRNA10;GABRD;XDH;CD55;GABRA2;CA12;GABRQ;GABRA1;GABRP;CRBN;F1

									0;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;SCN8A;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CALCA;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;CSF2RB;ADRB2;CACNA1E;CACNA1H;CACNA1G;DPP4;TPO;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;DRD5;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;VDR;HTR1D;SRD5A3;HTR1A;TRPV1;NFKB1

									;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;ITGB3;PDE3B;HTR2B;HTR2C;ADRA1D;HTR2A;PIK3CB;CKS1B;CASP9;POLB;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3C;HTR3B;ADRA2C;ADRA2B;MMP9;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;CACNG6;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;PDE6C;PTK2B;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;CACNG3;MAPK4;TRDMT1;KCNJ3;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NOS2;NTRK3;SLC12A1;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Binding of	0.	MYC				Seedl	0.	CHRM2;TPO;GLO1;CALM1

	TCF/LEF: CTNNB1 to target gene promoters Homo sapiens R-HSA-4411364	1.57911					ing	2.66866	
	CREB phosphorylation through the activation of Adenylate Cyclase Homo sapiens R-HSA-442720	0.157911	ADCY1				Blastomere	0.271111	TGFB1;ALB
	Phase 3 - rapid repolarisation Homo sapiens R-HSA-5576890	0.157911	KCNH2				Tastebud	0.271111	ITPR3;TRPV1
	Loss of Function of TGFBR1 in Cancer Homo sapiens R-HSA-3656534	0.157911	TGFB1				Synoviu m	0.27148	MCFD2;NCF1;S100A4;PTGS2;CSF2RA
	TGFBR1 KD Mutants in Cancer Homo	0.157	TGFB1				Basophil	0.273	PTGDR2

	sapiens R-HSA-3656532	91						29	
	Loss of Function of SMAD2/3 in Cancer Homo sapiens R-HSA-3304349	0.15791	TGFB1				Bonemarrow stem cell	0.27329	VEGFA
	SMAD2/3 MH2 Domain Mutants in Cancer Homo sapiens R-HSA-3315487	0.15791	TGFB1				Foam cell	0.27329	F3
	Pre-NOTCH Expression and Processing Homo sapiens R-HSA-1912422	0.16016	JUN;CCND1;TP53				NAMALWA cell	0.27329	IFNA1
	Amine compound SLC transporters Homo sapiens R-HSA-425428	0.16413	SLC6A2;SLC6A3				Ruminal fluid	0.27329	PDE4D
	Recruitment and ATM-mediated	0.16	ABL1;ATM;TP53				Sertoli cel	0.27	AR

	phosphorylation of repair and signaling proteins at DNA double strand breaks Homo sapiens R-HSA-5693565	606					line	329	
	DNA Double Strand Break Response Homo sapiens R-HSA-5693606	0.172033	ABL1;ATM;TP53				jf1	0.273299	GABRG1
	PI Metabolism Homo sapiens R-HSA-1483255	0.178005	PIK3CA;PIK3CD;PIK3CB				oa1	0.273299	CACNA1F
	ABC transporter disorders Homo sapiens R-HSA-5619084	0.178344	KCNJ11				Osteosarcomacell	0.289177	NR3C1;CALM1
	Insulin-like Growth Factor-2 mRNA Binding	0.178383	MYC				Spermatozoon	0.290909	WARS

	Proteins (IGF2BPs /IMPs/VICKZs) bind RNA Homo sapiens R-HSA-428359	4						3	
	Activation of PUMA and translocation to mitochondria Homo sapiens R-HSA-139915	0.178344	TP53				Allantois	0.290093	KDR
	Nef and signal transduction Homo sapiens R-HSA-164944	0.178344	RAC1				CHOP cell	0.290093	SELP
	Formyl peptide receptors bind formyl peptides and many other ligands Homo sapiens R-HSA-444473	0.178344	ANXA1				Corpus allatum	0.290093	PROCR
	Signaling	0	TGFB1				Fla	0	CALM1

	by TGF-beta Receptor Complex in Cancer Homo sapiens R-HSA-3304351	.178344					gellate	.290933	
	Nicotinamide salvaging Homo sapiens R-HSA-197264	0.178344	PTGS2				Gastroesophagealjunction	0.290933	ERBB2
	DNA strand elongation Homo sapiens R-HSA-69190	0.181552	PCNA;LIG1				Leukemicstemcell	0.290933	FLT3
	SMAD2/SMAD3:SMAD4 heterotrimer regulates transcription Homo sapiens R-HSA-2173796	0.181552	MYC;SERPINE1				PA-1 cell	0.290933	NRAS
	Signaling by Robo receptor Homo sapiens	0.1881	ABL1;RAC1				PNT-2 cell	0.2900	AR

	R-HSA-376176	52						93	
	Cooperation of Prefoldin and TriC/CCT in actin and tubulin folding Homo sapiens R-HSA-389958	0.181524	TUBA1A;TUBB4B				SW-1353 cell	0.290933	IL1B
	Signaling by Rho GTPases Homo sapiens R-HSA-194315	0.183044	AR;NCF1;NCF4;LIMK1;RAC2;ABL1;CYBB;MAPK1;CYBA;RAC1;CALM1;MAPK3				Scolex	0.290933	MT-ND1
	S Phase Homo sapiens R-HSA-69242	0.183343	PCNA;CCND1;LIG1;MYC;CKS1B				em2	0.290933	OPRM1
	Gap-filling DNA repair synthesis and ligation in TC-NER Homo sapiens R-HSA-6782210	0.190277	PCNA;LIG1;LIG3				rt1	0.290933	CD4
	Sialic acid	0.	NEU2;NEU1				Parat	0.	ATF1;ATF2;HTR4;AQP1;RPS6KA3;EDN

	metabolism Homo sapiens R-HSA-4085001	1903 2					hyroid gland	2966 6	RA;HTR7;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D4;PRKAB1;KCNQ3;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;PDE1C;PDE1B;PDE1A;PPP3R2;LTA4H;SCN3A;JUN;ACE;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;PDE3A;REN;ATM;CALR;CALM1;RET;RYR2;GABRB1;ORM1;ACY1;IFNA1;PRKAG2;HBB;PTH1R;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;JAK2;JAK1;IL10;CAMLG;PARP1;IL13;FOS;HBA1;F2;F3;PTGR2;F7;F8;CANX;TLR9;SLC29A1;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;LMAN1;NRAS;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;CD55;GABRA2;CA12;GABRP;CRBN;GABRA6;IFNB1;GABRA4;GSS;PTGES3;GABRA3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;PROS1;NCF4;FGF1;NR3C

									1;NR3C2;CDH5;ADORA3;SCN9A;PDE8A;FADS1;KCNH2;PDGFRB;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CACNB1;CACNB2;GPD1;PLA2G10;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;CACNA1D;CSF2RB;ADRB2;CACNA1E;CACNA1H;CACNA1G;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;FDPS;VCAM1;HSPA5;HTR1F;SRD5A1;VDR;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;PROC;IL7;ALB;FGFR4;FGFR2;FGFR1;MCFD2;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;ADRA1D;PIK3CB;CASP9;POLB;CPT2;CASP3;CA7;CASP1;BDKRB1;PDE4A;ITGAV;CCDC51;MBL2;CHUK;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3B;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;ETFDH;ATP2C1;TFPI;CACNG7;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;

									PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;KCNJ5;SLC12A3;KCNJ6;KCNJ11;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	E2F mediated regulation of DNA replication Homo sapiens R-HSA-113510	0.190332	PCNA;TYMS				Gastroesophagealcancercell	0.307199	LTA4H;MAPK6
	Smooth Muscle Contraction Homo sapiens R-HSA-445355	0.190332	ANXA1;CALM1				Gastricadenocarcinomacell line	0.308133	PRSS1
	Detoxification of Reactive Oxygen Species Homo sapiens R-HSA-	0.190332	CYBB;CYBA				L-1210cell	0.308133	TYMS

	3299685								
	Synthesis of substrates in N-glycan biosythesis Homo sapiens R-HSA-446219	0.196446	NEU2;NEU1;SRD5A3				Myelocyte	0.308133	MPO
	Organic cation transport Homo sapiens R-HSA-549127	0.198227	SLC22A5				Ookinete	0.308133	VWF
	Alpha-defensins Homo sapiens R-HSA-1462054	0.198227	CD4				Oral squamous cell carcinoma cell	0.308133	CCND1
	Integration of provirus Homo sapiens R-HSA-162592	0.198227	PPIA				VCaP cell	0.308133	AR
	Nef Mediated CD4 Down-	0.19	CD4				Stomach	0.30	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR7;MYC;A

	regulation Homo sapiens R-HSA-167590	827						86	KT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;AR;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;GRIN2A;PPP3R2;LTA4H;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A3;ASGR2;SLC6A4;IKBKB;TUBA1A;SMPD1;CTLA4;JAK2;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;NR1I2;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;GLRA3;GABRA2;P2RY12;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;STAT3;NR1H4;TUBB4B;CRAT;FRK;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;FGF2;SLC8A1;FGF4;CDH5;FADS2;ADORA3;FADS1;KCNH2;MAP2K1;SLC15A1;CA

									CNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;GRIA3;DRD5;GRIA4;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;HTR1B;NFKB1;GGCX;ALB;MCFD2;FLT1;FLT3;FLT4;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;SIGMAR1;HTR3B;ADRA2C;ADRA2B;ADRA2A;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG7;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG3;CACNG5;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NTRK3;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1A;SDC2;APOE;SCN3A;PDE2A;CALY;CD209;PDE3A;ATM;CALR;CALM1;SCN2A;

									DDR1;RYR2;ORM1;ACY1;IFNA1;PTGDR2;HBB;CROT;SLC7A11;ORM2;RAC2;RAC1;CCR5;CCR4;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;OPRD1;PTGER4;PCNA;PTGER1;PTGER2;PTGER3;TMPRSS2;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;GABRE;GABRD;XDH;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;CD40LG;FAS;NEK11;NR3C1;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;CACNA1A;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH2;HRH4;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;IL2;NFKBIA;SEL

									P;PROC;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;SCN4A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;KRAS;PDE7B;TEK;PDE7A
	AKT phosphorylates targets in the nucleus Homo sapiens R-HSA-198693	0.198277	AKT1				Renal proximal tubule	0.324922	WARS2
	PTK6 Regulates RTKs and Their Effectors AKT1 and DOK1 Homo sapiens R-HSA-8849469	0.198277	AKT1				Chondroblast	0.324922	NT5E

	Role of Abl in Robo-Slit signaling Homo sapiens R-HSA-428890	0.19827	ABL1				Groin	0.32492	SCN10A
	Inactivation of Cdc42 and Rac Homo sapiens R-HSA-428543	0.19827	RAC1				Microgametophyte	0.32492	SRD5A3
	Ca2+ activated K+ channels Homo sapiens R-HSA-1296052	0.19827	KCNMA1				Olfactory organ	0.32492	AVPR2
	Lipoprotein metabolism Homo sapiens R-HSA-174824	0.19917	ALB;APOE				Pulmonary vein	0.32492	PIK3CD
	Purine metabolism Homo sapiens R-HSA-73847	0.19917	NT5E;XDH				Regio parietalis capitis	0.32492	APOE
	TNFR2 non-canonical	0.1	CD40LG;CHUK;TNFSF11;TNF				Tail bu	0.3	PGR

	NF-kB pathway Homo sapiens R-HSA-5668541	993					d	24922	
	Chaperonin-mediated protein folding Homo sapiens R-HSA-390466	0.19933	TUBA1A;STAT3;TUBB4B;TP53				Uterine epithelium	0.32492	PGR
	ER to Golgi Anterograde Transport Homo sapiens R-HSA-199977	0.21295	GRIA1;LMAN1;MCFD2;F8;CD55				Meristem	0.32511	PARP3;PCNA
	Abacavir transport and metabolism Homo sapiens R-HSA-2161522	0.21772	ABCB1				Neuroblast	0.32511	NTRK1;NTRK3
	Nef mediated downregulation of MHC class I complex cell surface expression Homo	0.21772	HLA-A				Prostategland	0.33158	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR6;HTR7;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;AR;SCN10A;AGTR1;ATF7;A

	sapiens R-HSA-164940								TF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;HLA-DRB1;GABRB3;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A2;PRKAG3;SLC6A3;IKBKB;TUBA1A;SMPD1;JAK2;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;GABRA2;P2RY12;GABRA1;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;NCF4;FGF1;FGF2;SLC8A1;FGF4;CDH5;FADS2;ADORA3;FADS1;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;DRD4;GRIA3;HTR1E;SR

									D5A1;HTR1D;SRD5A3;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1A;ITGAV;CCDC51;CHUK;GGPS1;VWF;SIGMAR1;HTR3B;ADRA2C;ADRA2A;ADORA2A;PIK3CA;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG6;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG3;CACNG4;KCNJ3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NTRK3;SLC12A1;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;SCN1A;CPT1A;HLA-A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU1;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;ATM;CALR;CALM1;DDR1;RYR1;RYR2;ORM1;ACY1;HBB;CROT;ORM2;RAC2;RAC1;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR

									4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER2;PTGER3;TMPRSS2;TYMS;NT5E;PGRMC1;RXRA;CXCR1;GABRE;GABRD;XDH;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA2;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;ETFDH;

									ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Activation of Ca-permeable Kainate Receptor Homo sapiens R-HSA-451308	0.21772	CALM1				Prepuce	0.334022	PDGFRA;AKT1
	Ionotropic activity of Kainate Receptors Homo sapiens R-HSA-451306	0.21772	CALM1				Cpa	0.341331	TRDMT1
	Removal of the Flap Intermediate from the C-strand Homo sapiens R-HSA-174437	0.21772	PCNA				Erythroblast	0.341331	TMPRSS2
	Regulated proteolys	0.2	NFKB1				Phrenic	0.3	HTR1A

	is of p75NTR Homo sapiens R-HSA-193692	1772					nerve	41331	
	Regulation of gene expression by Hypoxia-inducible Factor Homo sapiens R-HSA-1234158	0.21772	VEGFA				Stoma	0.34131	ALB
	Netrin mediated repulsion signals Homo sapiens R-HSA-418886	0.21772	PTPN11				TZM-bl cell	0.34131	CCR5
	Acetylcholine regulates insulin secretion Homo sapiens R-HSA-399997	0.21772	CHRM3				Wes	0.34131	ATF7
	Thyroxine biosynthesis Homo sapiens R-HSA-209968	0.21772	TPO				b21	0.34131	HLA-A
	HDR through	0.	ABL1;ATM				mbl2	0.	MBL2

	Single Strand Annealing (SSA) Homo sapiens R-HSA-5685938	2259 8						34131	
	Infectious disease Homo sapiens R-HSA-5663205	0.22629	MAP2K1;CD4;TGFB1;LIG1;CANX;HLA-A;CALR;RAC1;CALM1;CCR5;PPIA				Mesoderm	0.34676	KDR;FGFR4;FGF4
	Cyclin E associated events during G1/S transition Homo sapiens R-HSA-69202	0.22806	CCND1;MYC;CKS1B				HeLa cell	0.34881	NFKBIA;SLC15A1;PRKDC;ATM
	Protein folding Homo sapiens R-HSA-391251	0.22987	TUBA1A;STAT3;TUBB4B;TP53				Chondrocyte	0.35729	NOS2
	Cyclin A:Cdk2-associated events at S phase entry Homo sapiens R-HSA-69656	0.23449	CCND1;MYC;CKS1B				Epidermal stem cell	0.35729	MYC
	Loss of	0	TUBA1A;TUBB;TU				GH	0	THRA

	Nlp from mitotic centrosomes Homo sapiens R-HSA-380259	.234499	BB4B				4-C1 cell	.357299		
	Loss of proteins required for interphase microtubule organization?from the centrosome Homo sapiens R-HSA-380284	0.234499	TUBA1A;TUBB;TUBB4B				Jaw	0.357299	FDPS	
	DNA Damage Recognition in GG-NER Homo sapiens R-HSA-5696394	0.234998	PARP1;PARP2				Molting gland	0.357299	CALM1	
	G1 Phase Homo sapiens R-HSA-69236	0.234998	CCND1;CKS1B				PC-3 cell	0.357299	AR	
	Cyclin D associated events	0.2	CCND1;CKS1B				Zygote	0.3	ALB	

	in G1 Homo sapiens R-HSA-69231	3498						57299	
	Mitotic G1-G1/S phases Homo sapiens R-HSA-453279	0.2355	PCNA;CCND1;MYC;TYMS;CKS1B				Melanocyte	0.37289	DDR1
	Glycerophospholipid biosynthesis Homo sapiens R-HSA-1483206	0.23508	ACHE;GPD1;PLA2G10;PLA2G2A				Hallux	0.37289	FGFR2
	Transport of organic anions Homo sapiens R-HSA-879518	0.2367	ALB				MDCK cell	0.37289	SLC29A4
	CASP8 activity is inhibited Homo sapiens R-HSA-5218900	0.2367	FAS				Platlet	0.37289	TPO
	Regulation by c-FLIP Homo sapiens R-HSA-3371378	0.2367	FAS				Breast	0.37346	ATF1;ATF2;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D

									3;CACNA2D4;GABRG3;PRKAB1;AR;AGTR1;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;PDE1C;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;ATM;CALR;CALM1;RET;RYR2;GABRB1;ORM1;PRKAG2;PTH1R;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;IL10;ANXA1;CAMLG;PARP1;IL13;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;KIT;TLR9;PPARG;TLR7;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;GABRA6;STAT1;IFNB1;GABRA4;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CRAT;FR

									K;NEK11;CHRM2;CHRM3;PROS1;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;CA14;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;HGF;LIG3;CACNB1;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CACNA1H;CACNA1G;HRH4;ABL1;DRD1;GRIA3;FDPS;VCAM1;HTR1E;HSPA5;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;PDE4D;AVPR2;SI

									GMAR1;HTR3B;MMP9;PIK3CA;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;CACNG8;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;NOS2;NTRK3;SLC12A1;LIMK1;PTPN11;CCK;MAPK15;MAPK11;FCGR2A;PDE7B;TEK;PDE7A
	Dimerization of procaspase-8 Homo sapiens R-HSA-69416	0.23677	FAS				Endosperm	0.378001	ALB;ORM2
	RHO GTPases activate KTN1 Homo sapiens R-HSA-5625970	0.23677	RAC1				Gut	0.381009	ATF1;ATF2;PRSS1;SERPINE1;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;FTH1;KDR;AKT1;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;CACNA2D4;HLA-A;PRKAB1;ACE2;ATF7;CES1;EPHA2;ABCB1;PDE1B;SDC2;NEU1;LTA4H;APOE;ELANE;ST14;ACE;PRG2;BRAF;L1CAM;CD209;PDE3A;ATM;CALR;CALM1;

									HLA-DRB1;RET;RYR1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;CROT;ORM2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;HBA1;F2;PTGR2;F8;CANX;KIT;TLR9;TLR7;SLC29A1;HLA-DQB1;PCNA;SERPINC1;NR1I3;TMPRSS2;ADCY2;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;XDH;CD55;GABRP;CRBN;F10;STAT1;GSS;AKR1C1;PTGES3;STAT3;AKR1C3;TUBB4B;CRAT;FRK;PF4;CHRM3;PROS1;NCF4;NR3C1;FGF2;MPO;CDH5;PDE8B;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;CYBB;CYBA;LIG3;PROCR;GPD1;PPIF;S100A4;RAF1;PPIA;FTL;GLO1;ITPR1;ITPR2;ITPR3;CACNA1C;CACNA1E;DPP4;ABL1;FDPS;PRNP;VCAM1;HSPA5;NFKB1;GGCX;IL7;ALB;SHBG;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;FLT3;FLT4;PDE3B;ADRA1D;POLB;CA1;CA3;CPT2;CA2;CASP

									3;CASP1;PDE4B;PDE4A;ITGAV;CCDC51;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;ADRA2B;ADORA2A;PIK3CA;IFNG;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;CACNG6;ERBB2;MAPK1;PTK2B;SCN7A;SLC25A20;MAPK6;MAPK4;MAPK3;PTPN11;CCK;MAPK15;WARS2;PDE10A;KRAS
	Apoptotic cleavage of cell adhesion proteins Homo sapiens R-HSA-351906	0.23667	CASP3				Lymphomacell	0.38667	ACE2;CALM1
	Association of TriC/CCT with target proteins during biosynthesis Homo sapiens R-HSA-390471	0.244	STAT3;TP53				Epididymis	0.38732	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;PRKAB2;CPT1A;CACNA2D1;CACNA2D4;GABRG3;PRKAB1;AR;KCNQ3;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;ACE;PDE2A;B

									RAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;REN;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;ACY1;IFNA1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;IL1A;F8;KCNMA1;CANX;KIT;TLR9;TLR8;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;GABRE;CD55;GABRA2;P2RY12;GABRQ;GABRP;CRBN;GABRA6;STAT1;IFNB1;GABRA4;GSS;PTGES3;STAT3;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;CHRM4;PROS1;NCF4;FGF1;NR3C1;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;CA14;KCNH2;PDGFRB;GUCY

									1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;LIG3;CACNB1;PROCR;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CACNA1H;CACNA1G;HRH1;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;DRD5;FDPS;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1D;SRD5A3;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;CASP9;POLB;CA3;CPT2;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CDC51;MBL2;CHUK;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3B;PIK3CA;IFNG;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;

									CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;CACNG3;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	AURKA Activation by TPX2 Homo sapiens R-HSA-8854518	0.25398	TUBA1A;TUBB;TUBB4B				BTO:0001239	0.38812	PRG2
	Passive transport by Aquaporins Homo sapiens R-HSA-432047	0.25522	AQP1				Hepatoblastomacell	0.38812	ATF5
	Defective EXT2 causes exostoses 2 Homo sapiens R-HSA-3656237	0.25522	SDC2				Eggyolk	0.38812	APOE
	Defective EXT1 causes exostoses 1, TRPS2	0.25522	SDC2				Epididymal fluid	0.3881	SHBG

	and CHDS Homo sapiens R-HSA-3656253	2						2	
	Endosomal/Vacuolar pathway Homo sapiens R-HSA-1236977	0.25522	HLA-A				Exoskeleton	0.38812	PDE6A
	CD28 dependent Vav1 pathway Homo sapiens R-HSA-389359	0.25522	RAC1				Large intestine	0.38812	PIK3CA
	P2Y receptors Homo sapiens R-HSA-417957	0.25522	P2RY12				Nymph	0.38812	SCN8A
	Caspase-mediated cleavage of cytoskeletal proteins Homo sapiens R-HSA-264870	0.25522	CASP3				Sporophyte	0.38812	SRD5A3
	The NLRP3 inflammasome	0.25	CASP1				af1	0.38	JDP2

	Homo sapiens R-HSA-844456	5.22						8.12	
	Pyrimidine catabolism Homo sapiens R-HSA-73621	0.25522	NT5E				wc1	0.38812	TUBA1A
	Sphingolipid metabolism Homo sapiens R-HSA-428157	0.2671	NEU2;SMPD1;NEU1				Uterine cervix	0.39015	ATF1;ATF2;IL1RN;SERPINE1;HTR4;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;HLA-A;GABRG3;PRKAB1;AR;SFRP4;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;PDE1C;PDE1B;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;REN;ATM;CALR;CALM1;RET;RYR2;GABRB1;ORM1;ACY1;IFNA1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;

									CANX;TLR9;TLR8;PPARG;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;CD55;GABRA2;CA12;GABRQ;GABRP;CRBN;GABRA6;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;CA14;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;LIG3;CACNB1;PROCR;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR2;ITPR3;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACN

									A1G;HRH4;ABL1;DRD1;GRIA3;FDPS;VCAM1;HTR1E;HSPA5;SRD5A1;HTR1D;NFKB1;IL2;NFKBIA;IL6;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CB;CASP9;POLB;CPT2;CASP3;CA7;CASP1;PDE4B;BDKRB1;ITGAV;CCDC51;CHUK;VWF;DDX58;MMP2;PDE4D;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;IFNG;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;TEK
	Transcriptional regulation of pluripotent stem cells Homo sapiens	0.271111	STAT3;FGF2				Cardiac muscle	0.398544	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;C

	R-HSA-452723								ACNA2D3;CACNA2D2;CACNA2D4;PRKAB1;GABRG1;ACE2;AR;SFRP4;AGTR1;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;GRIN2A;PPP3R2;LTA4H;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;GABRB3;RET;RYR1;RYR2;GABRB1;ORM1;ACY1;PTGDR2;PRKAG1;PRKAG2;HBB;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;KIT;TLR9;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;DDR2;OPRD1;PTGER4;PCNA;SERPINC1;PTGER3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRA

									S;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;CD55;GABRA2;CA12;GABRP;CRBN;F10;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;GABRA3;STAT3;NR1H4;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;TPO;HRH1;HRH2;HRH4;ABL1;DRD1;C

									ACNA1S;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1A;CASP9;POLB;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;PDE4A;ITGAV;SCN5A;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;ADRA2C;ADRA2B;ADORA2A;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;CACNG7;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;CACNG1;SLC25A20;PDE6A;MAPK6;CACNG3;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;KCNJ11;NOS2;NTRK3;SLC12A1;LIMK1;PLA2G2A;PT

									PN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Netrin-1 signaling Homo sapiens R-HSA-373752	0.271111	PTPN11;RAC1				Chorionic villus	0.402977	ST14
	tRNA Aminoacylation Homo sapiens R-HSA-379724	0.271111	WARS;WARS2				Fer	0.402977	OPRM1
	Dissolution of Fibrin Clot Homo sapiens R-HSA-75205	0.273299	SERPINE1				GH3 cell	0.402977	THRA
	Retrograde neurotrophin signalling Homo sapiens R-HSA-177504	0.273299	NTRK1				Gizzard	0.402977	CALM1
	TP53 Regulates Transcription of Genes Involved in G1 Cell	0.273299	TP53				HeLa-S3 cell	0.402977	NEK11

	Cycle Arrest Homo sapiens R-HSA-6804116								
	IRF3-mediated induction of type I IFN Homo sapiens R-HSA-3270619	0.27329	PRKDC				SF-9 cell	0.402977	HRH4
	Activation of DNA fragmentation factor Homo sapiens R-HSA-211227	0.27329	CASP3				Spikelet	0.402977	PCNA
	Apoptosis induced DNA fragmentation Homo sapiens R-HSA-140342	0.27329	CASP3				nuc1	0.402977	PPARA
	p75NTR recruits signalling complexes Homo sapiens R-HSA-209543	0.27329	IKBKB				Saliva	0.412332	ORM1;MPO
	Assembly Of The HIV	0.2	PPIA				Mesan	0.4	AQP1

	Virion Homo sapiens R-HSA-175474	7329					glial cell	1746	
	ERBB2 Activates PTK6 Signaling Homo sapiens R-HSA-8847993	0.27329	ERBB2				Tubercle	0.41746	ALB
	DEx/H-box helicases activate type I IFN and inflammatory cytokines production Homo sapiens R-HSA-3134963	0.27329	NFKB1				Vero cell	0.41746	LMAN1
	TNFR1-induced proapoptotic signaling Homo sapiens R-HSA-5357786	0.27329	TNF				Uterine endometrium	0.42576	ATF1;ATF2;SERPINE1;HTR4;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;GABRG3;PRKAB1;AR;SFRP4;KCNQ3;SIK1;ATF5;TP53;ATF3;CES1;EPHA2;PDE1C;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;ATM;CALR;CA

									LM1;RET;GABRB2;RYR2;GABRB1;ORM1;ACY1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC1;JAK2;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;IL1A;F8;KCNMA1;CANX;TLR9;TLR7;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CXCR1;GABRE;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;GABRA6;IFNB1;GABRA4;GSS;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;FRK;CHRM2;CHRM3;NCF1;CHRM4;PROS1;FGF1;NR3C1;SLC8A1;FGF4;NR3C2;CDH5;FADS2;SCN9A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBA;LIG3;CACNB1;CACNB2;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNA

									R1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;CACNA1B;ITPR2;ITPR3;CACNA1D;CSF2RB;CACNA1E;CSF2RA;CACNA1H;CACNA1G;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;FDPS;TGFB1;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1D;SRD5A3;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CB;CASP9;POLB;CPT2;CASP3;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;PDE4C;PIK3CA;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;SLC25A29;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;MAPK6;CACNG3;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ6;SLC12A1;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;

									MAPK15;MAPK11;CD4;KRAS;PDE7B;TEK;PDE7A
	Platelet Adhesion to exposed collagen Homo sapiens R-HSA-75892	0.27329	VWF				Skin fibroblast	0.43166	AKR1C1
	Synthesis, secretion, and inactivation of Glucose-dependent Insulinotropic Polypeptide (GIP) Homo sapiens R-HSA-400511	0.27329	DPP4				Tear	0.43166	HBB
	Formation of Incision Complex in GG-NER Homo sapiens R-HSA-5696395	0.28015	PARP1;PARP2				BeWo cell	0.43166	SLC22A5
	Iron uptake and transport Homo	0.280	FTH1;FTL				Bulb	0.431	PIK3CA

	sapiens R-HSA-917937	15						6	
	Transcription-Coupled Nucleotide Excision Repair (TC-NER) Homo sapiens R-HSA-6781827	0.28029	PCNA;LIG1;LIG3				Epimastigote	0.43166	CALM1
	FCERI mediated NF-kB activation Homo sapiens R-HSA-2871837	0.28303	NFKBIA;IKBKB;CHUK;NFKB1				Cerebellar Purkinje cell	0.44454	CACNA2D2
	Organic cation/anion/zwitterion transport Homo sapiens R-HSA-549132	0.29093	SLC22A5				Spermatheca	0.44454	ETFDH
	SUMOylation of transcription factors Homo sapiens R-HSA-3232118	0.29093	TP53				ZR-75-30 cell	0.44454	OPRD1
	TP53 regulates	0.	TP53				Plant	0.	TPO;CALM1

	transcription of several additional cell death genes whose specific roles in p53-dependent apoptosis remain uncertain Homo sapiens R-HSA-6803205	2.90933					embryo	4.45566	
	Polymerase switching on the C-strand of the telomere Homo sapiens R-HSA-174411	0.290933	PCNA				Placenta	0.445887	ATF1;ATF2;PRSS1;SERPINE1;MT-ND1;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;ACE2;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A2;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;JAK2;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;

									F8;F9;KCNMA1;PPARG;PPARA;SLC29A1;JDP2;PPARD;SLC29A2;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;GABRA2;P2RY12;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;GABRA3;STAT3;NR1H4;TUBB4B;CRAT;PF4;CHRM2;CHRM3;CHRM1;NCF1;PROS1;CHRM5;NCF4;FGF1;FGF2;SLC8A1;CDH5;FADS2;ADORA3;ADORA1;FADS1;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD2;GRIA3;DRD5;HTR1E;SRD5A1;HTR1D;SRD5A3;HTR1B;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;ITGB3;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;SIGMAR1;HTR3B;ADRA2C;ADRA2A;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;MET;CRP;PRKAA1;LRP1;NOD2;CACNG6;SLC25A

									29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG3;CACNG4;CACNG5;NTRK1;KCNJ5;SLC12A3;KCNJ6;NTRK3;SLC12A1;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;KCNQ3;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU1;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;ATM;CALR;CALM1;DDR1;RYR1;RYR2;ORM1;ACY1;HBB;CROT;ORM2;RAC2;RAC1;CCR4;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;ADRB3;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER2;PTGER3;TYMS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;PDGFRB;GUCY1

									A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;HRH2;HRH4;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;SCN4A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Polymerase switching Homo	0.29	PCNA				Tonsil	0.45	ATF1;ATF2;IL1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;

	sapiens R-HSA-69091	0 9 3						5 0 3	RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D1;HLA-A;GABRG3;PRKAB1;SCN10A;KCNQ3;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;PDE1A;SDC2;NEU2;PPP3R2;LTA4H;APOE;SCN3A;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;CALY;CD209;REN;ATM;CALR;CALM1;HLA-DRB1;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;PRKAG1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;KIT;TLR9;TLR8;PPARG;TLR7;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;OPRD1;PTGER4;PCNA;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;CYP17A1;GLRA1;LMAN

									1;NRAS;NT5E;PGRMC1;RXRA;CHRNA10;GABRE;GABRD;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;PROS1;CHRM5;NCF4;FGF1;NR3C1;MPO;SLC8A1;FGF4;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CSF2RB;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;DRD5;FDPS;PRNP;TGFB1;

									VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA3;CPT2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;IFNG;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;LRP1;ETFDH;NOD2;ATP2C1;TFPI;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;CACNG4;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;NOS2;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Leading Strand Synthesis	0.2	PCNA				Epitheli	0.4	EPHA2

	Homo sapiens R-HSA-69109	0.9093					um	5.5887	
	Removal of the Flap Intermediate Homo sapiens R-HSA-69166	0.29093	PCNA				Erythrocyte	0.45887	GLO1
	Regulation of necroptotic cell death Homo sapiens R-HSA-5675482	0.29093	FAS				Panicle	0.45887	CHRM2
	DCC mediated attractive signaling Homo sapiens R-HSA-418885	0.29093	RAC1				Striavascularis	0.45887	AQP1
	SEMA3A-Plexin repulsion signaling by inhibiting Integrin adhesion Homo sapiens R-HSA-399955	0.29093	RAC1				Smooth muscle	0.46131	ATF1;ATF2;SERPINE1;AQP1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D4;PRKAB1;KCNQ3;SIK1;ATF5;ATF4;CES1;EPHA2;PDE1C;PDE1B;SDC2;PPP3R2;LTA4H;SCN3A;JUN;

									PRG2;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;ATM;CALR;CALM1;RET;GABRB1;ORM1;IFNA1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;RAC2;RAC1;JAK2;JAK1;ANXA1;CAMLG;PARP1;IL13;FOS;F2;F7;F8;KCNMA1;CANX;TLR9;TLR7;SLC29A1;JDP2;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CD55;GABRA2;CA12;GABRQ;GABRA1;GABRP;CRBN;GABRA6;IFNB1;GABRA4;PTGES3;STAT3;NR1H4;VEGFA;FRK;CHRM2;CHRM3;CHRM4;PROS1;FGF1;NR3C1;FGF2;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;LIG1;HGF;CACNB1;CACNB2;PROCR;CACNB4;PLA2G10;PGR;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA2;CHRNA5;NPR1;CHRNA7;NPR2;ITPR1;ITPR2;CACNA1C;CACNA1E;CSF

									2RA;CACNA1G;HRH1;HRH2;HRH4;ABL1;DRD1;DRD2;GRIA3;HSPA5;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;PROC;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;CASP9;CA3;CASP3;CA7;CASP1;ITGAV;CCDC51;CHUK;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;NOD2;ATP2C1;TFPI;CACNG7;PDE11A;MAPK7;CCL2;MAPK1;PTK2B;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NTRK3;SLC12A1;LIMK1;PTPN11;MAPK15;MAPK11;PDE7B;TEK;PDE7A
	Activation of Rac Homo sapiens R-HSA-428540	0.290093	RAC1				Insulinomacell	0.472011	KCNJ6
	Nicotinate metaboli	0.2	PTGS2				Carcass	0.4	HLA-A

	sm Homo sapiens R-HSA-196807	90993						7201	
	Glutathione synthesis and recycling Homo sapiens R-HSA-174403	0.290093	GSS				Urinary bladder	0.475056	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR6;HTR7;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;ACE2;AR;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A3;IKBKB;TUBA1A;SMPD1;CTLA4;JAK2;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;LMAN1;NRAS;GABRA2;P2RY12;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;

									NCF1;CHRM4;PROS1;NCF4;FGF1;FGF2;SLC8A1;CDH5;FADS2;ADORA3;ADORA1;FADS1;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;DRD4;GRIA3;DRD5;GRIA4;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;MCFD2;FLT1;FLT3;FLT4;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1A;ITGAV;CCDC51;CHUK;GGPS1;VWF;AVPR2;SIGMAR1;HTR3B;ADRA2C;ADRA2A;ADORA2A;PIK3CA;ADORA2B;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG6;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG5;NTRK1;KCNJ5;KCNJ6;KCNJ11;NTRK3;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;SFRP4;KCNQ3;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1

									C;PDE1B;PDE1A;SDC2;NEU2;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;ATM;CALR;CALM1;RYR1;RYR2;ORM1;ACY1;HBB;CROT;SLC7A11;ORM2;RAC2;RAC1;CCR5;CCR4;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;IL1B;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER2;PTGER3;TMPRSS2;TYMS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;XDH;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;CD40LG;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;H

									RH1;HRH2;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;IL2;NFKBIA;SELP;IL6;PROC;CYP11B2;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;MMP9;IFNG;PDE5A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Biosynthesis of the N-glycan precursor (dolichol lipid-linked oligosaccharide, LLO) and transfer to a nascent protein	0.29354	NEU2;NEU1;SRD5A3				Ovary	0.48225	ATF1;ATF2;PRSS1;SERPINE1;MT-ND1;HTR6;HTR7;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;AR;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;PPP3R2;LTA4H;ELANE;JUN;ST14;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;GRIN

	Homo sapiens R-HSA-446193								3A;REN;HLA-DRB1;GABRB3;RET;PRKAG1;PRKAG2;PTH1R;SLC6A2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;JAK2;JAK3;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS2;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;GABRA2;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHRM1;NCF1;PROS1;NCF4;FGF2;SLC8A1;FGF4;CDH5;FADS2;ADORA3;ADORA1;FADS1;IFNAR2;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;PGR;S100A4;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;TPO;ABL1;DRD4;GRIA3;DRD5;GRIA4;HTR1E;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;ITGB3;HTR2B;HTR2C;PIK3CD;ADRA1

									D;PIK3CB;ADRA1B;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;SIGMAR1;ADRA2C;ADRA2B;ADRA2A;ADORA2A;PIK3CA;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;NOD2;CACNG6;SLC25A29;CCL5;CCL2;CACNG1;SLC25A20;CACNG3;CACNG5;NTRK1;KCNJ5;KCNJ6;KCNJ9;NTRK3;PTPN11;FCGR2A;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;SCN1A;CPT1A;HLA-A;SFRP4;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU1;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;ATM;CALR;CALM1;DDR1;RYR1;RYR2;ORM1;ACY1;IFNA1;HBB;CROT;SLC7A11;ORM2;RAC2;RAC1;CCR5;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;HBA1;IL1A;ADRB3;CANX;KIT;TLR9;TLR7;TLR4;TLR3;DDR2;TLR2;PTGER4;PCNA;PTGER1;PTGER2;PTGER3;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CXCR1;GABRE;GABRD;XDH;

									CD55;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;CD40LG;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;SCN8A;GPD1;PPIF;RAF1;PPIA;PDE9A;CHRNA5;NPR1;CHRNA7;NPR2;CACNA1B;CACNA1A;ADRB1;CSF2RB;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;CACNA1I;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;TRPV1;IL2;NFKBIA;SELP;IL6;PROC;IL7;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;SCN5A;DDX58;MMP2;PDE4D;PDE4C;IFNG;PDE5A;SCN4A;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;PDE6A;MAPK6;MAPK4;TRDMT

									1;MAPK3;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	ABC-family proteins mediated transport Homo sapiens R-HSA-382556	0.298199	ABCB1;KCNJ11				Barrett's esophagus	0.484483	TP53
	RMTs methylate histone arginines Homo sapiens R-HSA-3214858	0.298199	CCND1;JAK2				Hypodermal seamcell	0.484483	ATF7
	Centrosome maturation Homo sapiens R-HSA-380287	0.300018	TUBA1A;TUBB;TUBB4B				Vegetative stage	0.484483	PPP3R2
	Recruitment of mitotic centrosome proteins and complexes Homo sapiens R-HSA-380270	0.300018	TUBA1A;TUBB;TUBB4B				B-lymphocyte cell line	0.494155	JUN;PARP3;STAT1;NFATC1;LTA4H;MMP9;HLA-DRB1
	Activatio	0	AKT1				Es	0	ATF1;ATF2;PRSS1;I

	n of BAD and translocation to mitochondria Homo sapiens R-HSA-111447	.308133					ophagus	.4963 9	L1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D4;HLA-A;GABRG3;PRKAB1;ACE2;AR;SFRP4;AGTR1;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;PPP3R2;LTA4H;APOE;SCN3A;ELANE;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CD209;PDE3A;REN;ATM;CALR;CALM1;HLA-DRB1;GABRB3;RET;RYR1;GABRB2;RYR2;GABRB1;ORM1;ACY1;IFNA1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;ORM2;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;KCNMA1;CANX;KIT;T

									LR9;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER2;PTGER3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;GLRA3;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;F10;GABRA6;GABRA5;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;CA14;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1

									;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;TPO;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;VDR;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;ALB;SHBG;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1A;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;ADRA2C;MMP9;ADORA2A;PIK3CA;IFNG;ADORA2B;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;CACNG6;SLC25A

									29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Glycogen breakdown (glycogenolysis) Homo sapiens R-HSA-70221	0.308133	CALM1				Pericho ndrium	0.497344	TGFB1
	ERBB2 Regulates Cell Motility Homo sapiens R-HSA-6785631	0.308133	ERBB2				ae2	0.497344	CA2
	Defensins Homo sapiens R-HSA-1461973	0.316166	CD4;TLR2				Lymphoblast	0.509001	SIGMAR1;HLA-DRB1
	Class I MHC mediated antigen processin	0.3222	NCF1;HSPA5;CANX;NCF4;CYBB;CYBA;ITGAV;HLA-A;CALR				Cestode	0.5099	MT-ND1

	g & presentation Homo sapiens R-HSA-983169	14						54	
	STING mediated induction of host immune responses Homo sapiens R-HSA-1834941	0.32492	PRKDC				Subcutaneous adipose tissue	0.50954	ADRB3
	Translesion synthesis by REV1 Homo sapiens R-HSA-110312	0.32492	PCNA				Duodenum	0.52135	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;SFRP4;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;GRIN2A;PPP3R2;LTA4H;APOE;SCN3A;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PD

									E3A;REN;ATM;CALR;CALM1;SCN2A;GABRB3;RET;GABRB2;RYR2;GABRB1;ACY1;IFNA1;PTGDR2;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC6A3;SLC6A4;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;IL1B;KCNMA1;CANX;KIT;TLR9;SLC29A4;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;DDR2;TLR2;OPRD1;PTGER4;PCNA;SERPINC1;NR1I3;PTGER2;NR1I2;PTGER3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;GLRA3;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;P2RY12;GABRQ;GABRP;CRBN;F10;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;F11;GABRA3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CD40LG;FAS;CRAT;FRK;NE

									K11;CHRM2;CHR M3;NCF1;CHRM4; PROS1;NCF4;FGF1 ;NR3C1;FGF2;SLC8 A1;NR3C2;CDH5;F ADS2;CCND1;ADO RA3;FPGS;SCN9A; PDE8B;PDE8A;FAD S1;CA14;KCNH2;P DGFRB;GUCY1A2; PDGFRA;MAP2K1; SLC15A1;PHYH;CH RNB3;LIG1;HGF;CY BB;CYBA;LIG3;CAC NB1;CACNB2;PRO CR;CACNB3;CACN B4;GPD1;PLA2G10 ;PPIF;PGR;S100A4; RAF1;PPIA;PDE9A; FTL;IFNAR1;GRIA2 ;CHRNA3;CHRNA5 ;CHRNA4;NPR1;GL O1;CHRNA7;NPR2; ITPR1;CACNA1B;IT PR2;CACNA1A;ITP R3;CACNA1D;CSF2 RB;CACNA1C;CAC NA1E;CSF2RA;CAC NA1H;CACNA1G;D PP4;HRH1;HRH2;H RH4;ABL1;DRD1;C ACNA1S;DRD2;FD PS;PRNP;TGFB1;V CAM1;HTR1E;HSP A5;HTR1F;SRD5A1 ;VDR;HTR1D;SRD5 A3;HTR1A;HTR1B; TRPV1;NFKB1;IL2; NFKBIA;SELP;IL6;P ROC;GGCX;CYP11 B2;IL7;FGF19;ALB; SHBG;FGFR4;FGFR 2;FGFR1;MCFD2;F LT1;THRB;THRA;T

									NFAIP6;FLT3;FLT4;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1A;CASP9;POLB;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;HTR3E;MMP2;PDE4D;SIGMAR1;PDE4C;HTR3B;MMP9;ADRA2A;ADORA2A;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;CACNG7;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	JNK (c-Jun kinases) phosphorylation and	0.3249	NOD2				Aortaendotheli	0.5214	ITGAV

	activation mediated by activated human TAK1 Homo sapiens R-HSA-450321	2					um	6	
	Regulated Necrosis Homo sapiens R-HSA-5218859	0.32492	FAS				Fatbody	0.521466	FTH1
	RIPK1-mediated regulated necrosis Homo sapiens R-HSA-5213460	0.32492	FAS				Supporting cell	0.521466	CASP3
	Regulation of KIT signaling Homo sapiens R-HSA-1433559	0.32492	KIT				Vegetative cell	0.530671	ATM;CALM1;TP53
	Rap1 signalling Homo sapiens R-HSA-392517	0.32492	RAF1				Mouth	0.530822	DDR1;IL1RN;LRP1;ATP2C1;AQP1;ICAM1;MYC;ERBB2;MAPK1;CA12;GABRP;PARP1;GSS;AKR1C1;MMP2;STAT3;AKR1C3;FOS;NFKB1;FCGR2A;GGCX;CANX;CALM1;RAF1;ATF6;TP53

	RHO GTPases activate CIT Homo sapiens R-HSA-5625900	0.32492	RAC1				Hepatomacell	0.53152	SLC25A29;MAPK7;NR1I2;BRAF;MET;MAPK3
	TGF-beta receptor signaling in EMT (epithelial to mesenchymal transition) Homo sapiens R-HSA-2173791	0.32492	TGFB1				Ascidian	0.53308	MBL2
	Metabolism of folate and pterines Homo sapiens R-HSA-196757	0.32492	FPGS				Choriocarcinomacell	0.54442	SIGMAR1
	TP53 Regulates Transcription of Cell Cycle Genes Homo sapiens R-HSA-6791312	0.32511	PCNA;TP53				Hair follicle	0.54442	DDR2
	Amino acid and oligopept	0.3	SLC15A1;SLC7A11				Renal epi	0.5	FADS1

	ide SLC transporters Homo sapiens R-HSA-425374	3402					thelium	4442	
	Creation of C4 and C2 activators Homo sapiens R-HSA-166786	0.334024	CRP;MBL2				Pancreatic cancer cell line	0.555548	KRAS
	Butyrate Response Factor 1 (BRF1) binds and destabilizes mRNA Homo sapiens R-HSA-450385	0.341331	AKT1				Filopodium	0.555548	AKT1
	Formation of Senescence-Associated Heterochromatin Foci (SAHF) Homo sapiens R-HSA-2559584	0.341331	TP53				Natural killer cell line	0.555548	IL2

	Translesion synthesis by POLK Homo sapiens R-HSA-5655862	0.341311	PCNA				Semicircular canal	0.555548	PGRMC1
	Translesion synthesis by POLI Homo sapiens R-HSA-5656121	0.341311	PCNA				Decidua	0.566628	FLT1
	Platelet sensitization by LDL Homo sapiens R-HSA-432142	0.341311	PTPN11				Seminiferous epithelium	0.566628	SHBG
	RHO GTPases Activate ROCKs Homo sapiens R-HSA-5627117	0.341311	LIMK1				Ureteric bud	0.576822	RET
	Synthesis, secretion, and deacylation of Ghrelin Homo sapiens	0.341311	ACHE				Testis	0.577449	ATF1;ATF2;PRSS1;SERPINE1;HTR4;MT-ND1;HTR6;HTR7;SCN11A;MYC;AKT1;PRKAB2;CACNA2D1;CACNA2D3;CACNA2D2;CACNA2D4;GABRG3;PRKAB1;

	R-HSA-422085								ACE2;AR;AGTR1;ATF7;ATF5;ATF6;ATF3;ATF4;ABCB1;PRKDC;GRIN2A;PPP3R2;LTA4H;ELANE;JUN;ACE;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;REN;HLA-DRB1;GABRB3;RET;GABRB2;GABRB1;PRKAG1;PRKAG2;PTH1R;SLC6A2;PRKAG3;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;JAK2;JAK3;JAK1;ANXA1;TNNC1;FOS;F2;F3;PTGR2;F7;F8;F9;KCNMA1;SLC29A4;PPARG;PPARA;SLC29A1;JDP2;HLA-DQB1;PPARD;SLC29A2;SERPINC1;NR1I3;ADCY2;ADCY1;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;GABRA2;P2RY12;CRBN;F10;GABRA6;STAT1;GABRA4;GSS;F11;STAT3;NR1H4;TUBB4B;CRAT;FRK;PF4;CHRM2;CHRM3;CHRM1;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;FGF2;SLC8A1;FGF4;CDH5;FADS2;ADORA3;ADORA1;FADS1;IFNAR2;KCNH2;MAP2K1;SLC15A1;CACNB1;CACNB2;CACNB3;CACNB4;PGR;S100A4

									;FTL;IFNAR1;GRIA1;GRIA2;GLO1;ITPR1;ITPR2;ITPR3;ABL1;DRD1;GRIA3;DRD5;GRIA4;HTR1E;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;GGCX;ALB;SHBG;MCFD2;FLT1;FLT3;FLT4;ITGB3;HTR2B;HTR2C;PIK3CD;ADRA1D;HTR2A;PIK3CB;ADRA1A;ITGAV;CCDC51;CHUK;GGPS1;VWF;AVPR2;SIGMAR1;HTR3C;HTR3B;ADRA2A;ADORA2A;PIK3CA;IL3RA;CRH;MET;CRP;PRKAA1;PRKAA2;LRP1;CACNG6;CACNG7;CACNG8;SLC25A29;CCL5;CCL3;CCL2;CACNG1;SLC25A20;CACNG3;CACNG4;CACNG5;KCNJ3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;KCNJ9;NTRK3;SLC12A1;PTPN11;FCGR2A;IL1RN;AQP1;ICAM1;RPS6KA3;EDNRA;FTH1;KDR;TNFSF11;SCN1A;CPT1A;HLA-A;SFRP4;KCNQ3;KCNQ5;SIK1;TP53;CES1;EPHA2;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;NEU1;APOE;SCN3A;PDE2A;PRG2;CALY;CD209;PDE3A;

									ATM;CALR;CALM1;SCN2A;DDR1;RYR1;RYR2;ORM1;ACY1;IFNA1;PTGDR2;HBB;CROT;SLC7A11;ORM2;RAC2;RAC1;CCR4;IL10;PARP3;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;HBA1;IL1A;CANX;KIT;TLR9;TLR8;TLR7;TLR4;TLR3;DDR2;TLR2;OPRD1;PTGER4;PCNA;PTGER2;PTGER3;TMPRSS2;TYMS;CYP17A1;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;CA12;GABRQ;GABRP;IFNB1;AKR1C1;PTGES3;AKR1C3;GRIN1;VEGFA;CD40LG;FAS;NEK11;NR3C1;MPO;NR3C2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;CA14;PDGFRB;GUCY1A2;PDGFRA;CHRNB4;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;PROCR;SCN8A;GPD1;PLA2G10;PPIF;RAF1;PPIA;PDE9A;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;NPR2;CACNA1B;CACNA1A;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;CAC

									NA1I;HRH1;HRH4;CACNA1S;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;IL2;NFKBIA;SELP;PROC;IL7;FGF19;FGFR4;FGFR2;FGFR1;THRB;THRA;TNFAIP6;PDE3B;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;DDX58;MMP2;PDE4D;PDE4C;OPRM1;MMP9;IFNG;PDE5A;SCN4A;ETFDH;OPRL1;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;MAPK1;PTK2B;SCN7A;PDE6B;PDE6A;MAPK6;MAPK4;TRDMT1;MAPK3;NOS2;LIMK1;PLA2G2A;OPRK1;CCK;MAPK15;WARS2;MAPK11;CD4;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Chylomicron-mediated lipid transport Homo sapiens R-HSA-174800	0.341311	APOE				Rectal cancer cell	0.587171	NFKB1
	Inflammasomes Homo sapiens R-HSA-622312	0.341313	CASP1				lat1	0.587171	SLC15A1

		1							
	Signaling by NOTCH Homo sapiens R-HSA-157118	0.343	JUN;CCND1;MYC;TP53				Monocyte	0.602007	ATF1;PRSS1;IL1RN;NCF1;PROS1;NCF4;NR3C1;MPO;MT-ND1;ICAM1;CDH5;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;KDR;AKT1;CA14;IFNAR2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;CPT1A;CACNA2D3;CYBB;CYBA;LIG3;HLA-A;PROCR;SCN10A;CACNB3;PPIF;S100A4;ATF5;RAF1;TP53;PPIA;ATF3;ATF4;FTL;CES1;NPR1;GLO1;ITPR1;ITPR2;ITPR3;CSF2RB;ADRB2;CSF2RA;DPP4;NEU1;ABL1;LTA4H;APOE;ELANE;FDPS;PRNP;JUN;ST14;TGFB1;VCAM1;HSPA5;SRD5A1;VDR;BRAF;NFATC1;L1CAM;NFKB1;NFKBIA;SELP;PROC;ALB;ATM;CALR;SHBG;CALM1;FGFR4;HLA-DRB1;FGFR2;FGFR1;MCFD2;ORM1;FLT1;FLT3;FLT4;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;ADRA1B;ORM2;ASGR2;IKBKB;CASP9;POLB;TUBA1A;CPT2;CA2;CASP3;RAC2;CASP1;PDE4B;ITGAV;RAC1;JAK2;JAK1;MBL2;ANXA

									1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TUBB;MMP2;PDE4D;SIGMAR1;FOS;HBA1;F2;ADRA2C;F3;F7;F9;CANX;KIT;TLR9;TLR8;MET;TLR4;TLR3;HLA-DQB1;TLR2;PTGER4;PRKAA1;PRKAA2;PCNA;LRP1;SERPINC1;PTGER2;ETFDH;NOD2;PTGS2;ADCY5;PTGS1;CACNG6;LMAN1;NRAS;PGRMC1;RXRA;MAPK7;CCL5;CCL3;MAPK1;PTK2B;SLC25A20;MAPK6;CD55;MAPK4;MAPK3;CRBN;F10;STAT1;GSS;PTGES3;F11;STAT3;PTPN11;TUBB4B;MAPK15;VEGFA;CD4;FCGR2A;KRAS;CRAT;FRK;PF4
	Autodegradation of the E3 ubiquitin ligase COP1 Homo sapiens R-HSA-349425	0.351755	ATM;TP53				Notochord	0.606092	TGFB1
	Regulation of PLK1 Activity at G2/M Transition Homo sapiens	0.353434	TUBA1A;TUBB;TUBB4B				Procyclic form	0.616447	PTGER1

	R-HSA-2565942								
	Metabolism of nucleotides Homo sapiens R-HSA-15869	0.3534	NT5E;TYMS;XDH				Bronchus	0.6181 9	ATF1;ATF2;IL1RN;HTR4;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D4;GABRG3;PRKAB1;SFRP4;KCNQ3;KCNQ5;SIK1;ATF5;TP53;ATF3;ATF4;CES1;EPHA2;SLC22A5;PDE1C;PDE1A;SDC2;GRIN2A;PPP3R2;LTA4H;APOE;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CD209;REN;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;ACY1;IFNA1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;TLR9;TLR8;PPARG;TLR7;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;TYMS;GLRA1;LMAN1;NRAS;PGRMC1;RXRA;CX

									CR1;CHRNA10;GABRE;GABRD;CD55;GABRA2;P2RY12;CA12;GABRP;CRBN;GABRA6;STAT1;IFNB1;GABRA4;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;NCF1;PROS1;NCF4;FGF1;NR3C1;FGF4;NR3C2;CDH5;FADS2;CCND1;FPGS;SCN9A;PDE8B;PDE8A;FADS1;CA14;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;LIG3;CACNB1;CACNB2;PROCR;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;CACNA1B;ITPR2;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CACNA1H;CACNA1G;HRH1;HRH4;ABL1;DRD1;DRD2;GRIA3;DRD5;FDPS;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;

									MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1A;CASP9;POLB;CA1;CPT2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;DDX58;MMP2;PDE4D;SIGMAR1;PDE4C;HTR3B;ADRA2C;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;ETFDH;NOD2;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;PDE6A;MAPK6;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;SLC12A1;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Transport to the Golgi and subsequent modification Homo sapiens R-HSA-948021	0.35694	GRIA1;LMAN1;MCFD2;F8;CD55				Photoreceptor cell	0.62578	GUCY1A2

	Amine-derived hormones Homo sapiens R-HSA-209776	0.35729	TPO				Orbit	0.63488	F2
	Nonhomologous End-Joining (NHEJ) Homo sapiens R-HSA-5693571	0.36055	PRKDC;ATM				Carcinomacell	0.64375	TGFB1
	Defective B3GALT6 causes EDSP2 and SEMDJL1 Homo sapiens R-HSA-4420332	0.37289	SDC2				Ilealmucosa	0.64375	PLA2G2A
	Defective B4GALT7 causes EDS, progeroid type Homo sapiens R-HSA-3560783	0.37289	SDC2				Salivarygland	0.64602	ATF1;ATF2;PRSS1;SERPINE1;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D4;GABRG3;PRKAB1;GABRG1;SFRP4;SCN10A;AGTR1;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;GRI

									N2A;PPP3R2;LTA4H;APOE;SCN3A;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;DDR1;RYR1;RYR2;GABRB1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;CCR4;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;PTH2R;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;IL1B;KCNMA1;CANX;KIT;TLR9;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;F10;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H

									4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;NCF1;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;FGF4;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CACNA1D;CSF2RB;ADRB2;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH4;ABL1;CACNA1S;DRD2;GRIA3;GRIA4;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;VDR;HTR1D;SRD5A3;HTR1A;HTR1B;NFKB1;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;AL

									B;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;ADRA1A;CASP9;POLB;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3B;ADRA2C;MMP9;ADORA2A;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Defective B3GAT3 causes JDSSDHD Homo	0.372	SDC2				Neuroblasto	0.667	SCN11A;CACNA2D1;CACNA1D;FADS1

	sapiens R-HSA-3560801	89					macell	87	
	Translesion Synthesis by POLH Homo sapiens R-HSA-110320	0.37289	PCNA				Mammary gland	0.67126	PRKAA1;KCNJ11;SIGMAR1;NOD2;F2;FGFR4;ATP2C1;FGFR2;VEGFA
	Ephrin signaling Homo sapiens R-HSA-3928664	0.37289	RAC1				Motoneuron	0.67714	GRIN3B
	Golgi Associated Vesicle Biogenesis Homo sapiens R-HSA-432722	0.37801	FTH1;FTL				Pericardium	0.68499	CA3
	Stabilization of p53 Homo sapiens R-HSA-69541	0.37801	ATM;TP53				Tongue	0.68924	FADS2;VCAM1;CASP3;PDE2A;PDE4C;PLA2G2A;AKR1C3;TNFSF11;TMPRSS2;SLC7A11
	Host Interactions of HIV factors Homo sapiens R-HSA-162909	0.38189	CD4;HLA-A;RAC1;PPIA				Stratified epithelium	0.69264	TP53
	Ion	0	ATP2C1;CALM1				Se	0	ATF1;ATF2;PRSS1;

	transport by P-type ATPases Homo sapiens R-HSA-936837	.38667					minal vesicle	.69808	SERPINE1;HTR4;MT-ND1;ICAM1;RPS6KA3;EDNRA;HTR7;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D4;GABRG3;PRKAB1;ACE2;AR;SFRP4;KCNQ3;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF4;CES1;ABCB1;PDE1C;PDE1A;SDC2;GRIN2A;LTA4H;APOE;SCN3A;ACE;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;REN;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;IFNA1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;IL13;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;KIT;TLR9;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;TMPRSS2;ADCY2;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;CHRNA10;GABRE;GABRD;CD55;GABRA2;P2RY12;CA

									12;GABRQ;GABRP;CRBN;GABRA6;IFNB1;GABRA4;PTGES3;STAT3;NR1H4;TUBB4B;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;NCF1;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;ADORA3;FPGS;SCN9A;PDE8B;FADS1;CA14;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;LIG1;HGF;LIG3;CACNB1;PROCR;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;PDE9A;IFNAR1;GRIA2;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR3;CSF2RB;CACNA1C;CACNA1E;CACNA1H;DPP4;TPO;HRH4;ABL1;DRD1;CACNA1S;GRIA3;FDPS;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1D;SRD5A3;HTR1A;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1A;CASP9;POLB;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CDC51;CHUK;VWF

									;DDX58;MMP2;PDE4D;SIGMAR1;HTR3B;ADRA2C;MMP9;PIK3CA;IFNG;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;PRKAA2;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;LIMK1;OPRK1;CCK;MAPK15;MAPK11;CD4;KRAS;PDE7B;TEK;PDE7A
	Regulation of gene expression in beta cells Homo sapiens R-HSA-210745	0.38812	AKT1				Vagina	0.70212	ATF1;ATF2;IL1RN;HTR4;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;PRKAB1;KCNQ3;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;EPHA2;PDE1C;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;PDE2A;BRAF;GRIN2C;L1CAM;GRIN2D;CALY;CD209;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;ORM1;PRKAG2;PTH1R;CROT;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;ANXA1;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;

									F3;F7;IL1A;F8;CANX;TLR9;PPARG;TLR7;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;ADCY2;ADCY1;PTGS1;LMAN1;NRAS;NT5E;RXRA;GABRE;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;GABRA6;IFNB1;GABRA4;GSS;PTGES3;STAT3;NR1H4;TUBB4B;GRIN1;VEGFA;CRAT;NEK11;CHRM2;CHRM3;CHRM5;FGF1;NR3C1;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;PDE8B;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;LIG3;CACNB1;CACNB2;PROCR;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;CHRNA7;CACNA1B;ITPR2;ITPR3;CSF2RB;CACNA1C;CACNA1E;CSF2RA;CACNA1H;HRH4;ABL1;GRIA3;VCAM1;HTR1E;HSPA5;HTR1F;HTR1D;NFKB1;IL2;NFKBIA;PROC;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FL

									T1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;ADRA1A;CASP9;POLB;CPT2;CA4;CA7;CASP1;ITGAV;CCDC51;CHUK;VWF;DDX58;MMP2;PDE4D;SIGMAR1;HTR3B;ADRA2C;PIK3CA;IL3RA;MET;CRP;PRKAA1;LRP1;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;TEK
	Synthesis, secretion, and inactivation of Glucagon-like Peptide-1 (GLP-1) Homo sapiens R-HSA-381771	0.38812	DPP4				Colonic cancer cell	0.71597	PDGFRA;WARS;PARP1;HSPA5;ALB;BRAF;PDE5A;KRAS;CALR;CALM1;MAPK15;JAK1
	Signaling by Hippo Homo sapiens R-HSA-2028269	0.3881	CASP3				Root tip	0.7214	CALM1

		2						6	
	Synthesis of PC Homo sapiens R-HSA-1483191	0.38812	ACHE				Parenchyma	0.72367	PROS1;SERPINE1;HTR4;NR3C1;ICAM1;CDH5;FADS2;HTR6;CCND1;MYC;FTH1;FPGS;SCN9A;KDR;AKT1;FADS1;CA14;IFNAR2;CHRNB2;PDGFRA;MAP2K1;SLC15A1;CPT1A;CACNA2D2;CYBA;PROCR;SCN10A;PPIF;S100A4;ATF5;RAF1;ATF6;TP53;ATF4;GRIA1;CALCA;NPR1;GLO1;SDC2;NPR2;ITPR1;DPP4;NEU1;ABL1;LTA4H;APOE;FDPS;PRNP;JUN;ST14;TGFB1;VCAM1;HSPA5;NFKBIA;IL6;IL7;CALR;CALM1;FGFR1;DDR1;MCFD2;ACY1;TNFAIP6;PRKAG1;SLC7A11;CKS1B;CASP9;POLB;TUBA1A;CA3;CASP3;RAC2;ITGAV;RAC1;JAK1;ANXA1;WARS;CHUK;CAMLG;PARP1;DDX58;TUBB;MMP2;SIGMAR1;ADRA2C;F3;ADORA2B;IL1B;CANX;PDE5A;PPARA;HLA-DQB1;PCNA;LRP1;PTGS2;TYMS;TFPI;ADCY5;PTGS1;NT5E;PGRMC1;GLRA3;RXRA;CCL2;PDE6C;SLC25A20;MAPK6;CD55;CRBN;STAT1;GSS;PTGES3;STAT

									3;AKR1C3;PTPN11;VEGFA;FAS;KRAS;TEK;CRAT
	HS-GAG degradation Homo sapiens R-HSA-2024096	0.402977	SDC2				Blood	0.729820	ATF1;ATF2;IL1RN;NCF1;NCF4;NR3C1;TNF;MPO;ICAM1;RPS6KA3;HTR6;MYC;FTH1;FPGS;AKT1;CA14;IFNAR2;CHRNB2;MAP2K1;CPT1A;LIG1;CYBB;CYBA;HLA-A;SCN10A;PPIF;S100A4;ATF5;RAF1;TP53;PPIA;ATF3;ATF4;FTL;CES1;PRKDC;NPR1;GLO1;SDC2;CSF2RB;ADRB2;CSF2RA;NEU1;LTA4H;CACNA1S;ELANE;FDPS;PRNP;JUN;TGFB1;HSPA5;VDR;PRG2;L1CAM;NFKB1;IL2;NFKBIA;ALB;ATM;CALR;CALM1;HLA-DRB1;DDR1;MCFD2;ORM1;TNFAIP6;ITGB3;PRKAG1;PIK3CD;HBB;PIK3CB;CROT;IKBKB;CASP9;POLB;CA1;TUBA1A;CA2;CASP3;CA4;RAC2;CASP1;PDE4B;ITGAV;RAC1;JAK2;JAK1;MBL2;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TUBB;SIGMAR1;FOS;HBA1;MMP9;IL1B;CANX;TLR8;SLC29A1;TLR4;HLA-DQB1;TLR2;PTGER

									4;PCNA;LRP1;PTGER2;NOD2;PTGS2;ATP2C1;ADCY5;PTGS1;SLC25A29;PGRMC1;RXRA;CXCR1;CCL5;CCL3;CCL2;MAPK1;PTK2B;SLC25A20;MAPK6;CD55;MAPK3;CRBN;STAT1;GSS;PTGES3;STAT3;PTPN11;CD4;FCGR2A;FAS;KRAS;CRAT
	TP53 regulates transcription of additional cell cycle genes whose exact role in the p53 pathway remain uncertain Homo sapiens R-HSA-6804115	0.402977	TP53				Prefrontal cortex	0.731223	ATF2;CHRM3;FGF1;NR3C1;AQP1;ICAM1;NR3C2;FADS2;HTR6;MYC;FTH1;FPGS;ADORA1;AKT1;PDE8B;PDE8A;FADS1;CA14;SCN1A;IFNAR2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;CPT1A;PHYH;CACNA2D2;GABRG2;CACNB2;SCN10A;CACNB3;PPIF;RAF1;ATF4;GRIA1;GRIA2;PRKDC;NPR1;GLO1;ITPR1;CACNA1A;CACNA1I;NEU1;ABL1;LTA4H;APOE;SCN3A;FDPS;PRNP;ST14;VCAM1;HSPA5;PDE2A;L1CAM;NFKBIA;CALY;CALR;CALM1;SCN2A;FGFR2;FGFR1;DDR1;RYR2;GABRB1;MCFD2;ACY1;THRA;PRKAG1;HTR2A;PIK3CB;CROT;SLC7A11;CASP9;POLB;TUBA1A;CA2;CA4;PDE4B;PDE4A

									;ITGAV;RAC1;JAK1;MBL2;ANXA1;WARS;CHUK;GGPS1;VWF;CAMLG;PARP1;PARP2;DDX58;TUBB;ADRA2C;F3;F8;PIK3CA;CANX;KIT;PPARD;PCNA;LRP1;ADCY2;ADCY1;ATP2C1;ADCY5;PGRMC1;RXRA;MAPK1;PTK2B;SLC25A20;MAPK6;CACNG3;GABRD;GABRA2;GABRA1;KCNJ6;CRBN;GABRA5;STAT1;GSS;NTRK3;PTGES3;STAT3;PTPN11;CCK;GRIN1;VEGFA;KRAS;TEK;CRAT
	Cobalamin (Cbl, vitamin B12) transport and metabolism Homo sapiens R-HSA-196741	0.402897	PRSS1				Oviduct	0.755566	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;HTR4;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D4;GABRG3;PRKAB1;GABRG1;ACE2;AR;KCNQ3;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1A;SDC2;GRIN2A;PPP3R2;LTA4H;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CD209;PDE3A;REN;ATM;CALR;CALM1;RET;GABRB2;RYR2;GABRB1;IFNA1;PRKAG2;HBB;PT

									H1R;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;TNNC1;IL13;HBA1;F2;F3;PTGR2;F7;IL1A;F8;KCNMA1;CANX;KIT;TLR9;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;CYP17A1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;GABRD;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;CHRM2;CHRM3;CHRM1;NCF1;PROS1;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;KCNH2;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;LIG3;CACNB1;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;PDE9A;IFNAR1;

									GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;CACNA1B;ITPR2;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1E;CACNA1H;CACNA1G;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;FDPS;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1D;SRD5A3;NFKB1;IL2;NFKBIA;SELP;PROC;IL7;FGF19;ALB;FGFR4;FGFR1;MCFD2;FLT1;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;CASP9;POLB;CPT2;CASP3;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;PIK3CA;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;CACNG3;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;KCNJ11;SLC12A1;LIMK1;OPRK1;PTPN11;CCK;MAPK15;MAPK11;CD4;KRAS;PDE7B;

									TEK;PDE7A
	Synthesis of Leukotrienes (LT) and Eoxins (EX) Homo sapiens R-HSA-2142691	0.402977	LTA4H				Somite	0.759711	FGFR1
	Aflatoxin activation and detoxification Homo sapiens R-HSA-5423646	0.402977	ACY1				Lymphoid tissue	0.771125	FRK
	Mitochondrial tRNA aminoacylation Homo sapiens R-HSA-379726	0.402977	WARS2				Tooth enamel	0.782244	ALB
	Initial triggering of complement Homo sapiens R-HSA-166663	0.412321	CRP;MBL2				Pancreas	0.782988	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;CACNA2D4;HLA-A;GABRG3;PRKAB1;GABRG1;ACE2;SFRP4;SCN10A;KCN

									Q3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1A;SDC2;GRIN2A;PPP3R2;NEU1;LTA4H;APOE;SCN3A;ELANE;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;CALY;CD209;PDE3A;REN;ATM;CALR;CALM1;HLA-DRB1;GABRB3;RET;DDR1;GABRB2;RYR2;GABRB1;ORM1;ACY1;PTGDR2;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC7A11;ORM2;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;IL13;PTH2R;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;F9;IL1B;KCNMA1;CANX;KIT;TLR9;SLC29A4;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;OPRD1;PTGER4;PCNA;SERPINC1;PTGER3;TMPRSS2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;CYP17A1;GLRA1;LMAN1;NRAS;NT5E

									;PGRMC1;RXRA;CXCR1;CHRNA10;GABRE;GABRD;XDH;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;F10;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;F11;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;CHRM4;PROS1;NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;ADORA1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;CHRNB4;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;CACNA1A;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;DPP4;H

									RH4;ABL1;DRD1;DRD2;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;VDR;HTR1D;SRD5A3;HTR1B;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;PDE4C;HTR3B;ADRA2C;MMP9;ADRA2A;ADORA2A;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;CACNG6;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;CACNG2;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ6;KCNJ11;NOS2;NTRK3;LIMK1;PLA2G

									2A;OPRK1;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;TEK;PDE7A
	SUMO E3 ligases SUMOylate target proteins Homo sapiens R-HSA-3108232	0.412663	PCNA;PARP1;TP53				Inciso r	0.787544	TNFSF11
	RA biosynthesis pathway Homo sapiens R-HSA-5365859	0.417466	AKR1C3				Renal cell carcinoma cell	0.807447	CA12
	ADP signalling through P2Y purinoceptor 12 Homo sapiens R-HSA-392170	0.417466	P2RY12				Eye	0.815244	SERPINE1;AQP1;NR3C2;FADS2;CCND1;FTH1;KDR;AKT1;FADS1;CA14;KCNH2;PDGFRB;PDGFRA;PHYH;LIG1;CYBA;CACNA2D4;HLA-A;PRKAB1;GABRG2;SFRP4;PROCR;CACNB3;GPD1;PPIF;S100A4;ATF5;RAF1;ATF6;PPIA;ATF4;FTL;CHRNA3;PRKDC;GLO1;SDC2;NPR2;CACNA1A;CACNA1F;CACNA1G;NEU1;ABL1;LTA4H;APOE;DRD4;GRIA4;FDPS;PRNP;JUN;TGFB1;HSPA5;SRD5

									A3;NFKB1;NFKBIA;GGCX;CALY;ALB;ATM;CALR;CALM1;HLA-DRB1;FGFR2;FGFR1;GABRB3;DDR1;MCFD2;FLT1;ACY1;THRA;PRKAG1;PRKAG2;HBB;CROT;CKS1B;TUBA1A;CA3;CA2;SMPD1;RAC2;ITGAV;RAC1;CCDC51;PARP3;ANXA1;WARS;VWF;PARP1;MMP2;SIGMAR1;FOS;PIK3CA;CANX;SLC29A4;SLC29A1;JDP2;DDR2;PRKAA2;PCNA;LRP1;ADCY1;TYMS;ATP2C1;LMAN1;NRAS;SLC25A29;PGRMC1;RXRA;MAPK7;ERBB2;CCL2;MAPK1;PDE6B;PDE6A;MAPK4;MAPK3;CA12;CRBN;STAT1;GSS;PTGES3;STAT3;LIMK1;PLA2G2A;GRIN1;VEGFA;FAS
	Anchoring of the basal body to the plasma membrane Homo sapiens R-HSA-5620912	0.419111	TUBA1A;TUBB;TUBB4B				Nasopharynx	0.817661	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;MT-ND1;AQP1;ICAM1;RPS6KA3;EDNRA;HTR7;SCN11A;MYC;FTH1;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D4;GABRG3;PRKAB1;KCNQ3;SIK1;ATF5;ATF6;ATF4;CES1;EPHA2;SLC22A5;PDE1C;PDE1A;S

									DC2;GRIN2A;LTA4H;SCN3A;JUN;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;REN;CALR;CALM1;RET;RYR2;GABRB1;IFNA1;PRKAG2;HBB;PTH1R;CROT;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;IL10;ANXA1;CAMLG;PARP1;PARP2;IL13;FOS;HBA1;F2;F3;F7;IL1A;F8;KCNMA1;CANX;TLR9;TLR8;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;CD55;GABRA2;P2RY12;CA12;GABRQ;GABRP;CRBN;STAT1;IFNB1;GABRA4;GSS;AKR1C1;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;FGF1;NR3C1;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;FADS1;CA14;KCNH2;P

									DGFRB;GUCY1A2;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB4;GPD1;PLA2G10;PGR;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1C;CACNA1E;CACNA1H;HRH1;HRH4;ABL1;DRD1;GRIA3;DRD5;FDPS;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;HTR1D;SRD5A3;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;CASP9;POLB;CA1;CPT2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;HTR3B;PIK3CA;IFNG;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;PDE11A;M

									APK7;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;MAPK3;NTRK1;KCNJ5;SLC12A3;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;OPRK1;PTPN11;MAPK15;MAPK11;CD4;FCGR2A;PDE7B;TEK;PDE7A
	DNA Damage/ Telomere Stress Induced Senescence Homo sapiens R-HSA-2559586	0.420075	ATM;TP53				Finger	0.835055	AR;CD4;TGFB1;MYC;LTA4H;F2;CCR5;TP53
	Telomere Maintenance Homo sapiens R-HSA-157579	0.420075	PCNA;LIG1				Branchial arch	0.841911	EDNRA
	SCF(Skp2)-mediated degradation of p27/p21 Homo sapiens R-HSA-187577	0.420075	CCND1;CKS1B				Adipose tissue	0.843666	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;ICAM1;RPS6KA3;EDNRA;MYC;FTH1;KDR;AKT1;TNFSF11;PRKAB2;CPT1A;CACNA2D1;CACNA2D4;HLA-A;PRKAB1;ACE2;AR;SFRP4;AGTR1;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PRKDC;PDE1B;PDE1A;SDC2

									;NEU1;LTA4H;APOE;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;L1CAM;GRIN2B;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;DDR1;RYR1;GABRB2;ACY1;IFNA1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK3;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;FOS;HBA1;F3;PTGR2;F7;F8;KCNMA1;CANX;KIT;SLC29A4;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;PTGER1;PTGER2;PTGER3;TMPRSS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;XDH;CD55;P2RY12;CA12;CRBN;F10;GABRA6;STAT1;GSS;AKR1C1;PTGES3;STAT3;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;NEK11;PROS1;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;FPGS;SCN9A;ADORA1;P

									DE8B;PDE8A;FADS1;IFNAR2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;PROCR;CACNB3;GPD1;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;NPR1;GLO1;NPR2;ITPR1;ITPR2;ITPR3;ADRB1;CSF2RB;ADRB2;CACNA1C;CSF2RA;CACNA1H;DPP4;TPO;HRH1;ABL1;DRD5;FDPS;PRNP;TGFB1;VCAM1;HSPA5;VDR;SRD5A3;NFKB1;NFKBIA;SELP;IL6;PROC;GGCX;IL7;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;ITGB3;PDE3B;HTR2B;PIK3CD;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CASP1;PDE4B;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;HTR3C;ADRA2B;MMP9;ADRA2A;PIK3CA;IL3RA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;PTK2B;SL

									C25A20;PDE6A;MAPK6;MAPK4;MAPK3;KCNJ5;NOS2;LIMK1;PLA2G2A;PTPN11;WARS2;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Metabolism of water-soluble vitamins and cofactors Homo sapiens R-HSA-196849	0.42558	PRSS1;FPGS;PTGS2				Melanoma cell line	0.84943	MCFD2;HSPA5;MMP2;CANX;RAC1;FADS1
	RHO GTPases activate PKNs Homo sapiens R-HSA-5625740	0.42912	AR;RAC1				B-cell lymphoma cell	0.85129	CANX;NFATC1
	Laminin interactions Homo sapiens R-HSA-3000157	0.43166	ITGAV				Bone marrow	0.85587	ATF1;ATF2;PRSS1;IL1RN;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;MYC;FTH1;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D3;CACNA2D4;GABRG3;PRKAB1;SCN10A;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;PDE1C;PDE1B;

									PDE1A;SDC2;LTA4H;APOE;SCN3A;ELANE;JUN;ST14;ACE;PDE2A;PRG2;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RET;RYR2;GABRB1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;ORM2;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR4;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;IL13;PTH2R;FOS;HBA1;F2;F3;F7;IL1A;F8;IL1B;KCNMA1;CANX;KIT;TLR9;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;PPARD;SLC29A2;TLR2;OPRD1;PTGER4;PCNA;SERPINC1;PTGER2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;CYP17A1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CXCR1;GABRE;XDH;CD55;GABRA2;P2RY12;GABRQ;GABRP;CRBN;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CD40

									LG;FAS;CRAT;FRK;PF4;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;CHRM5;NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;FGF4;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;GUCY1A2;PDGFRA;MAP2K1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;PROCR;CACNB4;GPD1;PLA2G10;PPIF;S100A4;RAF1;PPIA;FTL;IFNAR1;GRIA1;GRIA2;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;ITPR1;CACNA1B;ITPR2;ITPR3;CSF2RB;ADRB2;CACNA1C;CACNA1E;CSF2RA;CACNA1H;CACNA1G;HRH2;HRH4;ABL1;DRD1;CACNA1S;DRD2;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;VDR;HTR1D;SRD5A3;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;PDE3B;HTR2B;HTR2C;PIK3CD;ADRA1D;PIK3CB;CKS1B;CA

									SP9;POLB;CA1;CA3;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;HTR3E;MMP2;PDE4D;AVPR2;SIGMAR1;ADRA2C;MMP9;ADORA2A;PIK3CA;IFNG;IL3RA;CRH;PDE5A;MET;CRP;PRKAA1;LRP1;ETFDH;OPRL1;NOD2;ATP2C1;TFPI;CACNG7;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;KCNJ3;MAPK3;KCNJ5;SLC12A3;KCNJ6;NTRK3;LIMK1;PLA2G2A;PTPN11;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Downregulation of SMAD2/3:SMAD4 transcriptional activity Homo sapiens R-HSA-2173795	0.4316	PARP1				Pineal gland	0.869320	ATF1;ATF2;PROS1;NR3C1;AQP1;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;ADORA1;AKT1;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRA;MAP2K1;CPT1A;PHYH;CACNA2D2;GABRG2;CACNB2;SCN10A;S100A4;SIK1;RAF1;ATF3;ATF4;GRIA1;G

									RIA2;CALCA;CHRNA3;CALCB;PRKDC;NPR1;GLO1;SDC2;NPR2;ITPR1;CACNA1A;ADRB1;CACNA1G;NEU1;ABL1;LTA4H;APOE;CACNA1S;FDPS;PRNP;ST14;VCAM1;HTR1E;HSPA5;PDE2A;L1CAM;NFKBIA;CALR;CALM1;FGFR1;DDR1;RYR1;RYR2;MCFD2;ACY1;THRA;PRKAG1;HTR2C;PIK3CB;CROT;SLC7A11;SLC6A4;IKBKB;CASP9;POLB;TUBA1A;CA2;PDE4A;ITGAV;RAC1;JAK1;ANXA1;WARS;CHUK;GGPS1;VWF;CAMLG;PARP1;PARP2;DDX58;TUBB;MMP2;PDE4D;SIGMAR1;FOS;ADRA2C;F3;F8;KCNMA1;IL3RA;CANX;PPARD;PCNA;LRP1;ADCY2;ADCY1;TYMS;ADCY5;PTGS1;PGRMC1;RXRA;SLC25A20;MAPK6;CD55;NTRK1;GABRA1;KCNJ6;CRBN;STAT1;GSS;PTGES3;STAT3;PTPN11;VEGFA;PDE10A;KRAS;CRAT
	Incretin synthesis, secretion, and inactivati	0.4316	DPP4				Aorta	0.8733	PGR

	on Homo sapiens R-HSA-400508							6	
	Hedgehog 'off' state Homo sapiens R-HSA-5610787	0.43201	ADCY2;ADCY1;ADCY5				Lymphnode	0.88019	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;TNFSF11;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D4;GABRG3;PRKAB1;SFRP4;SCN10A;KCNQ3;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;PPP3R2;LTA4H;APOE;SCN3A;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;CD209;PDE3A;REN;ATM;CALR;CALM1;HLA-DRB1;RET;DDR1;RYR1;RYR2;GABRB1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC6A3;IKBKB;TUBA1A;SMPD1;RAC2;CTLA4;RAC1;JAK2;CCR5;CCR4;JAK1;IL10;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;IL1

									B;KCNMA1;CANX;KIT;TLR9;TLR8;PPARG;TLR7;PPARA;SLC29A1;TLR4;JDP2;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;PTGER2;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;CD55;GABRA2;P2RY12;GABRA1;GABRP;CRBN;F10;STAT1;IFNB1;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;NCF1;PROS1;NCF4;FGF1;NR3C1;FGF2;MPO;SLC8A1;FGF4;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;GPD1;PLA2G10;PPIF;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA1;GRIA2;CHRNA5;CHRN

									A4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1E;CSF2RA;CACNA1H;DPP4;CACNA1I;TPO;HRH2;HRH4;ABL1;CACNA1S;DRD2;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;SRD5A1;VDR;HTR1D;SRD5A3;NFKB1;IL2;NFKBIA;SELP;IL6;PROC;GGCX;IL7;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;PDE3B;HTR2B;HTR2C;PIK3CD;PIK3CB;CASP9;POLB;CPT2;CA2;CASP3;CA4;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;AVPR2;SIGMAR1;HTR3A;ADRA2C;MMP9;ADRA2A;ADORA2A;PIK3CA;IFNG;IL3RA;PDE5A;MET;CRP;PRKAA1;LRP1;ETFDH;OPRL1;NOD2;ATP2C1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT

									1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ6;NOS2;NTRK3;LIMK1;PLA2G2A;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	Cell death signalling via NRAGE, NRIF and NADE Homo sapiens R-HSA-204998	0.43742	CASP3;RAC1				Spermatid	0.88423	AR;SHBG
	Transport of glucose and other sugars, bile salts and organic acids, metal ions and amine compounds Homo sapiens R-HSA-425366	0.44481	SLC22A5;SLC6A2;SLC6A3				Intestine	0.8892	PRSS1;IL1RN;PROS1;AQP1;ICAM1;CCND1;MYC;FTH1;FPGS;AKT1;FADS1;PDGFRB;MAP2K1;CPT1A;LIG1;CYBA;HLA-A;PRKAB1;ACE2;SFRP4;PROCR;PPIF;S100A4;ATF5;RAF1;ATF6;TP53;PPIA;ATF3;PDE9A;ATF4;FTL;IFNAR1;EPHA2;PRKDC;GLO1;SDC2;ITPR3;CACNA1D;CACNA1F;DPP4;NEU1;ABL1;LTA4H;APOE;FDPS;PRNP;JUN;ST14;HSPA5;SRD5A1;VDR;NFKB1;NFKBIA;REN;ATM;CALR;CALM1;FGFR4;HLA-DRB1;FGFR1;DDR1

									;ACY1;THRA;PRKAG1;PRKAG2;HBB;CKS1B;IKBKB;CA1;TUBA1A;CA2;CASP1;ITGAV;RAC1;ANXA1;WARS;GGPS1;VWF;PARP1;MMP2;SIGMAR1;FOS;MMP9;PIK3CA;CANX;PPARG;PPARA;SLC29A1;MET;HLA-DQB1;SLC29A2;DDR2;PCNA;LRP1;TMPRSS2;ATP2C1;LMAN1;NT5E;PGRMC1;RXRA;ERBB2;CCL2;MAPK1;SLC25A20;CD55;MAPK3;CA12;SLC12A3;CRBN;STAT1;GSS;PTGES3;STAT3;PLA2G2A;AKR1C3;PTPN11;CD4;KRAS
	SUMOylation Homo sapiens R-HSA-2990846	0.44481	PCNA;PARP1;TP53				Superior cervical ganglion	0.912	CHRM5;NR3C1;FADS2;HTR6;MYC;FTH1;FPGS;SCN9A;AKT1;FADS1;CA14;IFNAR2;CHRNB2;PDGFRA;SLC15A1;CPT1A;CACNA2D2;SFRP4;SCN10A;S100A4;ATF5;RAF1;ATF3;ATF4;CES1;GRIA1;CALCA;CHRNA3;NPR1;GLO1;NPR2;CACNA1S;PRNP;JUN;ST14;VCAM1;HSPA5;VDR;SRD5A3;BRAF;L1CAM;NFKBIA;IL7;ATM;CALR;CALM1;FGFR1;DDR1;TNFAIP6;PRKAG1;PIK3CB;CROT;CASP9;POLB;TUBA

									1A;CA3;PDE4B;ITGAV;RAC1;CCR5;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TUBB;MMP2;SIGMAR1;FOS;ADRA2C;F3;F8;IL3RA;CANX;PDE5A;PPARA;HLA-DQB1;PCNA;LRP1;TFPI;ADCY5;LMAN1;NT5E;PGRMC1;GLRA3;RXRA;CCL2;PDE6C;SLC25A20;MAPK6;XDH;KCNJ3;CRBN;GSS;STAT3;SLC12A1;PTPN11;VEGFA;KRAS;TEK;CRAT
	TNFs bind their physiological receptors Homo sapiens R-HSA-5669034	0.4454	TNFSF11				Umbilical cord blood	0.92379	PRKAA1;HRH4;PPIF;HBA1;MMP9
	Cytosolic tRNA aminoacylation Homo sapiens R-HSA-379716	0.4454	WARS				Pronephros	0.92807	PGRMC1;CRBN;PARP1;LIG1;PRKDC;PTGES3;ATM;ADRB2;RAF1;PTGR2;TP53;SLC8A1
	Cell Cycle, Mitotic Homo sapiens R-HSA-69278	0.4455	TUBA1A;PCNA;CCND1;LIG1;MYC;TUBB;MAPK1;TUBB4B;TYMS;TP53;CKS1B;MAPK3				Caudate nucleus	0.93875	DDR1;RYR2;MCFD2;THRA;PRKAG1;HTR2C;PIK3CB;SLC7A11;FGF1;NR3C1;AQP1;ICAM1;CASP9;POLB;FADS2;HTR6;TUBA1A;CA2;

									MYC;FTH1;FPGS;PDE4B;ITGAV;RAC1;PDE8B;PDE8A;FADS1;CA14;JAK1;CHRNB2;MAP2K1;CPT1A;ANXA1;WARS;GGPS1;VWF;CAMLG;PARP1;DDX58;TUBB;CACNA2D3;CACNA2D2;FOS;ADRA2C;F3;SCN10A;ADORA2A;CANX;KIT;PPIF;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;CACNA1A;ADCY2;ADCY1;ADCY5;PGRMC1;RXRA;MAPK1;LTA4H;SLC25A20;APOE;MAPK6;CACNG3;SCN3A;XDH;GABRA2;CA12;FDPS;PRNP;ST14;CRBN;HSPA5;GABRA5;GSS;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;L1CAM;GRIN1;NFKBIA;PDE10A;CALY;CALR;CALM1;CRAT;FGFR2;FGFR1
	HIV Life Cycle Homo sapiens R-HSA-162587	0.447 27	CD4;LIG1;CCR5;PPIA				Peripheral nervous system	0.942 33	TMPRSS2;ADRA2A
	HIV Infection	0.	CD4;LIG1;HLA-A;RAC1;CCR5;PPIA				Neur	0.	PDGFRA

	Homo sapiens R-HSA-162906	45218					al tu be	94661	
	p53-Dependent G1/S DNA damage checkpoint Homo sapiens R-HSA-69580	0.45383	ATM;TP53				T-cell chronic lymphocytic leukemia cell	0.9508	ATF1;ATF2;PRKAA1;SLC22A5;PRKDC;ITPR3;TYMS;NR3C1;ICAM1;IKBKB;RPS6KA3;CACNA1I;NT5E;PGRMC1;PDE11A;ABL1;PDE4A;MAPK1;ITGAV;MAPK6;JAK3;MAPK3;KCNH2;PRNP;PRKAB2;JUN;PARP1;LIG1;STAT1;PTGES3;CACNA2D2;BRAF;PTPN11;LIG3;FOS;PRKAB1;NFKB1;ALB;CANX;PDE7B;SLC29A1;CALM1;RAF1;PPIA;ATF4;IFNAR1
	p53-Dependent G1 DNA Damage Response Homo sapiens R-HSA-69563	0.45383	ATM;TP53				A mygdala	0.95899	ATF2;FGF1;NR3C1;AQP1;ICAM1;NR3C2;FADS2;HTR6;MYC;FTH1;FPGS;ADORA1;AKT1;PDE8B;PDE8A;FADS1;CA14;SCN1A;CHRNB2;PDGFRA;MAP2K1;CPT1A;PHYH;CACNA2D3;CACNA2D2;SCN10A;CACNB3;PPIF;RAF1;ATF4;GRIA1;GRIA2;NPR1;GLO1;SDC2;ITPR1;CACNA1A;LTA4H;APOE;SCN3A;FDPS;PRNP;ST14;HSPA5;PDE2A;L1CAM;NFKBIA;CALY;CALR;CALM1;FGFR2;FGF

									R1;DDR1;GABRB1;MCFD2;THRA;PRKAG1;HTR2C;CROT;SLC7A11;CASP9;POLB;TUBA1A;CA2;PDE4B;ITGAV;RAC1;JAK1;WARS;CHUK;GGPS1;VWF;CAMLG;PARP1;DDX58;TUBB;FOS;ADRA2C;F3;CANX;KIT;CRH;PCNA;LRP1;ADCY2;ADCY1;ATP2C1;ADCY5;NT5E;PGRMC1;RXRA;MAPK1;PTK2B;SLC25A20;MAPK6;CACNG3;GABRD;GABRA2;GABRA1;CRBN;GABRA5;STAT1;GSS;NTRK3;PTGES3;STAT3;PTPN11;CCK;GRIN1;VEGFA;KRAS;CRAT
	MHC class II antigen presentation Homo sapiens R-HSA-2132295	0.45749	CANX;HLA-DRB1;HLA-DQB1				Adrenal cortex	0.96562	DDR1;MCFD2;ACY1;PRKAG1;CROT;NR3C1;ICAM1;CASP9;POLB;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;AKT1;ITGAV;RAC1;PDE8A;FADS1;CA14;IFNAR2;CHRNB2;PDGFRA;CPT1A;PHYH;ANXA1;WARS;GGPS1;CAMLG;PARP1;DDX58;TUBB;MMP2;SIGMAR1;CACNA2D2;FOS;ADRA2C;F3;SCN10A;IL3RA;CANX;AGTR1;PPIF;S100A4;SIK1;PDE5A;ATF5;PPARA;RAF1;ATF3;ATF4;HLA

									-DQB1;DDR2;ABCB1;PCNA;LRP1;NPR1;GLO1;TYMS;ADCY5;CYP17A1;NT5E;PGRMC1;RXRA;NEU1;CCL2;PDE6C;LTA4H;SLC25A20;APOE;MAPK6;CD55;FDPS;PRNP;ST14;VCAM1;CRBN;HSPA5;VDR;GSS;PTGES3;STAT3;PDE2A;NR1H4;PTPN11;VEGFA;NFKBIA;CYP11B2;CALR;TEK;CALM1;CRAT;HLA-DRB1;FGFR1
	G0 and Early G1 Homo sapiens R-HSA-1538133	0.458887	PCNA				Filament	0.968222	CALM1
	Budding and maturation of HIV virion Homo sapiens R-HSA-162588	0.458887	PPIA				Trigeminal ganglion	0.968522	DDR1;TNFAIP6;PRKAG1;CROT;FGF1;NR3C1;AQP1;ICAM1;CASP9;FADS2;HTR6;TUBA1A;CA3;MYC;FTH1;FPGS;SCN9A;PDE4B;ITGAV;RAC1;FADS1;CA14;IFNAR2;CHRNB2;SLC15A1;CPT1A;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TNNC1;TUBB;MMP2;FOS;ADRA2C;F3;SFRP4;SCN10A;IL3RA;CANX;S100A4;PDE5A;ATF5;PPARA;RAF1;ATF3;ATF4;H

									LA-DQB1;CES1;CALCA;LRP1;NPR1;GLO1;PTGER2;NPR2;ITPR1;ADRB2;ADCY5;NT5E;PGRMC1;RXRA;CCL2;PDE6C;SLC25A20;APOE;FDPS;PRNP;ST14;CRBN;HSPA5;GSS;PTGES3;STAT3;PLA2G2A;PTPN11;L1CAM;VEGFA;NFKBIA;IL7;CALR;TEK;CALM1;CRAT;FGFR1
	Synthesis of IP3 and IP4 in the cytosol Homo sapiens R-HSA-1855204	0.458867	CALM1				Ophthalmic nerve	0.970042	CHRM5;PRKAG1;CROT;AQP1;ICAM1;FADS2;HTR6;TUBA1A;CA3;MYC;FTH1;FPGS;SCN9A;ITGAV;RAC1;FADS1;CA14;JAK1;IFNAR2;CHRNB2;PDGFRA;CPT1A;ANXA1;WARS;VWF;CAMLG;PARP1;DDX58;TUBB;FOS;ADRA2C;F3;SFRP4;SCN10A;CANX;S100A4;ATF3;ATF4;CALCA;PCNA;CALCB;LRP1;NPR1;GLO1;NPR2;ADCY5;NT5E;PGRMC1;RXRA;CCL2;SLC25A20;APOE;PRNP;ST14;VCAM1;CRBN;HSPA5;GSS;PTGES3;STAT3;PLA2G2A;PTPN11;VEGFA;NFKBIA;IL6;CALR;CALM1;CRAT;FGFR1
	TRP channels Homo	0.4	TRPV1				Natural	0.9	ATF1;ATF2;PRSS1;IL1RN;MT-ND1;ICAM1;RPS6K

	sapiens R-HSA-3295583	587					killer cell	712	A3;HTR6;MYC;FTH1;KDR;AKT1;CPT1A;CACNA2D2;HLA-A;PRKAB1;ACE2;SCN10A;ATF7;SIK1;ATF6;TP53;ATF4;CES1;EPHA2;ABCB1;NEU1;LTA4H;ELANE;JUN;ST14;ACE;PRG2;BRAF;NFATC1;GRIN2C;L1CAM;GRIN3A;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RYR1;RYR2;ACY1;PRKAG1;PRKAG2;HBB;CROT;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;ANXA1;WARS;CAMLG;PARP1;TUBB;FOS;HBA1;F3;F8;CANX;KIT;TLR9;TLR8;PPARA;TLR3;HLA-DQB1;PPARD;TLR2;PTGER4;PCNA;SERPINC1;PTGER2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;PGRMC1;RXRA;GABRE;XDH;CD55;CRBN;STAT1;GSS;AKR1C1;PTGES3;STAT3;AKR1C3;TUBB4B;CRAT;FRK;PF4;CHRM3;NCF1;PROS1;NCF4;NR3C1;MPO;FADS2;FPGS;PDE8B;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;LIG1;CYBB;CYBA;LI

									G3;CACNB1;CACNB3;CACNB4;PPIF;S100A4;RAF1;PPIA;FTL;NPR1;GLO1;ITPR1;ITPR2;CACNA1A;ITPR3;ADRB2;CACNA1E;DPP4;ABL1;FDPS;PRNP;TGFB1;HSPA5;SRD5A1;NFKB1;NFKBIA;SELP;GGCX;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;FLT3;FLT4;PIK3CD;PIK3CB;CKS1B;CASP9;POLB;CA1;CPT2;CA2;CASP3;CASP1;PDE4B;PDE4A;ITGAV;MBL2;CHUK;GGPS1;VWF;DDX58;PDE4D;SIGMAR1;ADRA2C;ADRA2A;ADORA2A;PIK3CA;IFNG;PDE5A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;CACNG6;MAPK7;CCL5;ERBB2;CCL3;MAPK1;PTK2B;SLC25A20;CACNG2;MAPK6;MAPK4;MAPK3;NTRK1;KCNJ9;NTRK3;SLC12A1;LIMK1;PTPN11;CCK;MAPK15;WARS2;KRAS;PDE7A
	HDR through Homologous Recombination (HRR) Homo sapiens	0.461193	PCNA;ATM				Uterus	0.972727	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;MT-ND1;AQP1;ICAM1;RPS6KA3;EDNRA;MYC;FTH1;KDR;AKT1;PRKAB2;CPT1A;CACNA2D1;CACNA2D2;CACNA2D4;P

	R-HSA-5685942								RKAB1;AR;SFRP4;AGTR1;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;NEU1;LTA4H;APOE;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;L1CAM;PDE3A;REN;ATM;CALR;CALM1;HLA-DRB1;GABRB3;DDR1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC6A2;ORM2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;CCR5;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;FOS;HBA1;F3;PTGR2;IL1A;F8;IL1B;KCNMA1;CANX;KIT;SLC29A4;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;DDR2;TLR2;PTGER4;PCNA;PTGER2;PTGER3;ADCY2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;GABRE;CD55;CA12;GABRQ;GABRP;CRBN;F10;STAT1;GSS;AKR1C1;PTGES3;STAT3;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;NEK1

									1;CHRM3;CHRM1;NCF1;PROS1;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA2;CHRNA5;NPR1;GLO1;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;CSF2RB;ADRB2;CACNA1C;CSF2RA;CACNA1H;CACNA1G;DPP4;HRH1;ABL1;DRD2;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;SRD5A1;VDR;SRD5A3;NFKB1;NFKBIA;SELP;IL6;GGCX;IL7;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT4;HTR2B;PIK3CD;PIK3CB;CKS1B;CASP9;POLB;CA3;CPT2;CA2;CASP3;CA4;CASP1;PDE4B;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;PDE4C;ADRA2C;ADRA2A;ADO

									RA2A;PIK3CA;IL3RA;PDE5A;MET;CRP;PRKAA1;PRKAA2;LRP1;ETFDH;NOD2;ATP2C1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;SCN7A;PDE6B;SLC25A20;MAPK6;TRDMT1;MAPK3;NTRK3;LIMK1;PLA2G2A;PTPN11;MAPK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	ER-Phagosome pathway Homo sapiens R-HSA-1236974	0.469966	HLA-A;CALR				Skin	0.974452	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;HTR4;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;HTR7;SCN11A;MYC;FTH1;KDR;AKT1;SCN1A;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D2;HLA-A;PRKAB1;GABRG1;AR;SFRP4;SCN10A;AGTR1;KCNQ3;ATF7;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PRKDC;PDE1B;PDE1A;SDC2;PPP3R2;NEU1;LTA4H;APOE;SCN3A;ELANE;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;L1CAM;GRIN2D;CALY;CD209;REN;ATM;CALR;

									CALM1;SCN2A;HLA-DRB1;RET;DDR1;RYR1;GABRB2;RYR2;GABRB1;ORM1;ACY1;PRKAG1;PRKAG2;HBB;PTH1R;CROT;SLC6A2;ORM2;SLC6A3;ASGR2;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;IL13;FOS;HBA1;F2;F3;PTGR2;F7;IL1A;F8;CANX;KIT;TLR9;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;HLA-DQB1;PPARD;SLC29A2;DDR2;TLR2;PTGER4;PCNA;SERPINC1;NR1I3;PTGER3;ADCY2;ADCY1;TYMS;ADCY5;PTGS1;GLRA1;LMAN1;NRAS;NT5E;PGRMC1;RXRA;CXCR1;GABRE;CD55;GABRA2;CA12;GABRQ;GABRP;CRBN;F10;GABRA6;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;NR1H4;AKR1C3;TUBB4B;GRIN1;VEGFA;CD40LG;FAS;CRAT;FRK;NEK11;CHRM2;CHRM3;CHRM1;PROS1;NCF4;FGF1;NR3C1;MPO;SLC8A1;NR3C2;CDH

									5;FADS2;CCND1;ADORA3;FPGS;SCN9A;PDE8B;PDE8A;FADS1;CA14;IFNAR2;KCNH2;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;SLC15A1;PHYH;CHRNB3;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CACNB2;PROCR;CACNB3;CACNB4;GPD1;PLA2G10;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;GRIA2;CHRNA3;CHRNA5;CHRNA4;NPR1;GLO1;CHRNA7;NPR2;ITPR1;CACNA1B;ITPR2;ITPR3;ADRB1;CSF2RB;ADRB2;CACNA1C;CACNA1F;CACNA1E;CSF2RA;CACNA1H;DPP4;HRH1;HRH4;ABL1;DRD1;CACNA1S;GRIA3;DRD5;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;HTR1F;SRD5A1;VDR;HTR1D;SRD5A3;TRPV1;NFKB1;IL2;NFKBIA;SELP;PROC;GGCX;IL7;FGF19;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;TNFAIP6;FLT3;FLT4;ITGB3;PDE3B;HTR2B;HTR2C;PIK3CD;HTR2A;PIK3CB;ADRA1A;CKS1B;CASP9;POLB;CA3;CPT2;CA2;C

									ASP3;CA7;CASP1;PDE4B;BDKRB1;PDE4A;ITGAV;CCDC51;MBL2;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;HTR3B;ADRA2C;MMP9;ADRA2A;PIK3CA;ADORA2B;IL3RA;CRH;PDE5A;SCN4A;MET;CRP;PRKAA1;LRP1;ETFDH;NOD2;ATP2C1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL2;MAPK1;PTK2B;SCN7A;CACNG1;SLC25A20;MAPK6;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ6;KCNJ11;NOS2;LIMK1;PLA2G2A;OPRK1;PTPN11;CCK;MAPK15;WARS2;MAPK11;CD4;FCGR2A;KRAS;PDE7B;TEK;PDE7A
	G1/S DNA Damage Checkpoints Homo sapiens R-HSA-69615	0.46996	ATM;TP53				Dendritic cell	0.97933	ATF1;NCF1;NCF4;NR3C1;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;AKT1;FADS1;CA14;IFNAR2;CHRNB2;MAP2K1;CPT1A;CACNA2D3;CYBB;CYBA;SCN10A;PPIF;S100A4;SIK1;ATF5;RAF1;TP53;ATF3;ATF4;CES1;EPHA2;PRKDC;NPR1;GLO1;ITPR1;CSF2RB;DPP4;NEU1;ABL1;LTA4H;FDPS;PRNP;JUN;S

									T14;TGFB1;HSPA5;L1CAM;NFKB1;NFKBIA;GGCX;ATM;CALR;CALM1;HLA-DRB1;MCFD2;FLT3;PRKAG1;PIK3CD;SLC7A11;CKS1B;IKBKB;CASP9;POLB;TUBA1A;RAC2;CASP1;PDE4B;ITGAV;RAC1;JAK2;CCR5;JAK1;MBL2;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TUBB;SIGMAR1;FOS;F3;IL1B;IL3RA;CANX;TLR7;HLA-DQB1;TLR2;PTGER4;PCNA;LRP1;PTGS2;TYMS;ADCY5;PTGS1;PGRMC1;RXRA;CCL5;CCL3;MAPK1;PTK2B;SLC25A20;MAPK6;CD55;SLC12A3;CRBN;STAT1;GSS;PTGES3;STAT3;PTPN11;CD4;FCGR2A;KRAS;CRAT
	Diseases associated with glycosaminoglycan metabolism Homo sapiens R-HSA-3560782	0.472201	SDC2				Cingulate cortex	0.979944	FGF1;NR3C1;ICAM1;FADS2;HTR6;MYC;FTH1;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CA14;SCN1A;IFNAR2;CHRNB2;PDGFRA;MAP2K1;CPT1A;CACNA2D2;SCN10A;CACNB3;S100A4;ATF5;RAF1;ATF4;GRIA1;GRIA2;CHRNA3;NPR1;GLO1;ITPR1;CACNA1A;NEU1;LTA4H;APOE;FDPS;PRNP;

									ST14;HSPA5;PDE2A;L1CAM;NFKBIA;CALY;CALR;CALM1;SCN2A;FGFR2;FGFR1;DDR1;GABRB1;MCFD2;THRA;PRKAG1;PIK3CB;CROT;CASP9;POLB;TUBA1A;CA2;PDE4B;ITGAV;RAC1;JAK1;MBL2;WARS;GGPS1;CAMLG;PARP1;PARP2;DDX58;TUBB;ADRA2C;F3;CANX;KIT;PCNA;LRP1;ADCY2;ADCY1;ADCY5;PGRMC1;RXRA;PTK2B;SLC25A20;MAPK6;CACNG3;GABRA2;GABRA1;KCNJ6;CRBN;GSS;NTRK3;PTGES3;STAT3;PTPN11;CCK;KRAS;CRAT
	A tetrasaccharide linker sequence is required for GAG synthesis Homo sapiens R-HSA-1971475	0.47201	SDC2				Bronchial epithelial cell	0.98459	ATF1;IL1RN;SERPINE1;NR3C1;ICAM1;FADS2;RPS6KA3;HTR6;CCND1;MYC;FTH1;AKT1;FADS1;CA14;CHRNB2;MAP2K1;CPT1A;CYBA;PROCR;SCN10A;PPIF;S100A4;SIK1;RAF1;ATF4;EPHA2;PRKDC;NPR1;GLO1;ADRB2;NEU1;LTA4H;FDPS;PRNP;JUN;ST14;TGFB1;HSPA5;NFKBIA;CALR;CALM1;DDR1;MCFD2;ACY1;PRKAG1;PIK3CB;SLC7A11;CKS1B;POLB;TUBA1A;CA2;CASP3;R

									AC2;ITGAV;RAC1;JAK1;CCDC51;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TUBB;MMP2;SIGMAR1;ADRA2C;F3;IL1A;ADORA2B;IL1B;CANX;MET;PPARD;PTGER4;PCNA;LRP1;PTGS2;TYMS;ADCY5;NT5E;PGRMC1;RXRA;MAPK1;SLC25A20;MAPK6;CA12;CRBN;STAT1;GSS;PTGES3;STAT3;AKR1C3;PTPN11;VEGFA;KRAS;CRAT
	Attenuation phase Homo sapiens R-HSA-3371568	0.472 01	PTGES3				Pancreatic islet	0.98492	PRSS1;PROS1;SERPINE1;HTR4;NR3C1;AQP1;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;AKT1;FADS1;CA14;IFNAR2;CHRNB2;PDGFRB;PDGFRA;MAP2K1;CPT1A;PHYH;CACNA2D2;CYBA;SCN10A;PPIF;S100A4;SIK1;RAF1;ATF3;ATF4;CES1;NPR1;GLO1;SDC2;NEU1;LTA4H;FDPS;PRNP;JUN;ST14;VCAM1;HSPA5;NFKBIA;IL6;ALB;CALR;CALM1;FGFR1;DDR1;MCFD2;ACY1;PRKAG1;CROT;CASP9;POLB;TUBA1A;ITGAV;RAC1;JAK1;ANXA1;WARS;CHUK;GGPS1;VWF;CAMLG;PARP1;DDX58;T

									UBB;MMP2;FOS;ADRA2C;F3;CANX;HLA-DQB1;CRP;PCNA;LRP1;PTGS2;TFPI;ADCY5;PGRMC1;RXRA;CCL5;CCL2;SLC25A20;MAPK6;CD55;CA12;CRBN;STAT1;GSS;PTGES3;STAT3;PLA2G2A;AKR1C3;PTPN11;VEGFA;KRAS;CRAT
	Resolution of D-loop Structures through Synthesis-Dependent Strand Annealing (SDSA) Homo sapiens R-HSA-5693554	0.472201	ATM				Medulla oblongata	0.986605	DDR1;GABRB1;THRA;PRKAG1;PIK3CB;CROT;FGF1;NR3C1;ICAM1;CASP9;POLB;FADS2;HTR6;TUBA1A;CA2;MYC;FTH1;FPGS;ADORA1;PDE4B;ITGAV;RAC1;PDE8B;PDE8A;FADS1;CA14;JAK1;MBL2;SCN1A;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;CAMLG;PARP1;DDX58;TUBB;CACNA2D2;FOS;ADRA2C;F3;SCN10A;CANX;S100A4;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;CACNA1A;ADCY1;ADCY5;PGRMC1;RXRA;LTA4H;SLC25A20;APOE;MAPK6;CACNG3;SCN3A;GABRD;XDH;GABRA2;GABRA1;FDPS;PRNP;ST14;CRBN;HSPA5;GSS;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;CCK;L

									1CAM;NFKBIA;PDE10A;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR2;FGFR1
	Regulation of Hypoxia-inducible Factor (HIF) by oxygen Homo sapiens R-HSA-1234174	0.472201	VEGFA				Spinal ganglion	0.987533	DDR1;PROS1;PRKAG1;CROT;FGF1;NR3C1;AQP1;ICAM1;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;FPGS;ITGAV;RAC1;FADS1;CA14;JAK1;MBL2;IFNAR2;CHRNB2;PDGFRB;CPT1A;ANXA1;WARS;VWF;CAMLG;PARP1;DDX58;TUBB;FOS;ADRA2C;F3;SFRP4;SCN10A;CANX;S100A4;ATF4;CES1;CALCA;PCNA;CALCB;LRP1;NPR1;GLO1;NPR2;ADCY5;PGRMC1;RXRA;APOE;MAPK6;FDPS;PRNP;ST14;CRBN;HSPA5;GSS;PTGES3;STAT3;PLA2G2A;PTPN11;L1CAM;NFKBIA;KRAS;CALR;CALM1;CRAT;FGFR1
	Cellular response to hypoxia Homo sapiens R-HSA-2262749	0.472201	VEGFA				Ovary cancer cell	0.987899	PARP1
	Downregulation of TGF-beta	0.47	TGFB1				Teratocarc	0.99	CHRM3;SLC25A29;WARS;MMP2;SLC29A4;FADS1;FGFR1

	receptor signaling Homo sapiens R-HSA-2173788	201					inomacell	01	
	Regulation of RAS by GAPs Homo sapiens R-HSA-5658442	0.485811	NRAS;KRAS				B-lymphocyte	0.990064	ATF1;ATF2;PRSS1;NCF1;NCF4;NR3C1;MPO;MT-ND1;ICAM1;NR3C2;RPS6KA3;HTR6;MYC;FTH1;KDR;AKT1;KCNH2;PDGFRB;GUCY1A2;PDGFRA;PRKAB2;MAP2K1;CPT1A;LIG1;CYBB;CYBA;LIG3;HLA-A;PRKAB1;AR;GPD1;PPIF;ATF7;PGR;S100A4;RAF1;PPIA;PDE9A;ATF4;FTL;CES1;EPHA2;ABCB1;GLO1;ITPR1;CACNA1B;ITPR2;ITPR3;ABL1;LTA4H;APOE;ELANE;FDPS;JUN;ST14;TGFB1;VCAM1;HSPA5;PRG2;BRAF;NFATC1;L1CAM;NFKB1;NFKBIA;SELP;ALB;ATM;CALR;CALM1;FGFR4;HLA-DRB1;FGFR2;FGFR1;RYR2;MCFD2;FLT1;ACY1;FLT3;FLT4;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;IKBKB;CASP9;POLB;TUBA1A;CPT2;CA2;SMPD1;CASP3;RAC2;CASP1;PDE4B;PDE4A;RAC1;JAK2;JAK3;JAK1;CC

									DC51;ANXA1;WARS;CHUK;GGPS1;VWF;CAMLG;PARP1;DDX58;TUBB;PDE4D;SIGMAR1;HBA1;F7;ADORA2A;PIK3CA;IFNG;CANX;KIT;TLR9;TLR8;TLR7;MET;TLR3;HLA-DQB1;PPARD;TLR2;PRKAA1;PRKAA2;PCNA;LRP1;ETFDH;ADCY2;ATP2C1;PTGS1;CACNG6;LMAN1;NRAS;NT5E;PGRMC1;RXRA;MAPK7;CCL5;MAPK1;PTK2B;SLC25A20;CACNG2;GABRE;MAPK6;XDH;CD55;MAPK4;MAPK3;SLC12A3;CRBN;NOS2;STAT1;GSS;AKR1C1;PTGES3;STAT3;SLC12A1;LIMK1;AKR1C3;PTPN11;TUBB4B;MAPK15;WARS2;CD4;FCGR2A;FAS;KRAS;TEK;CRAT;FRK;PF4
	Recognition of DNA damage by PCNA-containing replication complex Homo sapiens R-HSA-110314	0.49734	PCNA				Pons	0.99065	DDR1;GABRB1;MCFD2;THRA;CHRM5;PRKAG1;PIK3CB;CROT;FGF1;NR3C1;ICAM1;CASP9;POLB;FADS2;HTR6;TUBA1A;CA2;MYC;FTH1;FPGS;PDE4B;ITGAV;RAC1;PDE8B;FADS1;CA14;JAK1;MBL2;IFNAR2;CHRNB2;MAP2K1;CPT1A;ANXA1;WARS;GGPS1;CAMLG;PA

									RP1;DDX58;TUBB;CACNA2D2;ADRA2C;F3;SCN10A;IL3RA;CANX;ATF5;RAF1;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;CACNA1A;ADCY5;NT5E;PGRMC1;RXRA;CCL2;SLC25A20;APOE;MAPK6;CACNG3;GABRA1;FDPS;PRNP;ST14;CRBN;HSPA5;GSS;PTGES3;STAT3;PDE2A;PTPN11;CCK;L1CAM;NFKBIA;IL6;CALY;CALR;CALM1;CRAT;FGFR1
	G-protein activation Homo sapiens R-HSA-202040	0.497344	OPRM1				Subthalamic nucleus	0.990081	DDR1;GABRB1;MCFD2;PRKAG1;PIK3CB;CROT;FGF1;NR3C1;ICAM1;CASP9;POLB;FADS2;HTR6;TUBA1A;CA2;MYC;FTH1;FPGS;PDE4B;ITGAV;RAC1;PDE8B;FADS1;CA14;JAK1;MBL2;SCN1A;IFNAR2;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;CAMLG;PARP1;DDX58;TUBB;CACNA2D2;ADRA2C;F3;SCN10A;CANX;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO1;ITPR1;CACNA1A;ADCY1;ADCY5;PGRMC1;RXRA;NEU1;PTK2B;APOE;MAPK6;CACNG3;GABRA2;GABRA1;FDPS;PRNP;ST

									14;CRBN;HSPA5;GABRA5;GSS;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;CCK;L1CAM;GRIN1;NFKBIA;CALY;CYP11B2;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR1
	trans-Golgi Network Vesicle Budding Homo sapiens R-HSA-199992	0.509013	FTH1;FTL				Cerebral peduncle	0.99283	FGF1;NR3C1;AQP1;ICAM1;FADS2;HTR6;MYC;FTH1;FPGS;AKT1;FADS1;CA14;IFNAR2;CHRNB2;MAP2K1;CPT1A;CACNA2D2;SCN10A;CACNB3;CACNB4;ATF5;RAF1;ATF4;CES1;GRIA1;GRIA2;NPR1;GLO1;NPR2;ITPR1;CACNA1A;CACNA1G;NEU1;LTA4H;APOE;FDPS;PRNP;ST14;HSPA5;L1CAM;NFKBIA;CALY;CALR;CALM1;SCN2A;FGFR2;FGFR1;DDR1;MCFD2;THRA;PRKAG1;PIK3CB;CROT;SLC6A2;CASP9;POLB;TUBA1A;CA2;CA4;PDE4B;ITGAV;RAC1;JAK1;WARS;GGPS1;VWF;CAMLG;PARP1;DDX58;TUBB;SIGMAR1;ADRA2C;F3;CANX;KIT;SLC29A2;PCNA;LRP1;ADCY1;ADCY5;NT5E;PGRMC1;PTK2B;SLC25A20;MAPK6;GABRD;XDH;GABRA1;CRBN;GABRA6;GSS;P

									TGES3;STAT3;PTPN11;KRAS;TEK;CRAT
	Clathrin derived vesicle budding Homo sapiens R-HSA-421837	0.509	FTH1;FTL				BTO:0004410	0.9335	ATF1;ATF2;PRSS1;MT-ND1;ICAM1;RPS6KA3;HTR6;FTH1;KDR;AKT1;PRKAB2;CPT1A;CACNA2D2;HLA-A;PRKAB1;AR;SFRP4;KCNQ3;ATF7;CES1;EPHA2;ABCB1;PPP3R2;NEU1;LTA4H;ELANE;JUN;ACE;BRAF;NFATC1;GRIN2D;GRIN3A;PDE3A;ATM;CALR;CALM1;HLA-DRB1;RYR1;RYR2;ACY1;PTGDR2;PRKAG1;PRKAG2;HBB;CROT;PRKAG3;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK3;JAK1;ANXA1;WARS;CAMLG;PARP1;PARP2;TUBB;HBA1;PTGR2;F7;F8;CANX;KIT;TLR9;TLR7;PPARA;TLR4;TLR3;HLA-DQB1;PPARD;TLR2;PTGER4;PCNA;ADCY2;ADCY1;PTGS1;LMAN1;NRAS;NT5E;PGRMC1;GABRE;CD55;GABRA2;CRBN;STAT1;IFNB1;GABRA4;GSS;AKR1C1;PTGES3;STAT3;AKR1C3;TUBB4B;FAS;CRAT;FRK;PF4;NCF1;NCF4;NR3C1;

									TNF;MPO;NR3C2;FPGS;PDE8B;KCNH2;PDGFRB;PDGFRA;MAP2K1;LIG1;CYBB;CYBA;LIG3;CACNB3;CACNB4;GPD1;PPIF;S100A4;RAF1;PPIA;FTL;GLO1;NPR2;ITPR1;ITPR2;CACNA1A;ITPR3;ADRB2;CACNA1E;CACNA1G;DPP4;ABL1;FDPS;PRNP;TGFB1;HSPA5;NFKB1;NFKBIA;SELP;IL7;ALB;FGFR4;FGFR2;FGFR1;MCFD2;FLT1;FLT3;FLT4;PDE3B;PIK3CD;PIK3CB;CASP9;POLB;CA1;CPT2;CA2;CASP3;CA4;CASP1;PDE4B;CCDC51;CHUK;GGPS1;VWF;DDX58;PDE4D;SIGMAR1;ADORA2A;PIK3CA;IFNG;MET;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;CACNG6;SLC25A29;MAPK7;CCL5;MAPK1;PTK2B;SLC25A20;CACNG2;MAPK6;MAPK4;MAPK3;NOS2;NTRK3;PTPN11;CCK;MAPK15;WARS2;CD4;KRAS;PDE7A
	HSF1 activation Homo sapiens R-HSA-3371511	0.50954	PTGES3				Thymus	0.99433	NR3C1;AQP1;ICAM1;FADS2;HTR6;MYC;FTH1;FPGS;AKT1;CA14;IFNAR2;CHRNB2;CPT1A;LIG1;CYBA;HLA-A;SCN10A;PPIF;S1

									00A4;RAF1;TP53;PPIA;ATF3;ATF4;CHRNA3;NPR1;GLO1;CACNA1C;ABL1;LTA4H;APOE;FDPS;PRNP;ST14;TGFB1;VCAM1;HSPA5;PRG2;NFKBIA;ALB;CALR;CALM1;HLA-DRB1;FGFR1;DDR1;MCFD2;PRKAG1;CROT;CKS1B;IKBKB;CASP9;POLB;TUBA1A;RAC2;ITGAV;RAC1;JAK1;ANXA1;WARS;CHUK;VWF;CAMLG;PARP1;DDX58;TUBB;MMP2;FOS;MMP9;ADORA2A;CANX;SLC29A1;HLA-DQB1;PCNA;LRP1;TYMS;ATP2C1;ADCY5;PGRMC1;RXRA;MAPK7;CCL5;CCL2;MAPK1;PTK2B;SLC25A20;MAPK6;CRBN;STAT1;GSS;PTGES3;STAT3;AKR1C3;PTPN11;CD4;KRAS;PDE7A;CRAT
	The citric acid (TCA) cycle and respiratory electron transport Homo sapiens R-HSA-1428517	0.510036	RXRA;GLO1;ETFDH;PPARD				BTO:0005453	0.994466	ATF1;ATF2;PRSS1;NCF4;NR3C1;MPO;MT-ND1;ICAM1;NR3C2;RPS6KA3;HTR6;FTH1;KDR;AKT1;PDGFRB;PDGFRA;MAP2K1;CPT1A;LIG1;CYBB;CYBA;LIG3;HLA-A;PRKAB1;CACNB3;PPIF;ATF7;S100A4;RAF1;PPIA;FTL;G

									LO1;ITPR1;ITPR2;ITPR3;DPP4;PPP3R2;ABL1;LTA4H;ELANE;FDPS;PRNP;TGFB1;HSPA5;PRG2;BRAF;NFATC1;NFKB1;NFKBIA;GGCX;ALB;ATM;CALR;CALM1;FGFR4;HLA-DRB1;FGFR2;FGFR1;MCFD2;ORM1;FLT1;FLT3;FLT4;PRKAG1;PRKAG2;PIK3CD;HBB;PIK3CB;CROT;ORM2;PRKAG3;SLC6A4;IKBKB;POLB;TUBA1A;CPT2;CA2;CASP3;RAC2;CASP1;PDE4B;RAC1;JAK2;JAK3;JAK1;CCDC51;ANXA1;WARS;CHUK;GGPS1;PARP1;DDX58;TUBB;PDE4D;SIGMAR1;HBA1;PTGR2;ADORA2A;PIK3CA;CANX;KIT;TLR9;TLR7;MET;TLR3;HLA-DQB1;PRKAA1;PRKAA2;PCNA;PTGER2;ETFDH;ATP2C1;CACNG6;LMAN1;NRAS;PGRMC1;RXRA;MAPK7;MAPK1;PTK2B;SLC25A20;PDE6A;MAPK6;CD55;MAPK4;KCNJ3;MAPK3;CRBN;NOS2;STAT1;KCNJ9;GSS;NTRK3;AKR1C1;PTGES3;STAT3;AKR1C3;PTPN11;CCK;TUBB4B;MAPK15;WARS2;CD4;FAS;K

									RAS;CRAT;FRK;PF4
	HDR through Homologous Recombination (HR) or Single Strand Annealing (SSA) Homo sapiens R-HSA-5693567	0.512911	PCNA;ABL1;ATM				Globus pallidus	0.996565	DDR1;GABRB1;CHRM5;PRKAG1;CROT;NR3C1;ICAM1;CASP9;FADS2;HTR6;TUBA1A;MYC;FTH1;PDE4B;ITGAV;RAC1;PDE8B;FADS1;CA14;JAK1;CHRNB2;MAP2K1;CPT1A;WARS;GGPS1;CAMLG;PARP1;DDX58;TUBB;ADRA2C;F3;SCN10A;CANX;ATF4;GRIA1;GRIA2;LRP1;NPR1;GLO1;ITPR1;CACNA1A;ADCY1;ADCY5;PGRMC1;RXRA;APOE;MAPK6;CACNG3;GABRA2;GABRA1;FDPS;PRNP;ST14;CRBN;HSPA5;GSS;PTGES3;STAT3;PDE2A;PTPN11;CCK;L1CAM;NFKBIA;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR1
	Lipid digestion, mobilization, and transport Homo sapiens R-HSA-73923	0.516559	ALB;APOE				Cervical carcinoma cell	0.997676	ATF1;ATF2;PDE3B;PRKAG1;PRKAG2;SLC7A11;NR3C1;ICAM1;IKBKB;CASP9;RPS6KA3;CPT2;MYC;FTH1;CASP3;FPGS;AKT1;PDE4A;ITGAV;RAC1;PDE8B;PDE8A;IFNAR2;PRKAB2;MAP2K1;ANXA1;WARS;CHUK;CAMLG;PARP1;LIG1;PDE4D;LIG3;HLA-A;PRKAB1;CANX;A

									TF7;PPARG;SLC29A1;RAF1;ATF6;MET;PPIA;JDP2;ATF4;SLC29A2;IFNAR1;EPHA2;DDR2;PRKAA1;ABCB1;PRKAA2;SLC22A5;PRKDC;NPR1;ITPR1;ITPR2;ITPR3;ATP2C1;PGRMC1;HRH1;RXRA;MAPK7;ERBB2;ABL1;MAPK1;PTK2B;MAPK6;CD55;MAPK4;MAPK3;SLC12A3;JUN;HSPA5;STAT1;PTGES3;STAT3;LIMK1;BRAF;PTPN11;L1CAM;TUBB4B;NFKB1;PDE10A;PDE3A;FAS;ATM;KRAS;CALM1;FGFR4;HLA-DRB1;FRK;NEK11
	RNA Polymerase I Promoter Opening Homo sapiens R-HSA-73728	0.52146	MAPK3				Embryonic brain	0.99787	DDR1;ATF2;MCFD2;THRA;PRKAG1;CROT;ICAM1;CASP9;POLB;FADS2;HTR6;TUBA1A;CA2;MYC;FTH1;CASP3;FPGS;PDE4B;AKT1;ITGAV;RAC1;FADS1;CA14;JAK1;SCN1A;CHRNB2;PDGFRA;MAP2K1;CPT1A;WARS;CHUK;GGPS1;CAMLG;PARP1;PARP2;DDX58;TUBB;CACNA2D3;CACNA2D2;FOS;ADRA2C;F3;ADRA2A;SCN10A;CACNB3;CANX;KIT;CRH;RAF1;ATF4;GRIA1;GRIA2;PCNA;LRP1;NPR1;GLO

									1;CACNA1A;ADCY1;ATP2C1;ADCY5;CACNA1G;PGRMC1;RXRA;CCL2;LTA4H;APOE;MAPK6;SCN3A;GABRA2;FDPS;PRNP;ST14;VCAM1;CRBN;HSPA5;GABRA5;SRD5A1;GSS;NTRK3;PTGES3;STAT3;PDE2A;PTPN11;CCK;L1CAM;VEGFA;NFKBIA;CALY;KRAS;CALR;CALM1;SCN2A;CRAT;FGFR1
	Termination of translesion DNA synthesis Homo sapiens R-HSA-5656169	0.52146	PCNA				Thyroid gland	0.998001	ATF1;ATF2;PRSS1;IL1RN;SERPINE1;MT-ND1;AQP1;ICAM1;RPS6KA3;HTR6;EDNRA;SCN11A;MYC;FTH1;KDR;AKT1;TNFSF11;PRKAB2;CPT1A;CACNA2D1;CACNA2D3;CACNA2D2;HLA-A;GABRG3;PRKAB1;GABRG1;ACE2;AR;SFRP4;SCN10A;AGTR1;ATF7;KCNQ5;SIK1;ATF5;ATF6;TP53;ATF3;ATF4;CES1;EPHA2;ABCB1;SLC22A5;PDE1C;PDE1B;PDE1A;SDC2;NEU2;NEU1;LTA4H;APOE;JUN;ST14;ACE;PDE2A;BRAF;NFATC1;GRIN2C;CD209;PDE3A;REN;ATM;CALR;CALM1;HLA-DRB1;GABRB3;DD

									R1;RYR2;ORM1;ACY1;PRKAG1;PRKAG2;HBB;CROT;SLC7A11;IKBKB;TUBA1A;SMPD1;RAC2;RAC1;JAK2;JAK1;PARP3;ANXA1;WARS;CAMLG;PARP1;PARP2;TNNC1;TUBB;FOS;HBA1;F3;PTGR2;IL1A;F8;IL1B;KCNMA1;CANX;KIT;SLC29A4;PPARG;PPARA;SLC29A1;TLR4;JDP2;TLR3;PPARD;SLC29A2;DDR2;TLR2;OPRD1;PTGER4;PCNA;PTGER3;TMPRSS2;ADCY1;PTGS2;TYMS;ADCY5;PTGS1;CYP17A1;GLRA1;LMAN1;GLRA2;NRAS;NT5E;PGRMC1;RXRA;GABRE;CD55;P2RY12;CA12;GABRQ;CRBN;F10;STAT1;GSS;AKR1C1;PTGES3;STAT3;AKR1C3;TUBB4B;VEGFA;FAS;CRAT;PF4;NEK11;CHRM2;CHRM3;NCF1;CHRM4;PROS1;NCF4;FGF1;NR3C1;FGF2;SLC8A1;NR3C2;CDH5;FADS2;CCND1;ADORA3;FPGS;ADORA1;PDE8B;PDE8A;FADS1;CA14;CHRNB2;PDGFRB;GUCY1A2;PDGFRA;MAP2K1;PHYH;LIG1;HGF;CYBB;CYBA;LIG3;CACNB1;CA

									CNB2;PROCR;CACNB3;CACNB4;PPIF;PGR;S100A4;RAF1;PPIA;PDE9A;FTL;IFNAR1;CALCA;CHRNA3;CALCB;NPR1;GLO1;CHRNA7;NPR2;ITPR1;ITPR2;ITPR3;CACNA1D;CACNA1C;CSF2RA;CACNA1H;DPP4;TPO;ABL1;CACNA1S;GRIA3;FDPS;PRNP;TGFB1;VCAM1;HTR1E;HSPA5;SRD5A1;SRD5A3;NFKB1;NFKBIA;SELP;GGCX;FGF19;ALB;FGFR2;FGFR1;MCFD2;FLT1;THRB;THRA;FLT4;PIK3CD;PIK3CB;CASP9;POLB;CA3;CPT2;CA2;CASP3;CA4;CASP1;PDE4B;PDE4A;ITGAV;CCDC51;CHUK;GGPS1;VWF;DDX58;MMP2;PDE4D;SIGMAR1;ADRA2C;MMP9;PIK3CA;IL3RA;PDE5A;SCN4A;MET;PRKAA1;PRKAA2;LRP1;ETFDH;ATP2C1;TFPI;SLC25A29;PDE11A;MAPK7;CCL5;ERBB2;CCL3;CCL2;MAPK1;PTK2B;PDE6B;SLC25A20;MAPK6;CACNG3;MAPK4;TRDMT1;CACNG5;MAPK3;NTRK1;KCNJ5;KCNJ11;NOS2;NTRK3;LIMK1;PLA2G2A;PTPN11;MA

									PK15;WARS2;MAPK11;CD4;FCGR2A;PDE10A;KRAS;PDE7B;TEK;PDE7A
	Activation of Kainate Receptors upon glutamate binding Homo sapiens R-HSA-451326	0.52146	CALM1				Thalamus	0.998033	DDR1;MCFD2;ACY1;PRKAG1;PIK3CB;CROT;FGF1;NR3C1;AQP1;ICAM1;CASP9;POLB;FADS2;HTR6;TUBA1A;CA2;MYC;FTH1;FPGS;ADORA1;PDE4B;ITGAV;RAC1;PDE8B;PDE8A;FADS1;CA14;JAK1;SCN1A;IFNAR2;CHRNB2;PDGFRA;MAP2K1;CPT1A;WARS;GGPS1;VWF;CAMLG;PARP1;PARP2;DDX58;TUBB;SIGMAR1;CACNA2D2;ADRA2C;F3;SCN10A;CANX;KIT;CRH;PPIF;S100A4;ATF5;RAF1;ATF4;GRIA2;CHRNA3;PCNA;LRP1;NPR1;GLO1;NPR2;CACNA1A;ATP2C1;ADCY5;CACNA1G;PGRMC1;RXRA;PTK2B;LTA4H;SLC25A20;APOE;MAPK6;FDPS;PRNP;ST14;CRBN;HSPA5;GABRA5;STAT1;GSS;PTGES3;STAT3;PTPN11;L1CAM;NFKBIA;CALY;CALR;CALM1;CRAT;FGFR2;FGFR1
	Immunoregulatory interactions	0.53	VCAM1;CD40LG;HLA-A;ICAM1				BTO:0000	0.99	SDC2;CHRNA9

	between a Lymphoid and a non-Lymphoid cell Homo sapiens R-HSA-198933	0.66					379	834	
	Amino acid transport across the plasma membrane Homo sapiens R-HSA-352230	0.533088	SLC7A11				Olfactory bulb	0.998533	DDR1;MCFD2;PROS1;PRKAG1;FGF1;NR3C1;AQP1;ICAM1;CASP9;FADS2;HTR6;TUBA1A;CA2;MYC;FTH1;FPGS;ITGAV;RAC1;FADS1;CA14;JAK1;MBL2;IFNAR2;CHRNB2;PDGFRB;PDGFRA;CPT1A;ANXA1;WARS;VWF;CAMLG;PARP1;DDX58;TUBB;MMP2;FOS;ADRA2C;F3;SFRP4;SCN10A;CANX;S100A4;SIK1;ATF3;ATF4;DDR2;GRIA2;PCNA;LRP1;NPR1;GLO1;ADCY5;PGRMC1;RXRA;ABL1;CCL2;LTA4H;SLC25A20;APOE;MAPK6;FDPS;PRNP;CRBN;HSPA5;STAT1;GSS;PTGES3;STAT3;PTPN11;L1CAM;NFKBIA;FCGR2A;KRAS;CALR;CALM1;CRAT;HLA-DRB1;FGFR1
	HS-GAG biosynthesis	0.5	SDC2				Cytotoxi	0.9	ATF1;ATF2;NR3C1;ICAM1;FADS2;RPS6KA3;HTR6;MYC;F

	Homo sapiens R-HSA-2022928	3308					c T-lymphocyte	9903	TH1;FPGS;AKT1;CA14;IFNAR2;CHRNB2;MAP2K1;CPT1A;CACNA2D2;CYBA;SCN10A;S100A4;RAF1;ATF4;ABCB1;PRKDC;NPR1;GLO1;ITPR3;ADRB2;DPP4;ABL1;LTA4H;FDPS;PRNP;ST14;TGFB1;HSPA5;NFATC1;L1CAM;NFKB1;NFKBIA;ATM;CALR;CALM1;PRKAG1;PIK3CD;CROT;IKBKB;CASP9;POLB;TUBA1A;CASP3;RAC2;CASP1;PDE4B;ITGAV;RAC1;CCR5;JAK1;MBL2;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TUBB;FOS;ADRA2C;F3;ADORA2A;PIK3CA;CANX;PTGER4;PRKAA1;PCNA;LRP1;PTGER2;TYMS;ADCY5;NT5E;PGRMC1;CCL5;MAPK1;PTK2B;SLC25A20;MAPK6;CD55;CRBN;STAT1;GSS;PTGES3;STAT3;PTPN11;FAS;KRAS;PDE7A;CRAT
	Adherens junctions interactions Homo sapiens R-HSA-418990	0.533308	CDH5				B-lymphoblastoid cell	0.99958	ATF1;ATF2;NCF1;NCF4;NR3C1;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;AKT1;PDE8A;FADS1;CA14;IFNAR2;CHRNB2;MAP2K1;LIG1;CYBA;SCN10A;PPIF;S100A4;

									ATF5;RAF1;TP53;ATF3;ATF4;PRKDC;NPR1;GLO1;ITPR1;CACNA1A;CSF2RB;NEU1;ABL1;LTA4H;FDPS;PRNP;ST14;TGFB1;VCAM1;HSPA5;NFKB1;NFKBIA;GGCX;IL7;ATM;CALR;CALM1;FGFR1;DDR1;MCFD2;ACY1;PRKAG1;SLC7A11;CKS1B;IKBKB;CASP9;POLB;TUBA1A;CASP3;RAC2;CASP1;ITGAV;RAC1;JAK1;CCDC51;MBL2;PARP3;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;PARP2;DDX58;TUBB;SIGMAR1;ADRA2C;PIK3CA;CANX;SLC29A1;HLA-DQB1;PCNA;LRP1;TYMS;ATP2C1;ADCY5;NT5E;PGRMC1;RXRA;CCL5;CCL3;MAPK1;PTK2B;SLC25A20;MAPK6;CD55;CRBN;STAT1;GSS;PTGES3;STAT3;PTPN11;VEGFA;WARS2;PDE10A;FAS;KRAS;CRAT
	Regulation of beta-cell development Homo sapiens R-HSA-186712	0.5444 2	AKT1				Helper T-lymphocyte	0.99959	ATF1;ATF2;NR3C1;ICAM1;FADS2;RPS6KA3;HTR6;MYC;FTH1;FPGS;AKT1;CA14;IFNAR2;CHRNB2;MAP2K1;CPT1A;CACNA2D2;CYBA;SCN10A;S100A4;ATF5;RAF1;ATF4;

									ABCB1;PRKDC;NPR1;GLO1;ITPR3;DPP4;LTA4H;FDPS;PRNP;ST14;TGFB1;HSPA5;NFATC1;L1CAM;NFKB1;NFKBIA;ATM;CALR;CALM1;FGFR1;DDR1;PRKAG1;PIK3CD;CROT;IKBKB;CASP9;POLB;TUBA1A;RAC2;CASP1;PDE4B;RAC1;JAK1;MBL2;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;DDX58;TUBB;SIGMAR1;FOS;ADRA2C;PIK3CA;CANX;PTGER4;PRKAA1;PCNA;LRP1;PTGER2;TYMS;ADCY5;NT5E;PGRMC1;RXRA;CCL5;MAPK1;PTK2B;SLC25A20;MAPK6;CD55;CRBN;STAT1;GSS;PTGES3;STAT3;PTPN11;CD4;FAS;KRAS;PDE7A;CRAT
	Resolution of D-loop Structures through Holliday Junction Intermediates Homo sapiens R-HSA-5693568	0.5444 2	ATM				Erythroid cell	0.9996	ATF1;PRKAG1;NR3C1;AQP1;ICAM1;CKS1B;CASP9;FADS2;HTR6;CA1;TUBA1A;CA3;CA2;MYC;FTH1;FPGS;RAC2;AKT1;RAC1;JAK2;FADS1;CA14;JAK1;MBL2;IFNAR2;KCNH2;CHRNB2;CPT1A;WARS;CHUK;CAMLG;PARP1;LIG1;DDX58;TUBB;SIGMAR1;CACNA2D2;FOS;ADRA2C;PRKA

									B1;F3;SCN10A;CANX;PPIF;S100A4;ATF5;SLC29A1;ATF4;PCNA;LRP1;NPR1;GLO1;TYMS;ADCY5;PGRMC1;RXRA;MAPK1;LTA4H;SLC25A20;MAPK6;CD55;FDPS;PRNP;ST14;CRBN;HSPA5;GSS;PTGES3;STAT3;AKR1C3;PTPN11;VEGFA;NFKBIA;FAS;KRAS;CALR;CALM1;CRAT;FGFR1
	Signal amplification Homo sapiens R-HSA-392518	0.5442	P2RY12				Erythroleukemia cell	0.9997	ATF1;ATF2;ITGB3;PDE3B;PIK3CD;SLC7A11;NR3C1;ICAM1;IKBKB;CASP9;RPS6KA3;MYC;CASP3;FPGS;AKT1;PDE4A;JAK2;PDE8A;CCDC51;KCNH2;PRKAB2;ANXA1;WARS;CAMLG;PARP1;LIG1;TUBB;CYBA;LIG3;PRKAB1;CANX;ATF7;PGR;KCNQ5;ATF5;SLC29A1;RAF1;PPIA;ATF3;JDP2;SLC29A2;IFNAR1;PRKAA1;PRKDC;ITPR3;TYMS;ATP2C1;PGRMC1;RXRA;ERBB2;ABL1;MAPK1;PTK2B;MAPK6;MAPK3;JUN;CRBN;STAT1;GSS;PTGES3;STAT3;LIMK1;BRAF;NFATC1;PTPN11;TUBB4B;NFKB1;ATM;CALM1
	TGF-beta receptor	0.	TGFB1				MOL	0.	DDR1;PRKAG1;CROT;ICAM1;CKS1B;

	signaling activates SMADs Homo sapiens R-HSA-2173789	5.4442					T-4 cell	99999	CASP9;POLB;FADS2;HTR6;TUBA1A;MYC;FTH1;CASP3;RAC2;AKT1;ITGAV;RAC1;FADS1;CA14;JAK1;CHRNB2;CPT1A;ANXA1;WARS;CHUK;GGPS1;CAMLG;PARP1;LIG1;PARP2;DDX58;TUBB;SIGMAR1;CYBA;ADRA2C;SCN10A;CANX;PPIF;ATF5;RAF1;ATF4;PCNA;LRP1;PRKDC;NPR1;GLO1;TYMS;ADCY5;PGRMC1;ABL1;LTA4H;SLC25A20;MAPK6;SCN3A;FDPS;PRNP;ST14;CRBN;HSPA5;GSS;PTGES3;STAT3;PTPN11;VEGFA;NFKBIA;KRAS;CALR;CALM1;CRAT;FGFR1
	Resolution of D-Loop Structures Homo sapiens R-HSA-5693537	0.55548	ATM						
	HSF1-dependent transactivation Homo sapiens R-HSA-3371571	0.56628	PTGES3						
	Activated PKN1	0.	AR						

	stimulates transcription of AR (androgen receptor) regulated genes KLK2 and KLK3 Homo sapiens R-HSA-5625886	5662 8							
	Negative regulators of RIG-I/MDA5 signaling Homo sapiens R-HSA-936440	0.5662 8	DDX58						
	Striated Muscle Contraction Homo sapiens R-HSA-390522	0.5662 8	TNNC1						
	G2/M DNA damage checkpoint Homo sapiens R-HSA-69473	0.5674 4	ATM;TP53						
	Translesion synthesis by Y	0.59	PCNA						

	family DNA polymerases bypasses lesions on DNA template Homo sapiens R-HSA-110313	7 1 3							
	Apoptotic cleavage of cellular proteins Homo sapiens R-HSA-111465	0 . 5 9 7 1 3	CASP3						
	Beta defensins Homo sapiens R-HSA-1461957	0 . 6 0 6 9 2	TLR2						
	Glutathione conjugation Homo sapiens R-HSA-156590	0 . 6 0 6 9 2	GSS						
	G2/M Transition Homo sapiens R-HSA-69275	0 . 6 0 7 3 9	TUBA1A;TUBB;TUBB4B;TP53						
	Mitotic	0	TUBA1A;TUBB;TU						

	G2-G2/M phases Homo sapiens R-HSA-453274	.61643	BB4B;TP53						
	Presynaptic phase of homologous DNA pairing and strand exchange Homo sapiens R-HSA-5693616	0.61647	ATM						
	tRNA modification in the nucleus and cytosol Homo sapiens R-HSA-6782315	0.61647	TRDMT1						
	Cell Cycle Homo sapiens R-HSA-1640170	0.618771	PCNA;LIG1;TUBB;TUBB4B;TYMS;CKS1B;TUBA1A;CCND1;MYC;MAPK1;ATM;TP53;MAPK3						
	Chromosome Maintenance Homo sapiens R-HSA-73886	0.62069	PCNA;LIG1						

	Regulation of mRNA stability by proteins that bind AU-rich elements Homo sapiens R-HSA-450531	0.62069	MAPK11;AKT1						
	Gene Expression Homo sapiens R-HSA-74160	0.62733	ATF2;PRKAA1;PRKAA2;PCNA;THRB;THRA;NR1I3;SERPINE1;NR1I2;PRKAG1;PRKAG2;NR3C1;PRKAG3;NR3C2;RXRA;MYC;CASP1;AKT1;TRDMT1;MAPK3;PRKAB2;JUN;WARS;PARP1;VDR;NR1H4;FOS;PRKAB1;WARS2;AR;MAPK11;FAS;PPARG;PGR;ATM;PPARA;TP53;PPARD						
	Host Interactions with Influenza Factors Homo sapiens R-HSA-168253	0.63488	TGFB1						
	Activation of anterior HOX genes in hindbrain	0.63932	JUN;RXRA						

	development during early embryogenesis Homo sapiens R-HSA-5617472								
	Activation of HOX genes during differentiation Homo sapiens R-HSA-5619507	0.6393	JUN;RXRA						
	Homologous DNA Pairing and Strand Exchange Homo sapiens R-HSA-5693579	0.6437	ATM						
	Deactivation of the beta-catenin transactivating complex Homo sapiens R-HSA-3769402	0.6437	AKT1						
	Signaling by Hedgeho	0.6	ADCY2;ADCY1;ADCY5						

	g Homo sapiens R-HSA-5358351	4426							
	PCP/CE pathway Homo sapiens R-HSA-4086400	0.65133	RAC2;RAC1						
	Classical antibody-mediated complement activation Homo sapiens R-HSA-173623	0.65241	CRP						
	SUMOylation of DNA replication proteins Homo sapiens R-HSA-4615885	0.66085	PCNA						
	Inositol phosphate metabolism Homo sapiens R-HSA-1483249	0.66085	CALM1						
	NRAGE signals death	0.6	RAC1						

	through JNK Homo sapiens R-HSA-193648	691							
	DNA Damage Bypass Homo sapiens R-HSA-73893	0.67714	PCNA						
	NOTCH1 Intracellular Domain Regulates Transcription Homo sapiens R-HSA-2122947	0.68499	MYC						
	Synthesis of DNA Homo sapiens R-HSA-69239	0.68546	PCNA;LIG1						
	Influenza Infection Homo sapiens R-HSA-168254	0.69545	TGFB1;CANX;CALR						
	FCGR activation Homo sapiens R-HSA-	0.700	FCGR2A						

	2029481	11							
	Chondroitin sulfate/dermatan sulfate metabolism Homo sapiens R-HSA-1793185	0.7074	SDC2						
	Ubiquitin-dependent degradation of Cyclin D1 Homo sapiens R-HSA-69229	0.7074	CCND1						
	Ubiquitin-dependent degradation of Cyclin D Homo sapiens R-HSA-75815	0.7074	CCND1						
	Vpu mediated degradation of CD4 Homo sapiens R-HSA-180534	0.7145 2	CD4						

	Apoptotic execution phase Homo sapiens R-HSA-75153	0.71452	CASP3						
	p53-Independent DNA Damage Response Homo sapiens R-HSA-69610	0.72146	ATM						
	p53-Independent G1/S DNA damage checkpoint Homo sapiens R-HSA-69613	0.72146	ATM						
	Ubiquitin Mediated Degradation of Phosphorylated Cdc25A Homo sapiens R-HSA-69601	0.72146	ATM						
	DNA Replication Homo sapiens R-HSA-	0.726	PCNA;LIG1						

	69306	65							
	Heparan sulfate/heparin (HS-GAG) metabolism Homo sapiens R-HSA-1638091	0.73484	SDC2						
	Assembly of collagen fibrils and other multimeric structures Homo sapiens R-HSA-2022090	0.73484	MMP9						
	Meiotic recombination Homo sapiens R-HSA-912446	0.73484	ATM						
	Mitotic Prophase Homo sapiens R-HSA-68875	0.73362	MAPK1;MAPK3						
	IRE1alpha activates chaperones Homo sapiens	0.74122	HSPA5						

	R-HSA-381070	9							
	Constitutive Signaling by NOTCH1 HD+PEST Domain Mutants Homo sapiens R-HSA-2894862	0.753772	MYC						
	Signaling by NOTCH1 in Cancer Homo sapiens R-HSA-2644603	0.753772	MYC						
	Signaling by NOTCH1 PEST Domain Mutants in Cancer Homo sapiens R-HSA-2644602	0.753772	MYC						
	Constitutive Signaling by NOTCH1 PEST Domain Mutants Homo sapiens R-HSA-	0.753772	MYC						

	2644606								
	Signaling by NOTCH1 HD+PEST Domain Mutants in Cancer Homo sapiens R-HSA-2894858	0.753772	MYC						
	Formation of the beta-catenin:TCF transactivating complex Homo sapiens R-HSA-201722	0.759711	MYC						
	NIK-->noncanonical NF-kB signaling Homo sapiens R-HSA-5676590	0.759711	CHUK						
	The role of GTSE1 in G2/M progression after G2 checkpoint Homo sapiens R-HSA-8852276	0.765555	TP53						

	Dectin-1 mediated noncanonical NF-kB signaling Homo sapiens R-HSA-5607761	0.77682	CHUK						
	Cell-cell junction organization Homo sapiens R-HSA-421270	0.77682	CDH5						
	Dual incision in TC-NER Homo sapiens R-HSA-6782135	0.78754	PCNA						
	Rho GTPase cycle Homo sapiens R-HSA-194840	0.79915	RAC2;RAC1						
	Triglyceride Biosynthesis Homo sapiens R-HSA-75109	0.80267	GPD1						
	Amyloid fiber formatio	0.8	CALCA						

	n Homo sapiens R-HSA-977225	1216							
	Signaling by NOTCH1 Homo sapiens R-HSA-1980143	0.82979	MYC						
	Assembly of the primary cilium Homo sapiens R-HSA-5617833	0.83501	TUBA1A;TUBB;TUBB4B						
	SUMOylation of DNA damage response and repair proteins Homo sapiens R-HSA-3108214	0.84191	PARP1						
	Influenza Life Cycle Homo sapiens R-HSA-168255	0.84552	CANX;CALR						
	RNA Polymerase I Promoter Clearanc	0.8457	MAPK3						

	e Homo sapiens R-HSA-73854	6							
	COPI-mediated anterograde transport Homo sapiens R-HSA-6807878	0.85318	CD55						
	RNA Polymerase I Transcription Homo sapiens R-HSA-73864	0.85675	MAPK3						
	Glucose metabolism Homo sapiens R-HSA-70326	0.85675	CALM1						
	Processing of DNA double-strand break ends Homo sapiens R-HSA-5693607	0.86364	ATM						
	Collagen formation Homo sapiens R-HSA-	0.8766	MMP9						

	1474290	45							
	Meiosis Homo sapiens R-HSA-1500620	0.87645	ATM						
	Cell junction organization Homo sapiens R-HSA-446728	0.87946	CDH5						
	G2/M Checkpoints Homo sapiens R-HSA-69481	0.88196	ATM;TP53						
	Diseases of glycosylation Homo sapiens R-HSA-3781865	0.88526	SDC2						
	Respiratory electron transport Homo sapiens R-HSA-611105	0.88526	ETFDH						
	Chromatin organizat	0.9	ATF2;CCND1;JAK2						

	ion Homo sapiens R-HSA-4839726	1427							
	Chromatin modifying enzymes Homo sapiens R-HSA-3247509	0.91427	ATF2;CCND1;JAK2						
	Phase II conjugation Homo sapiens R-HSA-156580	0.91465	GSS						
	tRNA processing Homo sapiens R-HSA-72306	0.92074	TRDMT1						
	HATs acetylate histones Homo sapiens R-HSA-3214847	0.92819	ATF2						
	Respiratory electron transport, ATP synthesis by chemiosmotic	0.93165	ETFDH						

	coupling, and heat production by uncoupling proteins. Homo sapiens R-HSA-163200								
	Cell Cycle Checkpoints Homo sapiens R-HSA-69620	0.93745	ATM;TP53						
	RHO GTPases Activate Formins Homo sapiens R-HSA-5663220	0.93959	RAC1						
	RNA Polymerase I, RNA Polymerase III, and Mitochondrial Transcription Homo sapiens R-HSA-504046	0.94255	MAPK3						
	Glycosaminoglycan metabolism	0.9499	SDC2						

	Homo sapiens R-HSA-1630316	18							
	TCF dependent signaling in response to WNT Homo sapiens R-HSA-201681	0.955578	MYC;AKT1						
	Late Phase of HIV Life Cycle Homo sapiens R-HSA-162599	0.957225	PPIA						
	M Phase Homo sapiens R-HSA-68886	0.989797	MAPK1;MAPK3						
	Metabolism of carbohydrates Homo sapiens R-HSA-71387	0.992399	SDC2;CALM1						
	Metabolism of amino acids and derivatives Homo sapiens	0.999975	TPO						

	R-HSA-71291								