

Apoptosis Quiz Answer Key PDF

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Which pathway is initiated by internal signals in apoptosis?

- A. Extrinsic pathway
- B. Intrinsic pathway ✓**
- C. Necrotic pathway
- D. Autophagic pathway

What is apoptosis?

- A. A form of programmed cell death ✓**
- B. A type of cell division
- C. A form of cellular growth
- D. A type of inflammation

Which family of proteins is crucial for regulating apoptosis?

- A. Kinase family
- B. Bcl-2 family ✓**
- C. G-protein family
- D. Cyclin family

How can apoptosis be detected and measured in a laboratory setting?

Apoptosis can be detected using assays like TUNEL, which labels DNA breaks, or Annexin V staining, which identifies phosphatidylserine exposure on cell membranes.

What are the roles of apoptosis in the body? (Select all that apply)

- A. Tissue homeostasis ✓**
- B. Immune system regulation ✓**

C. Uncontrolled cell proliferation

D. Removal of damaged cells ✓

How does apoptosis contribute to the prevention of cancer?

Apoptosis eliminates damaged or potentially cancerous cells, preventing them from proliferating and forming tumors.

Explain the difference between the intrinsic and extrinsic pathways of apoptosis.

The intrinsic pathway is initiated by internal signals, often involving mitochondrial release of cytochrome c, while the extrinsic pathway is triggered by external signals binding to death receptors on the cell surface.

Describe the role of p53 in the regulation of apoptosis.

p53 is a tumor suppressor gene that regulates apoptosis by activating pro-apoptotic genes in response to DNA damage, thus preventing the proliferation of damaged cells.

Which gene is known as the "guardian of the genome" and is involved in apoptosis regulation?

A. BRCA1

B. p53 ✓

C. MYC

D. RAS

Which assays are used to detect apoptosis? (Select all that apply)

A. TUNEL assay ✓

B. Western blot

C. Annexin V staining ✓

D. ELISA

What is the role of caspases in apoptosis?

A. To promote cell growth

B. To inhibit cell division

C. To execute cell death ✓

D. To repair DNA

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

A. Cell shrinkage ✓

B. Inflammation

C. DNA fragmentation ✓

D. Membrane blebbing ✓

Which of the following is a characteristic feature of apoptosis?

A. Cell swelling

B. Membrane rupture

C. Chromatin condensation ✓

D. Inflammation

Discuss the potential therapeutic strategies that target apoptosis in disease treatment.

Therapies may aim to induce apoptosis in cancer cells or inhibit excessive apoptosis in diseases like neurodegeneration, using drugs that modulate apoptotic pathways.

What are the consequences of excessive apoptosis in neurodegenerative diseases?

Excess apoptosis can lead to the loss of neurons, contributing to diseases such as Alzheimer's and Parkinson's, resulting in cognitive and motor function decline.

Which proteins are part of the Bcl-2 family? (Select all that apply)

A. Bax ✓

B. Bcl-2 ✓

C. Fas

D. Bak ✓

Which of the following are involved in the intrinsic pathway of apoptosis? (Select all that apply)

A. Cytochrome c ✓

- B. Death receptors
- C. Mitochondria ✓**
- D. Caspase-8

What distinguishes apoptosis from necrosis?

- A. Apoptosis is energy-independent
- B. Necrosis is a controlled process
- C. Apoptosis involves DNA fragmentation ✓**
- D. Necrosis is programmed cell death

Which molecule is released from mitochondria to activate apoptosis?

- A. ATP
- B. Cytochrome c ✓**
- C. Glucose
- D. Oxygen

What can result from dysregulation of apoptosis? (Select all that apply)

- A. Cancer ✓**
- B. Neurodegenerative diseases ✓**
- C. Enhanced immune response
- D. Tissue regeneration