

PEPPER APPROXIMATE QUESTIONS TO TEST IN MOLECULAR BIOLOGY

1. Apoptosis and oncogenesis processes (OPK -7, OPK – 9).
2. Biological functions of DNA (OPK -7, OPK – 9).
3. Viral DNA. Heterocomplexes with DNA (OPK -7, OPK – 9).
4. Isolation of RNA, detection of mutations, genome correction, DNA sequencing (OPK -7, OPK – 9).
5. Genetic structures: chromosomes, plasmids, nucleoids, genomes of mitochondria and chloroplasts (OPK -7, OPK – 9).
6. Detection of mutations with obligatory sequencing, segments occupied by them, analysis of images of fluorescent-labeled nucleotides (PK - 21).
7. Domains and chaperons. Heterocomplexes of proteins in biological membranes. Functions and structure of membrane proteins (OPK -7, OPK – 9).
8. Initiation, elongation and termination of prokaryotic and eukaryotic broadcasts (OPK -7, OPK – 9).
9. The cell is the basic unit of structure and development of all living organisms (OPK -7, OPK – 9).
10. Cell as an integral, dynamic system (OPC -7, OPC – 9).
11. Cell topology of formation of ribosomal RNA, proteins and subunits of the ribosome (OPK -7, OPK – 9).
12. Cell cycle (OPK -7, OPK – 9).
13. Construction of microbial cells. Preparation of transgenic organisms (PC - 21).
14. Matrix expression of the RNA, hybridization of nucleic acids, cloning of genes and DNA (-7 OPK, OPK – 9).
15. Methods of molecular genetics (for self - study) (PK-21).
16. Molecular mechanisms of genetic processes: replication, repair, genetic recombination (OPK -7, OPK – 9).
17. Molecular mechanisms of translation. Components of biosynthesis system (OPK -7, OPK – 9).
18. Nucleic acids: structural organization of DNA (OPC -7, OPC – 9).
19. Metabolism, the role of the cell membrane in this process (OPK -7, OPK – 9).
20. Main directions of applied molecular biology: genetic engineering. Methods of genetic engineering (PK - 21).
21. The peculiarities of ontogenesis in prokaryotes and eukaryotes (-7 OPK, OPK – 9).
22. DNA polymorphism. Nuclear, extragerii, transposome DNA (-7 OPK, OPK – 9).
23. Production of proteins by recombinant DNA molecules, primers corresponding to known genes, recombinant DNA molecules (OPK -7, OPK – 9).
24. The concept of supramolecular systems. Intermolecular interactions (OPC -7, OPC – 9).
25. Posttranslational modification of proteins, protein storage and removal processes (OPK -7, OPK – 9).
26. Prions. Amyloids (OPK -7, OPK – 9).
27. DNA repair. Mechanisms of mutation (-7, OPK, OPK – 9).
28. DNA restriction, nucleic acid hybridization, cloning. Chemical synthesis of the gene. Genetic transformation.
29. The ribosome is like a machine translation (DIC -7).
30. Ribosomal proteins, proteins of the satellites of ribosomes (DIC -7).
31. Ribosomal RNA, the active center of the ribosome (DIC -7).
32. The role of the environment in intermolecular interactions (OPK -7, OPK – 9).
33. Assembly of the ribosome into the translation machine (OPK -7).
34. System analysis of the organization of living matter (OPK -7, OPK – 9).
35. Composition and primary structure of proteins. Spatial organization of polypeptide chains, their stabilization (OPK -7).
36. Protein splicing, its types (OPK -7).
37. RNA splicing, its types, role in the immune response (OPC -7, OPC – 9).
38. Structure and functioning of ribosomes (OPK -7).

39. Structure of biological membranes (OPK -7).
40. Structure of water. Excluded volume effects (OPC -7).
41. Gene structure. Gene expression (OPC -7).
42. Structural organization of macromolecules: proteins and their heterocomplexes (OPK -7).
43. Structural organization of RNA. Functions and variety of RNA. RNA structures and their stabilization (OPK -7).
44. mRNA transcription and processing. Genetic code. Transcription and processing of tRNA. Structure and functions of rRNA (OPC -7).
45. Translation. Differences of translational mechanisms in Pro-and eukaryotes (OPK -7).
46. Three-dimensional organization of the ribosome. Stages of ribosome formation in the cell (OPC -7).
47. The three-dimensional structure of the cells (DIC -7).
48. Areas of the bacterial ribosome, which is the object of attack of the bacteriostatic antibiotics (MIC -7).
49. Functions and structures of different types of rRNA (OPK -7, OPK – 9).
50. Chemical structure and spatial organization of DNA, stabilizing interactions in structures (OPK -7).
51. Cytosolic and mitochondrial ribosomes, differences in ribosomes of Pro-and eukaryotes (OPK -7, OPK – 9).