
BIOLOGY IS THE KEY SUBJECT OF THE MODERN SCHOOL

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Annotation.

Modern man, regardless of what type of activity he chooses for himself in the future, must be able to build his relationship with nature based on respect for man and the environment. He must have an ecological culture and be well versed not only in the biological, but also in the fields of knowledge bordering on it. To do this, you need to know the history of biology, biological terms, concepts, theories, and be sure to have the skills of their practical application in various fields. In this regard, the problems of the modern school and biology, in particular, are today integral to the problems and life of society.

Keywords.

Biology, biocenosis, heredity, variability, adaptability, individual and historical development of organisms, microbiology, virology, helminthology, parasitology.

Today, biology is the problems of the ecological crisis, a sharp increase in the number of diseases, the disappearance of small and large biotopes with their inhabitants, pollution of water areas.

The term "biology" (from the Greek "bios" - life and "logos" - science) was introduced independently by several authors: F. Burdach in 1800, J.B. Lamarck and G. Treviranus in 1802 to designate the science of life as a special natural phenomenon. From this moment on, one can speak of biology as a complex science, although its history dates back to ancient times. For a long time, information about wildlife has been accumulated within the framework of natural philosophy, medicine, and in connection with the needs of plant growing and animal husbandry. The most ancient should be considered such areas as comparative anatomy, morphology and systematics. Currently, the term biology is also used, referring to groups of organisms up to the species (biology of microorganisms, biology of the reindeer, human biology), biocenoses (biology of the Arctic basin), individual structures (biology of the cell) [1].

In the modern view, biology is a set of sciences about wildlife - about a huge variety of extinct and now inhabited the Earth living beings, their structure and

functions, origin, distribution and development, relationships with each other and with inanimate nature. Biology establishes general and particular patterns inherent in life in all manifestations (metabolism, reproduction, heredity, variability, adaptability, growth, irritability, mobility, etc.). The object of study of biology is wildlife in its natural state and integrity. The subject of biology as a scientific discipline is life in all its manifestations: structure, physiology, behavior, individual and historical development of organisms, their relationship with each other and with the environment. As a special science, biology emerged from the natural sciences in the 19th century, when scientists discovered that living organisms have certain characteristics common to all. Since ancient times, people have mastered the environmental conditions, observed nature, and accumulated practical knowledge. The twentieth century is characterized by the development of new biological sciences, the further expansion of the scope of classical research in biology. In this century, genetics, cytology, physiology, biochemistry, developmental biology, evolutionary theory, ecology, biosphere theory, as well as microbiology, virology, helminthology, parasitology and many other branches of biology developed rapidly. Based on the regularities discovered by Mendel, chromosome theories of mutations and heredity were developed (T. Boveri, 190–207; W. Setton, 1902). The chromosome theory was developed by T. Morgan and his students on the basis of the doctrine of a pure line (1903) by V. Johansen, the concepts of gene, genotype, phenotype. Until the middle of the 20th century, the chemical nature of genes was theoretically interpreted in the form of hereditary molecules (N.K. Kolsov, 1927). Based on the study of the acts of transduction and transformation in microorganisms, it was established that the DNA molecule carries genetic information (USA, O. Avery, 1944). The study of the structure of the DNA helix (J. Watson, F. Crick, 1953) led to the discovery of the genetic code. These discoveries marked the beginning of molecular genetics. The study of the amino acid composition of proteins, the synthesis of certain proteins (insulin), the establishment that viruses and phages consist of nucleoproteins are among the most important discoveries made in the middle of the 20th century. The discovery of the electron microscope made it possible to see structures that cannot be seen with a conventional microscope, to examine the finest structure of a cell, to study in detail the structure of bacteria and viruses.

Thanks to these discoveries, in the second half of the 20th century, the youngest field of biology, molecular biology, was born and began to develop rapidly. Research in molecular biology has led to new ideas in all areas of biological

science; radically changed the idea of the structure and functions of the cell. In the 20th century, great progress was made in the field of animal physiology. The Russian scientist I. M. Sechenov (1829-1905) studied the nervous system and founded the theory of brain reflexes. IP made a number of major discoveries in the field of conditioned and unconditioned reflexes, nervous regulation of blood circulation and digestion. His theory of conditioned reflexes and higher nervous activity was awarded the Nobel Prize. During this period, neurophysiology also began to develop rapidly. In plant physiology, a significant breakthrough was achieved in the study of photosynthesis processes, first of all, chlorophyll and chlorophyll were synthesized, some plant growth hormones (auxins, gibberellins) were isolated and artificially synthesized. Important discoveries were also made in the field of evolutionary theory, in particular, in the 1920s and 1930s, the centers of origin of cultivated plants were identified; revealed the role of mutational variability, changes in the number of individuals and isolation in the influence of selection in a certain direction (N.I. Vavilov, S.S. Chetverikov, B.S. Haldane, R. Fisher, S. Wright, J. Huxley, F.T. Mayr and others). This made it possible to further develop Darwinism, the development of a synthetic evolutionary doctrine, including the doctrine of microevolution and macroevolution of evolutionary factors (I. I. Shmalgauzen and others). The teachings of V. I. Vernadsky on biogeochemistry and the biosphere and the teachings of A. Tensley on ecosystems (1935) are among the great achievements of biology and are of great importance in the development of relations between man and nature. W. Shelfard (1912, 1939), Ch. Thanks to the works of Elton (1934) and others, the theoretical foundations of ecology were developed. Since the middle of the 20th century, the achievements of ecology and the problems of nature conservation have led to the greening of almost all biological sciences. Molecular biol. work in the field of genetics (the discovery of the genetic code, the synthesis of artificial genes) became the theoretical basis for the development of such applied sciences as genetic engineering and biotechnology. Population biology has developed rapidly in recent years. Research in this area makes it possible to successfully solve such problems as meeting the nutritional needs of a growing population, protecting endangered species, and preserving the biological diversity of living organisms.

In the 20th century, biology achieved grandiose successes, an unprecedented contribution was made to the knowledge of wildlife, even greater successes and a theoretical breakthrough in biology are expected in the 21st century. Thus, traditional biology continues to develop at the present time. Compared with other

areas, it has the necessary advantage: its scientific material is accumulated as a result of direct observation of the object of study - wildlife, perceived as a whole in all its diversity of forms and manifestations. Due to this advantage, traditional biology will continue to develop in the future. Without school biology, it is unlikely that it will be possible to instill goodness and mercy in the hearts of schoolchildren, and even more so to educate a personality. The formation of the worldview of modern man is largely connected with the knowledge of this subject. Today's children are our tomorrow, our future. It is very important what it will be like, what specialists will come to replace us and what they will be able to leave behind: a luminous planet or a lifeless desert.

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