

Questions - exam Pathobiochemistry 2

1. Physical factors involved in the development of cancer.
2. Chemical carcinogenesis.
3. Viral carcinogenesis.
4. Characteristics of transformed cells.
5. Disorders of apoptosis activation in cancer cells.
6. Significance and mechanisms of p53 gene inactivation in the pathogenesis of human tumors.
7. Disorders of DNA repair mechanisms in carcinogenesis.
8. Metabolic changes in cancer cells, Warburg effect.
9. Tumor neovascularization - molecular mechanisms, therapeutic targeting.
10. Metastatic cascade - molecular mechanisms. Premetastatic niche, micrometastasis, dormancy, colonization.
11. Tumor microenvironment - relationships between transformed cells and tumor stroma.
12. Intratumoral heterogeneity.
13. Hereditary cancer syndromes and sporadic cancer.
14. Analysis of hereditary predisposition to cancer - significance, examples, methods.
15. Analysis of somatic mutations and microsatellite markers in sporadic cancers - significance, examples, methods.
16. Options for detecting minimal residual disease.
17. Oncogenes and tumor suppressor genes.
18. Cancer biomarkers - classification according to their use in clinical practice. Sensitivity, specificity, positive and negative predictive values. Methods of determination and detection in biological material.
19. Cancer biomarkers - biomarkers used for diagnosis and monitoring. Characteristics, distribution, examples. Tumour and organ specificity. Oncofetal antigens.
20. Cancer biomarkers - prognostic and predictive biomarkers. Characteristics, distribution, examples. Kaplan-Meier survival function estimation.
21. Cancer biomarkers - biomarkers used for screening and pharmacodynamic biomarkers. Characteristics, distribution, examples, ROC curve.
22. Hormonal anticancer therapy, biochemical mechanism of action, therapeutic use, adverse effects.

23. Radiotherapy in cancer treatment, biochemical mechanism of action, therapeutic use, bystander and abscopal effects, adverse effects.
- 24 Anti-tumour chemotherapy, biochemical mechanism of action of alkylating agents, antimetabolites, microtubular agents and topoisomerase inhibitors, therapeutic use, adverse effects
25. Principles of targeted therapy in oncology, mechanism of action of tyrosine kinase inhibitors, therapeutic use, classification of antibodies, kinome, side effects
- 26 Mechanism of action of inhibitors of self-renewal signaling cascades Wnt, Notch, Hedgehog, induction of apoptosis, treatment directed against DNA repair mechanisms, therapeutic use, side effects.
27. Therapy directed against CD antigens and epigenetic mechanisms, biochemical mechanism of action, therapeutic use, side effects.
28. Anti-tumour immunotherapy, biochemical mechanism of action of oncolytic viruses, vaccines, LAK and TIL cells, therapeutic use, adverse effects.
- 29; Anti-tumor immunotherapy, biochemical mechanism of action of CAR-T cells, cytokines and checkpoint inhibitors, T-receptors, therapeutic use, adverse effects.
30. Pathology of signaling cascades regulating cell growth, biochemical mechanism of action of cyclin/Cdk kinase complex inhibitors, therapeutic applications, adverse effects.