

Lecture 2 what is Biology ?

Biology (Greek. Bios= life; logos = science or study) is the science which deals with the study of living objects. The plants and animals are living objects. Biology has , thus , two branches:

Botany or Plant Biology. (Greek. Botane = herb or plant is the study of plants).

Zoology or Animal Biology (Greek. Zoon = animal) is the study of animals.

BRANCHES OF ZOOLOGY

There are several branches of Zoology. They deal with different aspects of animal life. The most important branches of Zoology are following :

1. Morphology : It is the study of external and internal form structure of the animals. It is studied under two branches :

(a) External Morphology : It is the study of external structure of animals.

(b) Internal Morphology : It is the study of internal structure of animals. It has three sub-branches:

(i) Anatomy : It is the study of the of different parts of internal structure^fr animal as seen by the naked eye after dissection.

(ii) Histology : it is the study of the microscopic structure of the tissues of which the animal body *is* composed.

(iii) Cytology : It ii the detailed Microscopic study of a cell and its contents

2. Physiology : It deals with the bodily functions of the animals such as nutrition, respiration, excretion, movements, reproduction etc.

3. Taxonomy or Systematic Zoology : It deals with the classification and naming of animals.

4. Ecology : It is the study of animals in relation to their environments such as temperature, heat, water, soil etc.

5. Embryology : It is the study of the development of an animal from egg to adult.

6. Paleontology or Pales-Zoology : It is the study of fossils which are the stonified remains or impressions of the animals which existed in the past.

7. Zoo-geography : It is the study of distribution of animals in different parts of the world.

8. Pathology : It deals with the animal diseases caused by other animals or plants.

9. Economic Zoology : It deals with the economic importance of animals.

10. Evolution : It is the study of the origin of new and complex forms from older and simpler forms by modifications due to changed conditions (adaptations).
11. Genetics: It is the study of Heredity and Variations. *Heredity is the transmission of characters from parents to offspring. Variations are the differences which occur in structure and functions among individuals of the same species.*
12. Eugenics: It is the study of improvement of human races.
13. Euthenics : It is the study of environment and its influence on mankind.
14. Space Zoology : It is the study of survival problems of animals in the outer space.
15. Molecular Biology : It, is the study of living objects up to molecular level.
16. Parasitology : It is the study of parasitic forms.
17. Natural History : It is the study of habits of animals.
18. Ethology : It is the study of behaviour of animals in response to stimuli.

Besides this, there are certain specialized branches of Zoology. They deal with particular kinds of animals or their particular systems. The following are some important species branches:

- (i) Protozoology : It deals with the study of Protozoa (uni-cellular animals).
- (ii) Helminthology : It deals with the study of worms
- (iii) Entomology ; It is the study of insects,.
- (iv) Malacology : It is the study of Molluscs,
- (v) Ichthyology ; It is the study of fishes,
- (vi) Herpetology : It is the study of snakes and lizards,
- (vii) Ornithology : It is the study of birds,
- (viii) Mammalogy : It is the study of mammals.
- (ix) Osteology : It is the study of skeleton of animals,
- (x) Myology : It is the study of muscular system of animal,
- (xi) Syndesmology : It is the study of joints of animals,
- (xii) Angiology: It is the study of circulatory system of animals.
- (xiii) Splanchnology: It is the study of visceral system of animals,
- (xiv) Neurology : It is the study of nervous system of animals
- (xv) Endocrinology: It is the study of endocrine glands. (xvi) Virology: It is the study of viruses.
- (xvii) Anthropology : It deals with the study of physical and social nature of primitive and modern man.
- (xviii) Haematology : It is the study of blood.

The above branches mostly deal with the basic phenomenon of animal life. They are put together as a sub-division of zoology called pure zoology.

There is another sub-division of zoology called applied zoology. This includes those branches of zoology which are of economic value to man. The main branches of applied zoology are the following :

- (i) Medicine : It deals with the study of curing the diseases of man by drugs.
- (ii) Surgery : It is the study of removal of human sufferings by surgical operations.
- (iii) Dietetics : It is the study of nutrition.
- iv) Dentistry: It is the study of teeth.
- (v) Veterinary science : It deals with the study of domestic animals.
- (vi) Fishery or Pisciculture : It deals with the study of rearing fish.
- (vii) Sericulture : It is the study of rearing silk-worm for silk.
- (viii) Apiculture :It deals with the study of bee-keeping for obtaining honey and wax
- (ix) Poultry: It is the study of raising fowl for eggs and meat
- (x) Dairying: It is the study of keeping cattle (buffaloes and cows)
- (xi) Piggery: It is the study of keeping pigs for meat and milk. and pickles.
- (xii) Animal husbandry : It deals with the study of breeding and care of animals,
- (xiii) Hygiene : It deals with the health problems of man.

Because of recent researches with new techniques, modern Biology is divided into the following branches :

- (i) Molecular Biology: It deals with the study of various aspects of Biology at the molecular level.
- (ii) Cellular Biology: It deals with the structure and functions of the cells.
- (iii) Organisms Biology: It deals with the anatomy, physiology, ecology and phylogeny of whole organisms.
- (iv) Developmental Biology: It is the Study of development, healing and aging of organisms.
- (v) Population Biology: It is the study of biological principles (*i.e.* food chains, energy flow ecological crisis etc.) observed in ecosystems.
- (vi) Space Biology: It deals with the study of survival problems of

plants and animals in the outer space.

(vii) Applied Biology: It is the study of application of biological laws to improve the economy of man and to eradicate diseases.

(viii) Radio-biology: It deals with the study of effects of radioactivity on biological system

(ix) Marine Biology: It is the study of marine life.

(x) Immunology: It is the study of immunity i.e. resistance of organism against infection.

(xi) Ethology: It is the study of behaviour of animals.

(xii) Pollution: It is the study of pollution of water, air and atmosphere and their check and Control measures.