جامعة المستقبل
كلية العلوم
علوم الكيمياء الحياتية

GENERAL BIOLOGY

قسم علوم الكيمياء الحياتية / المرحلة الأولى

LECTURE : 1

INTRODUCTION TO ZOOLOGY AND ANIMALCLASSIFICATION

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Introduction to Zoology

What is Biology?

▪ **Biology** is a study of life in all its living things.

▪ Living things are called organisms.

▪ Biology includes the study of structure, function, growth, evolution, distribution, and taxonomy.

▪ Organisms include: plants, animals and microorganisms (virus and bacteria) including human.

The term "Biology" is derived from: Bios = life and Logos = to study

What is Zoology?

Zoology: is the scientific study that deals with animals and animal life, including the study of structure, physiology, development and classification of animals.

The term "Zoology" derived from: Zoon = Animal and Logos = to study

▪ Zoology is a branch of Biology which study the animal kingdom.

▪ Botany is also a branch of Biology which study plant kingdom.

▪ Zoologist is the scientist who study zoology.

The study of zoology was done by the contribution of thousands of scientists around the world throughout centuries.

Why study Zoology?

▪ A better understanding of structure and physiology of our body. Why?

▪ Better understand how animals can adapt successfully to different environmental conditions.

▪ Zoology and Botany are important fields, which many disciplines rely on such as medicine, pharmacy, veterinary and nutrition.

▪ New surgical methods and new drugs applied to animals before being introduced to humans.

▪ Help to understand how parasites infect us and how are distributed.

▪ Improve the quality of animals: eggs, milk, meat.

▪ Using animals (mice, rats and rabbits) in scientific experiments to understand how microbes behave and how to treat them.

▪ Understand the life cycle of many bad insects which caused problems to the crops and how to control them.

Branched of Zoology:

Morphology: Study the outer shape of the animals.

Anatomy: Study of the structure of entire organisms and their parts.

Cytology: Study of structure and functions of cells.

Ecology: Study of the interaction of organisms with their environment.

Histology: Study of tissues.

Embryology: Study of the development of an animal from the fertilized egg to birth.

Physiology: Study of the function of organisms and their parts.

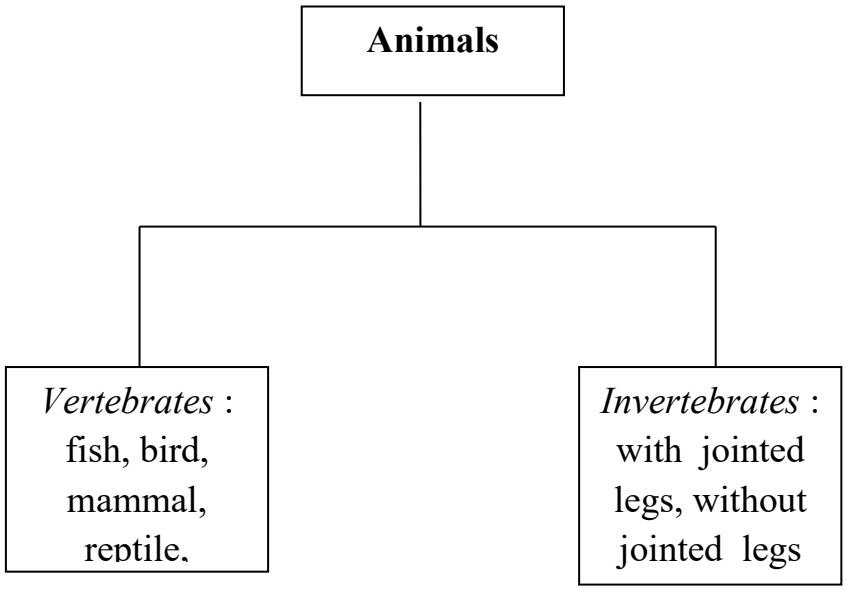
Genetics: Study of the mechanisms of transmission of traits from parents to offspring.

Molecular Biology: Study the subcellular details of structure and function.

Parasitology: Study of animals that live in or on other organisms at the expense of the host.

Animal Classification

Animal are broadly divided into **vertebrates** and **invertebrates.** A vertebrates is an animal with a backbone. An invertebrates is an animal without a backbone.



VERTEBRATES

FISH



Characteristics

- Fish have bodies that are well adapted for life underwater.
- Their skin is covered with hard and slimy scales for protection.
- They have fins and tails to swim.
- They absorb dissolved oxygen in the water through their gills.
- Most of them lay eggs that are fertilized outside their bodies.
- Fish are cold-blooded animals.
- This means that their body temperature changes with their surrounding temperature.

AMPHIBIAN



Characteristics

- Amphibians are cold blooded animals that can live both on land and in water.
- Most amphibians adults live on land.
- They return to the water only to lay eggs.
- The eggs are fertilized outside the female's body (external fertilization).
- The young amphibians live in water and breathe through their gills.
- The adults breathe with their lungs when on land and through their skin when in water.
- The adults have loose and moist skin.

REPTILES



- Many reptiles live on land.
- All reptiles have hard dry scales to protect their bodies.
- They breathe with their lungs and are cold-blooded animals.
- Reptile eggs are fertilized inside the female body.
- The eggs have tough, leathery shells to prevent them from drying out.

BIRD



Characteristics

- Birds are the only animals with feathers.
- They have beaks and wings but not all of them can fly.
- They breath with their lungs.
- They are warm blooded animals.
- This means that their body temperature remains constant and doesnot change with the environment.
- Their eggs, which are fertilized internally (internal fertilization), have hard shells and are laid in their nests.

MAMMAL



Characteristics

- Mammals are warm-blooded animals whose bodies are covered with hair or fur.
- Their eggs are fertilized internally and their young develop inside the female body.
- All mammals, except the duck-billed platypus and the spiny anteater, give birth to live young.
- Their young feed on milk from the mother's mammary glands.
- Mammals breathe with their lungs.
- This includes those living in the water such as dolphins and whales.

CRITERIA

Type Of Vertebrates	*Body Temperature*	*Method Of Reproduction*	*Body Covering*	*Breathing Organ*	*Method Of Fertilisation*
Fish	Warm-blooded	Laying eggs	Feathers	Lungs	Internal
Amphibian	Cold-blooded	Laying eggs	Dry and scaly skin	Lungs	Internal
Reptile	Cold-blooded	Laying eggs	Fins and tails	Gills	External
Bird	Warm-blooded	Giving birth	Hair/Fur	Lungs	Internal
Mammal	Cold-blooded	Laying eggs	Smooth and moist skin	Gills and lungs	External