General

1. Definition of science

Before embarking on a history of science, it makes sense to define what we mean by science. The word itself comes from the Latin scientia, whose root is scire, meaning "to know". It is the body of knowledge and study of universal value.

2. What is biology?

The word biology comes from the Greek words bios meaning life, and logos meaning study. So biology is defined as the study of life. More specifically, it is the study of living organisms and organisms that were once alive.

3. History of science

As a discipline, we study the progressive transformation of these speculations, and the accompanying accumulation of knowledge. In these courses, we present lines of this evolution of scientific knowledge, which constitutes a history of science.

4. Knowledge

It's the action of understanding and knowing the properties and characteristics o f something: knowledge of nature.

5. Intuition

Direct, immediate knowledge of the truth, without recourse to reasoning or experience.

6. The technology

It's a humanitarian effort to transform knowledge and theories into practical work to improve living standards and the human environment.

7. Some Biology disciplines

Biology is the science of living organisms. It covers part of the natural sciences and the natural history of living beings.

Life takes so many forms and on so many different scales that biology covers a very

broad spectrum, from the molecular level, through the cell, then the organism, right up to the population and ecosystem level. These different levels show that the field of life is highly hierarchical, and as biology progresses, it specializes in multiple fields, all more or less related to each other.

a. Biochemistry

Biochemistry, the study of the chemical reactions of metabolism (which enables the development and reproduction of living organisms), and the molecules that make it up.

Biochemistry is derived from biology and chemistry. As such, it covers several aspects of the chemistry of living organisms: the structural and functional study of biological molecules (proteins, lipids, carbohydrates and nucleic acids) and their metabolism, the study of enzymes (enzymology), or the study, at the molecular level, of the expression and transmission of genetic information.

Liebig, Justus, baron von (1803-1873), German chemist

Calvin, Melvin (1911-1997) American biochemist won the Nobel Prize in Chemistry in 1961.

b. Microbiology

Microbiology is the study of microscopic organisms, in particular bacteria, protozoa, viruses, certain fungi (yeasts) and small unicellular algae.

Microbiology encompasses all biological disciplines concerned with these micro-organisms, including bacteriology, virology and parasitology. Microbiology, which developed in tandem with microscopy, studies not only the morphology of micro-organisms, but also their mode of life, metabolism, molecular structure, possible pathogenic properties and antigenic characteristics.

Van Leeuwenhoek, Antonie

Pasteur, Louis

C. Zoology

Zoology, the branch of biology devoted to the study of the animal kingdom. Zoology

studies all the characteristics of animals: physical, physiological, behavioral and so on. It also classifies organisms and traces their evolutionary history. In fact, zoology covers a large number of different disciplines: taxonomy (or species classification), embryology (study of development), anatomy, animal physiology, histology (which deals with tissues, the constituents of organs), ethology (study of animal behavior), and so on.

Aristotle

Cuvier, Georges

d. Botany

Botany is the branch of biology devoted to the study of plants. Initially, it covered all non-animal organisms (the living world was divided into plant and animal kingdoms). Today, the living world is divided into five major groups: animals, plants, fungi, protists (unicellular eukaryotic organisms) and bacteria (prokaryotes).

Theophraste

Linné, Carl von

e. Ecology

Ecology is the science that studies the conditions of existence of living beings (animals and plants) in relation to the natural environment in which they live. It's the science of living beings' relationships with each other and with the outside world.

Humboldt, Alexander, Baron von (1769-1859), German naturalist Haeckel, Ernst Heinrich (1834-1919), German biologist and philosopher

f. Biophysics

Biophysics attempts to explain, through physical laws, certain properties of living organisms and their physiology. Today, this science is closely linked to several biological disciplines, including biochemistry, genetics, molecular biology and microbiology. An extension of physics and physical chemistry, biophysics is concerned with biological problems, which it attempts to solve using techniques derived from the physical sciences.

Archimedes

Prehistory

A. The nature of this era:

1. Primitive

2. Natural: using nature to live.

3. Analphabetic

B. The characteristics of this era: prehistory is divided into different periods characterized by specific techniques:

1. The Paleolithic is the earliest period, characterized by carved stone technology and a nomadic lifestyle. Humans lived by hunting and gathering. This era began three million years ago, long before the human species had reached its current appearance. Among the techniques developed during the Paleolithic period were the domestication of fire, the manufacture of clothing and containers from animal skins, and the production of hunting tools and canoes. The domestication of dogs probably dates back to the Paleolithic period.

2. The Neolithic period was originally defined by the use of polished stone, but it was above all characterized by the emergence of animal husbandry (domestication of goats, pigs and cattle) and agriculture. The earliest traces of a Neolithic population can be found& in the Middle East, dating back t o between 9,000 and 6,000 BC. The art of pottery was also developed at this time. The invention of the wheel dates back to this period. The invention of agriculture was perhaps the greatest revolution in the evolution of the human race. Humans had to work the land by the sweat of their brow to survive, a task fortunately compensated for by a relatively stable diet.

The appearance of the first furnaces coincides with the beginning of the Metal Age. The first metals were native (gold, silver and copper) and used mainly for decorative purposes.

C. Acquiring knowledge in this era:

Man took these needs (food, clothing and protection) f r o m natural sources (animals, plants and stones), where he learned the skills of hunting, protection, construction and hiding.

C.1. food knowledge :

❖ Depending on how you eat :

1. the direct consumption stage, 2. the selection and diversification stage, 3. the blending and cooking stage.

❖ Depending on power supply access mode :

1. The hunting and harvesting stage, 2. The storage stage, 3. T h e farming stage, 4. The grazing stage.

C.2. Knowledge of raw materials :

1. Plant materials :

These were the first materials man used to make tools, because they were readily available and easy to transport and shape.

2. Animal materials :

Bone was used as a hunting and logging tool, while animal skins were used to make clothing and containers.

3. Stones:

It was easy for man to use stones as tools in his daily life because they were available everywhere and in deferent patterns, and they were also very easy to shape, which is why they were part of the raw materials.

4. Metals :

The use of metals came after a long period of use of stone. Because they are less widespread and require a change in appearance and composition, obtaining them requires knowledge of soil and rock composition.

C.3. knowledge of the defence sector :

1. clothing and footwear:

Man dressed to protect himself as he moved to regions whose environment

differed from his own, and he added aesthetic purposes later.

As for footwear, it plays a protective role and makes walking safer.

2. Accommodation :

The man needed a home to protect him from the elements and aggression, as well as for his privacy.

The form of the habitat evolved from caves to roofed dwellings, and was then surrounded by blackberries.

Construction tools have evolved from plant elements to stone tools.

3. Defense:

The earth was full of wild animals, which is why man had to invent tools to fight them.

C.4. knowledge of toolmaking :

Man began with simple tools to provide food.

1. pottery tools :

The art of pottery developed at this time with the invention of agriculture, because of man's need for containers to preserve the harvest.

C.5. knowledge of the transport sector :

It began as a means of shopping, transporting crops or hunting to the place of consumption, then developed into a means of bringing people together.

The means of transport are known in 3 stages:

1. human energy, 2. animal energy, 3. hydraulic energy (boats).