

Lec 1

General concept of biology

Biology is the science of living things which deals with the study of the varied aspects of life (of living organisms), such as plant biology (Botany) treating of plants and animal biology (Zoology) treating of animals.

Why we study biology :-

The importance of this broad field of scientific knowledge may be considered from the two natural division of the science itself: plant and animal life

1-Study of plant life: gives man areal appreciation of both morphology and physiology complexities that obtain in the vegetative life surrounding him on every side

2- Study of animal life: brings man to real appreciation of both morphological and physiological complexities that bound in the animal life around him

3-Study of plant and animal diseases are general biology

4-Although the study of parasitology, bacteriology, virology, genetics, etc are general biology

5-To be sure general biology, is of basic importance preparation for such fields as medicine, dentistry, nursing and so on.

6-Plays in the great balance of nature.

Some sub division of biology

It may be sub divided into:

1-**Gross morphology**: deals with plant and animal form and structure which can be distinguished with the naked eye.

2-**Histology**: is the study of tissue.

3-**Cytology**: is the study of the structure of cell.

4-**Anatomy**: is the study of internal architecture of plants and animals.

5-**Embryology**: treats of the changes which plants and animals under go in form and structure during development.

6-**Taxonomy**: is the study concerned with the identification correct nomenclature and placing of organisms or group of organisms into categories related by descent.

7-**Physiology**: deals with the functional processes associated with plant and animal it explain how the different parts of plants and animals function or how they perform their work.

*plant physiology is concerned with the nutrition , growth, reproduction and responses of plants.

8-**Genetics** : is the science which seeks to account for the illness and differences between organisms , related by descent , in fact , genetics has welded together with tow basic biological science(Botany and Zoology) in its work on genes and chromosomes

9-**Pathology**: is the study of the nature of plant and animal diseases , tier causes and symptoms, plant diseses are caused by viruses , by bacteria and other fungal organisms , by certain parasitic rounded worm . also are included nutrient deficiencies , likehydrogen , oxygen and water deficiencies . diseases of animals are caused by viruses, by bacteria and other fungal organisms , by pathogenic protozoa and helminthes , by vitamin deficiencies , by radiation , by certain insects.

10-**Ecology**: deals with the relations between living organisms and their biotic and a biotic environment. The a biotic or non living environment factors, including temperature , light and other radiation , water , gravity, soil texture, and chemical composition , pressure and others.

The biotic or living environmental factors and inter reaction with other organisms in ecology one learns the effects of these factors on plant and animal behavior.

11-**Biogeography**: is a consideration of the distribution of the various individual types of plants and animals association which cover the land surface of the earth and those found in water and soil. It also includes a study of factors which determine plant and animal distribution.

12-**Paleontology**: is a science which deals with the study of extinct plants and animals that survive today as fossils . knowledge obtained from a study of these fossils has been of unique assistance in supplying evidence for organic evolution, paleontology can be sub divided into paleobotany and paleozoology.

13-**Economic biology**: is the study of plants and animals and their products that benefit man.

Lec 2

The kingdom of living things:-

Classification : refer to placing a group of organisms in its proper place within the modern plan of classification . to bring related groups of plants and animals for classification they demands a knowledge of the gross anatomy , histology, cytology, embryology , ecology, biochemistry, genetics, and geographical distribution of organisms .

Classification of organisms :-

Living things can be sorted in to groups on the basis of shared feature and also can be grouped if they have some thing in common. Modern classification system are based on a careful study of all the main features of organisms including body shape , different types of limbs and skeletons , the arrangement of internal organs and many other characteristics.

Biological classification :-

Closely related species are grouped together in the next higher unit of classification , the genus (genera) . the scientific names of plants and animals consist of two words , the genus and the species , given in latin , this system of naming organisms called the binomial (two name system, was first used by Swedish botanist carlos Linnaeus

Just as several species may be grouped together to form a genus , so too in modern taxonomy a number of genera may be grouped together on the basis of structure , biochemical similarities ,and other criteria to compose a family , families may be grouped together in to order, orders into classes and classes in to divisions (phylum) , phylum may be grouped together in to kingdoms either plant kingdom or animal kingdom.

Species

Define as population of similar individual alike in their structure and produce fertile offspring. Human ,cats, dogs and sunflower are example of species .

Naming organisms

Every species of organisms known to science, living and extinct , has been given a double scientific name , one name for its genus (the generic name) and one for its species (the specific name) this scientific name is always written in

latin which mean that all scientists can use the same name and be sure they are talking about the same organisms , for example the scientific name for human is Homo sapiens , this is usually written H. sapiens for short , the generic name is always written with capital letter and specific name with a small letter