

Lesson N°03

The emergence of biology in antiquity

I. Definition of antiquity

Antiquity (Latin: antiquus/ anterior, ancient) is an epoch that follows prehistory. Antiquity is characterized by the development of writing. It began in the 1st millennium BC with the invention of writing in Mesopotamia and Egypt.

II. Oriental antiquity

II.1 Extreme Orient :

A. China:

The Chinese already knew a great deal about the biology of various animals, such as silkworms, which they bred to produce precious textiles.

B. India:

They also had more or less empirical biological knowledge of various animals :

- ❖ Cross-breeding of various domestic mammals
- ❖ Adaptation of freshwater fish to their habitats and observation of their reproduction periods.
- ❖ Ecological requirements of certain insects (such as the lacquer mealybug).

II-2-Near and Middle Orient

A- Mesopotamia (Babylonian, Sumerian and Assyrian civilizations) :

It was the source of ancient civilizations with diverse biological practices :

- ❖ Inventors of writing (cuneiform)
- ❖ Rough knowledge of general and functional biology, but very precise anatomy: they made terracotta organs of various viscera (notably the liver), which proves that they practiced animal dissection.
- ❖ Selective crossing methods: crossing between horses and donkeys.
- ❖ Distinction between different breeds of horse.
- ❖ For them, the heart is the seat of intelligence and the liver the seat of blood circulation.

B- Egypt:

The contribution of the ancient Egyptians, who are well known for their highly advanced and refined civilization, to biology consists essentially of :

- ❖ Has a very good knowledge of human and animal anatomy thanks to the practice of embalming corpses and successfully performing surgical operations.
- ❖ Use of selection for animals.
- ❖ Identification and description of a wide range of diseases. They are skilled in cardiology, gynecology, eye, intestinal and urinary tract medicine.

III- Occidental antiquity

A. Greece :

Greek civilization is the result of an important mix of cultures: Chinese, Indian, etc. It is characterized by :

- ❖ The emergence of scientific thought, the manuscripts and thoughts that dominated the history of science until the 17th century.
- ❖ A number of personalities have made major contributions to Greek biology. The most notable are :

1- **Thales** wrote in his "Cosmology" that water is the origin of all life.

2- **Anaximander**, the first Greek physiologist, believed that animals were born in the sea, that man came from another species and that life originally came from water and evolved to adapt to life on land.

3- **Pythagoras** with the idea of sea-level change.

4- **Alcméon** was the first Greek to perform systematic dissections. He links the brain and the senses.

5- **Hippocrates** wrote several medical treatises under the name of "Corpus Hippocratis", which would serve as a reference for some time to come, on embryology, pathology, physiology and gynecology. According to Hippocrates :

- ⇒ The heart is the center of intelligence
- ⇒ For him, nerves serve as tendons for the organs.
- ⇒ Breathing cools the heart, which is where blood and air meet.

B. Rome

During the Roman Empire, the biological sciences began to decline. The Romans' contribution to biology was far less important than that of the Greeks :

L'émergence de la biologie dans l'Antiquité

- 1- Pliny the ancient**, Roman chief (procurator then admiral) wrote "Natural Histories", a very large book taking inventory of current knowledge in biology.
- 2- Gallien**, was interested in anatomy and made many anatomical plates, but using animals because of religion. He was also an experimental physiologist who understood the role of motor nerves and knew that arteries carry blood (not air).