Biology

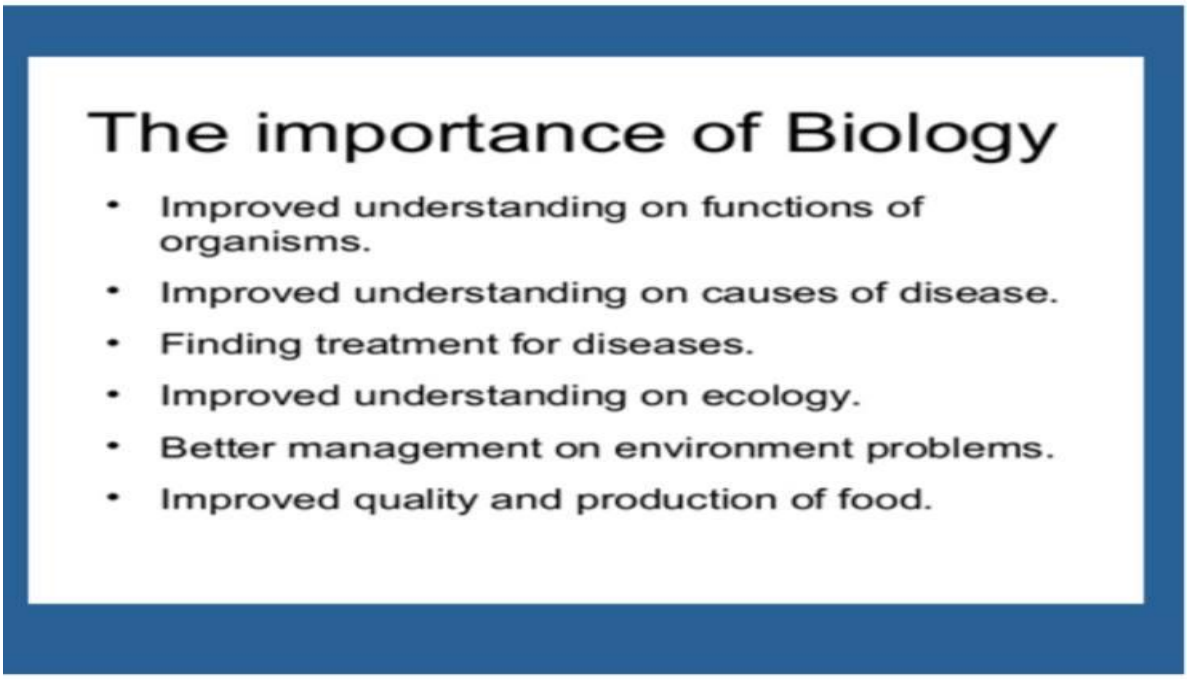
GENERAL INTRODUCTION

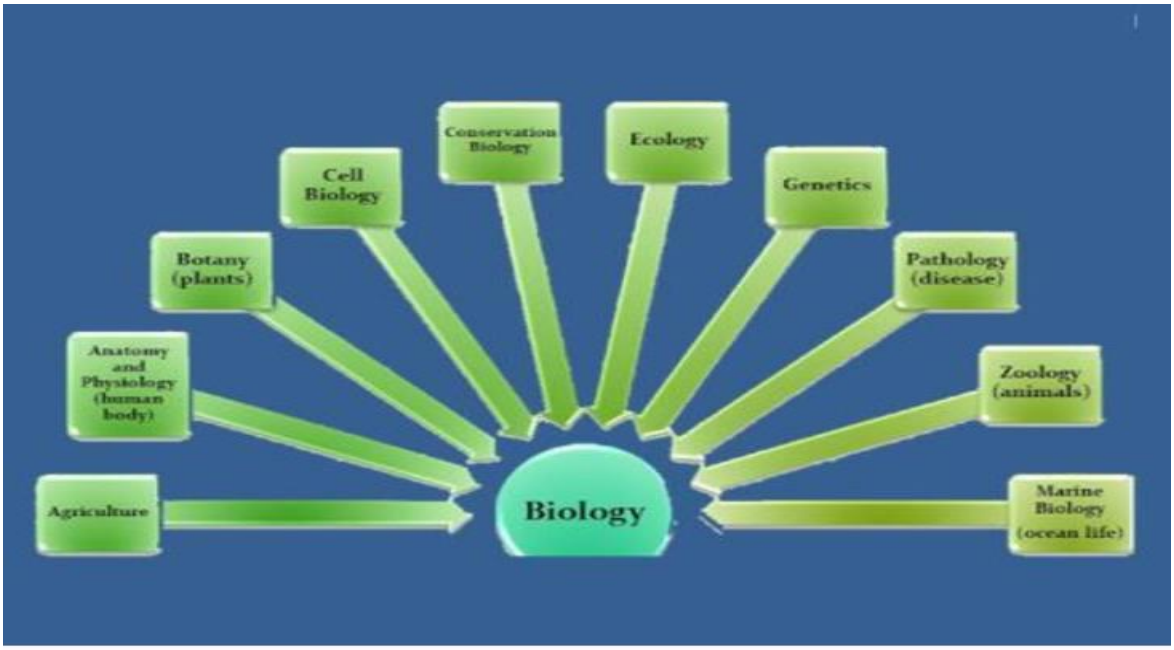
Definition of Biology:

Biology is a natural science concerned with the study of life and living organisms, including their structure, function, growth,evolution, distribution, and taxonomy. The word biology is derived from Greek origin: Bios means life and logos means science or the study of living things.

Importance of Biology

The many branches of biology have much to tell us about what the human body is made up of, how it works, and how it's affected by what we eat, the air we breath, and every other aspect of the world around us. It can help us prevent, cure, and even eliminate disease





The Seven Characteristics of Living Things

living things : All animals , plants, bacterium, protist, fungus are living things. If something is living it will carry out all of the seven activities

Non-living things:Sand, wood and glass are all non-living things.

1-Feeding

All living organisms need to take substances from their environment to obtain energy, to grow and to stay healthy.

2-Movement

All living organisms show movement of one kind or another. All living organisms have internal movement, which means that they have the ability of moving substances from one part of their body to another. Some living organisms show external movement as well - they can move from place to place by walking, flying or swimming.

3-Breathing or Respiration

All living things exchange gases with their environment. Animals take in oxygen and breathe out carbon dioxide.

4-Excretion

Excretion is the removal of waste from the body. If this waste was allowed to remain in the body it could be poisonous. Humans produce a liquid waste called urine. We also excrete waste when we breathe out. All living things need to remove waste from their bodies.

5-Growth

When living things feed they gain energy. Some of this energy is used in growth. Living things become larger and more complicated as they grow.

6-Sensitivity

Living things react to changes around them. We react to touch, light, heat, cold and sound, as do other living things.

7-Reproduction

All living things produce young. Humans make babies, cats produce kittens and pigeons lay eggs. Plants also reproduce. Many make seeds which can germinate and grow into new plants.

All these characters can be Summarized in:

A--Degree of orderliness.

B--Ability to respond to stimuli.

C--Capacity to grow, develop and reproduce by using hereditary molecules.

D--Possession of regulatory processes, which control and coordinate life functions.

Branches of Biology:

Biology can be divided into two major fields: **zoology and botany.**

Zoology deals with animals, while botany deals with plants. Each of these major fields includes different life sciences* such as:

Morphology: A branch of biology that deals with form and structure of animals and plants. Such study on the cellular level is known as Cytology. On tissue level, it is known as Histology

Embryology: The study of formation and development of embryo

Anatomy - study of the animal form, particularly human body

Biotechnology - applied science that is concerned with biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use

Cell biology - the study of cells at the microscopic or at the molecular level. It includes studying the cells' physiological properties, structures, organelles, interactions with their environment, life cycle, division and apoptosis

Ecology - the scientific study of between plants, animals, and their environment

Immunobiology - a study of the structure and function of the immune system, innate and acquired immunity, the bodily distinction of self from non self, and laboratory techniques involving the interaction of antigens with specific antibodies

Microbiology - the branch of biology that deals with microorganisms and their effects on other living organisms

Molecular Biology - the branch of biology that deals with the formation, structure, and function of macromolecules essential to life, such as nucleic acids and proteins, and especially with their role in cell replication and the transmission of genetic information

Mycology - the study of fungi

Parasitology - the study of parasites and parasitism

Pathology - the study of the nature of disease and its causes, processes,

development, and consequences

Pharmacology - the study of preparation and use of drugs and synthetic medicines

Physiology - the biological study of the functions of living organisms and their parts

Toxicology - the study of how natural or man-made poisons cause undesirable effects in living organisms

Virology - study of viruses

Zoology - The branch of biology that deals with animals and animal life, including the study of the structure, physiology, development, and classification of animals.

Genetics:A branch of biology that deals with the heredity and variation of organisms