

Cancer Biology Quiz Questions and Answers PDF

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Which treatment uses high-energy particles to destroy cancer cells?

- Chemotherapy
- Immunotherapy
- Radiation therapy ✓
- Surgery

Radiation therapy is a treatment that uses high-energy particles or waves, such as X-rays or gamma rays, to target and destroy cancer cells. This method is commonly used to shrink tumors and eliminate cancerous tissues.

Which type of cancer originates in the bone or soft tissues?

- Carcinoma
- Sarcoma ✓
- Leukemia
- Lymphoma

Sarcoma is a type of cancer that originates in the bone or soft tissues, including muscles, fat, blood vessels, and nerves. It is distinct from carcinomas, which arise from epithelial cells.

How does immunotherapy differ from traditional cancer treatments like chemotherapy and radiation?

Immunotherapy differs from traditional cancer treatments like chemotherapy and radiation by using the body's immune system to target and destroy cancer cells, rather than directly attacking

the cells with drugs or radiation.

What are the challenges and benefits of implementing personalized medicine in cancer treatment?

The challenges of implementing personalized medicine in cancer treatment include high costs, the complexity of genetic testing, and the need for extensive data analysis, while the benefits include more effective treatments, reduced side effects, and the ability to tailor therapies to individual patients' genetic makeups.

Describe the role of oncogenes in the development of cancer.

Oncogenes play a critical role in cancer development by driving the excessive growth and division of cells, often due to mutations that alter their normal function.

What is the primary characteristic of cancer cells?

- Controlled cell division
- Uncontrolled cell division ✓**
- Decreased cell division
- Cell death

Cancer cells are characterized by uncontrolled growth and division, often leading to the formation of tumors. Unlike normal cells, they can evade the mechanisms that regulate cell cycle and apoptosis.

What are the ethical considerations involved in conducting clinical trials for new cancer treatments?

Key ethical considerations include ensuring informed consent from participants, conducting a thorough risk-benefit analysis to justify the trial, prioritizing patient safety throughout the study, and ensuring equitable selection of participants to avoid exploitation.

Discuss the impact of genetic predisposition on cancer risk and prevention strategies.

Genetic predisposition affects cancer risk by increasing the likelihood of developing specific cancers based on inherited mutations, such as BRCA1 and BRCA2 for breast and ovarian cancer. Prevention strategies may include regular screenings, lifestyle modifications, and prophylactic surgeries for those at high risk.

Which factors are considered lifestyle and environmental risk factors for cancer? (Select all that apply)

- Smoking ✓
- High-fat diet ✓
- Radiation exposure ✓
- Genetic mutations

Lifestyle and environmental risk factors for cancer include factors such as smoking, excessive alcohol consumption, poor diet, lack of physical activity, exposure to pollutants, and UV radiation. These factors can significantly increase the likelihood of developing various types of cancer.

Which of the following are common types of genetic mutations involved in cancer? (Select all that apply)

- Point mutations ✓

- Deletions ✓
- Insertions ✓
- Translocations ✓

Common types of genetic mutations involved in cancer include point mutations, insertions, deletions, and chromosomal rearrangements. These mutations can lead to uncontrolled cell growth and tumor formation.

Which screening method is commonly used for early detection of breast cancer?

- Colonoscopy
- MRI
- Mammography ✓
- Biopsy

The most commonly used screening method for early detection of breast cancer is a mammogram. This X-ray imaging technique helps identify tumors that may not be palpable during a physical examination.

What is the primary purpose of angiogenesis in cancer?

- To spread cancer cells
- To provide nutrients to tumors ✓
- To destroy cancer cells
- To activate immune response

Angiogenesis is the process by which new blood vessels form from existing ones, and in cancer, it primarily serves to supply the tumor with the necessary nutrients and oxygen for its growth and metastasis.

Which of the following are common side effects of chemotherapy? (Select all that apply)

- Hair loss ✓
- Increased appetite
- Nausea ✓
- Immunosuppression ✓

Common side effects of chemotherapy include nausea, fatigue, hair loss, and increased risk of infection. These effects vary depending on the type of chemotherapy and individual patient factors.

What does the 'M' in the TNMG cancer staging system stand for?

- Metastasization** ✓
- Mutation
- Mitosis
- Mortality

In the TNMG cancer staging system, the 'M' stands for 'Metastasis', which indicates whether cancer has spread to other parts of the body beyond the primary tumor site.

Which gene is commonly known as the 'guardian of the genome'?

- RAS
- MYC
- p53** ✓
- BRCA1

The gene commonly referred to as the 'guardian of the genome' is p53. It plays a crucial role in regulating the cell cycle and preventing cancer by repairing DNA or triggering apoptosis in damaged cells.

Which of the following are characteristics of malignant tumors? (Select all that apply)

- Slow growth
- Invasive** ✓
- Non-invasive
- Metastatic potential** ✓

Malignant tumors are characterized by uncontrolled growth, the ability to invade surrounding tissues, and the potential to metastasize to distant sites in the body. They often exhibit abnormal cell structures and can lead to significant health complications.

Which of the following is a targeted therapy drug for breast cancer?

- Herceptin** ✓
- Tamoxifen
- Methotrexate
- Cisplatin

Target therapy drugs for breast cancer are designed to specifically target cancer cells while minimizing damage to normal cells. Examples include trastuzumab (Herceptin) for HER2-positive breast cancer.

Explain the process of metastasis and its significance in cancer progression.

Metastasizing involves several steps: cancer cells invade surrounding tissues, enter the bloodstream or lymphatic system, travel to distant sites, and establish new tumors. This process is crucial in cancer progression as it indicates a more advanced stage of the disease, often leading to increased morbidity and mortality.

Which of the following are recent advances in cancer treatment? (Select all that apply)

- CRISPR technology ✓
- Radiation therapy
- CAR-T cell therapy ✓
- Personalized medicine ✓

Recent advances in cancer treatment include immunotherapy, targeted therapy, and CAR T-cell therapy, which have significantly improved patient outcomes and survival rates.

Which of the following are roles of tumor suppressor genes? (Select all that apply)

- Promote cell division
- Repair DNA damage ✓
- Induce apoptosis ✓
- Inhibit cell cycle progression ✓

Tumor suppressor genes play crucial roles in regulating cell growth and preventing uncontrolled cell division, which can lead to cancer. They function by repairing DNA, controlling the cell cycle, and promoting apoptosis in damaged cells.