

BIOLOGY

1. Characteristics of life - properties of living matter, differences between living and non-living matter
2. The building blocks of organisms – biopolymers, structure and function of carbohydrates, lipids, proteins and nucleic acids
3. Cell structure – prokaryotic and eukaryotic cells. Membrane cell organelles – their structure and function.
4. Cell division – cell cycle phases, mechanism and genetic consequences of mitosis, mechanism and genetic consequences of meiosis
5. Molecular biology – process of DNA replication, expression of genetic information (transcription and translation), genetic code, mutations
6. The Mendelian genetics – the basic terms of Mendelian genetics, the crosses and Mendel's principles of segregation and independent assortment, the allelic interactions (complete and incomplete dominance, codominance)
7. Digestive system – compounds of the human digestive system – the digestive tract and glands, functions of the human digestive system, mechanism of digestion
8. Urinary system – organs and functions of the human urinary system, structure of the nephron, process of urine formation in the kidneys
9. Respiratory system – compounds of the human respiratory system – the respiratory tract and lungs, functions of the human respiratory system, external and internal respiration, mechanics of breathing
10. Circulatory system – compounds and functions of the human circulatory system, blood circulation, compounds and functions of blood, lymphatic system
11. Immune system – compounds and functions of the human immune system, specific and nonspecific defense, immunogenetics, blood-group systems
12. Hormonal (endocrine) system – endocrine glands and secreted hormones, their functions
13. Nervous system – the basic functions and the constitution of the nervous system, the constitution and types of the neurons, the transfer of the nerve message, the central nervous system: spinal cord and brain, the peripheral nervous system