

Biology: The Science of Life

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Editorial

Biology is an important subject and affects our lives dramatically. Biologists across the world are working on many human problems that influence man's day to day life such as AIDs, recent outbreak Covid-19, Cancer, Diabetes etc. These insights are crucial to improve the quality of lives of human beings. Biology scientists gain this knowledge through deductive and inductive reasoning. They make alternate proposals about general principles and test each to conclude which one is true. Based on these observations, an hypothesis is made that coincide with known facts. An experiment is done to test hypothesis and final theory will be made and disseminated to scientific community with results and conclusions. This is how Darwin's theory of Evolution by Natural Selection was made.

Biology studies or experiments are conducted at different levels like molecule, cell, organ and organism. Cell Biology studies at molecular, cellular and organellar level to draw insights on how cells grow, divide and communicate. Genetics studies at organism level about individual traits and transmission from one generation to another, understands evolution at population and ecosystem levels. Different molecules unite with different bonds and form a living organism. The living body is made of majorly molecules like proteins that take part in chemistry of the cell like catalysis, transportation etc., nucleic acids are those that store and transfer genetic information within the cell, Lipids store energy and form different membranes and carbohydrates which are building materials and also store energy.

All organisms share some common fundamental properties which biology studies about such as "Cellular Organization" means all living bodies are composed of cells which unite together to form different organs, "Sensitivity" means all

organisms respond to external stimuli in same or the other way, "Growth" means all organisms generate and utilize energy for performing different actions which is called metabolism, "Reproduction" means all organisms reproduce to pass on traits to next generations and to continue life, "Regulation" means all organisms coordinate internal processes through different regulatory mechanisms, and "Homeostatis" means all organisms have same uniform internal conditions as compare to outside environment.

Biologists differentiated and defined diversity of life based on similarity of composition and function in 6 different categories which are called as kingdoms of life for easy study. Archabacteria-These prokaryotes lack peptidoglycan cell wall and methanogens, halophiles and thermophiles come under this domain. Eubacteria-These prokaryotes have peptidoglycan cell wall and pathogenic bacteria, nitrogen-fixing bacteria, soil bacteria and cyanobacteria belong to this category. Protista-are single cellular eukaryotes and amoebas, paramecia and algae (which is multicellular) belong to this kingdom. Fungi-many are multicellular eukaryotes, have chitin cell wall, usually do not have movement and mushrooms, yeasts (unicellular) fall in this domain. Plantae-Eukaryotic organisms, multicellular, no movement, usually terrestrial organisms like tress, grasses and mosses that depend on photosynthesis. Animalia-eukaryotic multicellular motile organisms including sponges, humans, penguins etc.

Thus biology scientists are conducting experiments to better understand each life form from small bacteria to humans on earth and other planets and draw conclusions on their bodies, possible threats from environment and their resources.