

## **Questions on molecular biology of intermediate knowledge control module № 1**

1. Golgi apparatus and its functions.
2. Smooth and rough endoplasmic reticulum, its connection to the cell nucleus.
3. Glycocalyx, structure, functions, role in the formation of immune tolerance.
4. Classification of ion channels.
5. Classification of cell receptors.
6. Cellular compartments. One- and two-membrane cell organelles.
7. Organization of intracellular transport of biomolecules. Transport proteins and the role of the cytoskeleton.
8. Organization of chromatin. Attachment of DNA to the nuclear membrane.
9. Receptor, its role in signaling.
10. System of cell membranes.
11. Structure and functions of the cell nucleus. The organization of the membrane of the nucleus. Structure of nuclear pores.
12. Structure and functions of lysosomes.
13. Structure and functions of mitochondria.
14. Structure and functions of peroxisomes.
15. Theory of symbiogenesis.
16. Three-dimensional organization of ion channels, their functions.
17. Three-dimensional organization of cell receptors, their functions.
18. Three-dimensional organization and functions of the cytoskeleton. Proteins of the cytoskeleton. Electric potential of tubulin microfilaments.
19. Three-dimensional structure of the cell.
20. Chemical composition of cell membranes. Differences in the molecular composition of the outer and inner layers of the cell membrane. Differences in the molecular composition of biomembranes of cells of various organs and tissues.
21. Functions of cell membranes, mechanisms of organization of its functions.
22. The electrical potential of the cell membrane and the inner membrane of the mitochondria. Mechanisms of their formation.
23. The effect of excluded space. Organization of intracellular water structure. The concept of three-dimensional cooperative network of hydrogen bonds, the mechanism of Grothus.