Apoptosis in Development Quiz Answer Key PDF

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What is the role of apoptosis in digit formation?

A. To promote cell growth

B. To separate fingers and toes ✓

C. To fuse bones

D. To enhance muscle development

Which pathway of apoptosis is triggered by internal signals?

A. Extrinsic pathway

B. Intrinsic pathway ✓

C. Lytic pathway

D. Necrotic pathway

Which of the following is an anti-apoptotic protein?

A. Bax

B. Bak

C. Bcl-2 ✓

D. Cytochrome c

What are the consequences of defective apoptosis in neurodegenerative diseases?

The consequences of defective apoptosis in neurodegenerative diseases include increased neuronal survival of damaged cells, leading to neuroinflammation, accumulation of toxic proteins, and ultimately exacerbating the disease pathology.

Describe the differences between the intrinsic and extrinsic pathways of apoptosis.

The intrinsic pathway involves mitochondrial release of cytochrome c and activation of caspasemediated apoptosis due to internal stress, whereas the extrinsic pathway is activated by ligands binding to death receptors, leading to caspasemediated apoptosis from external signals.

Which of the following statements about the intrinsic pathway of apoptosis are true? (Select all that apply)

A. It involves death receptors

B. It is triggered by internal signals ✓

C. It involves mitochondrial release of cytochrome c ✓

D. It is independent of caspasess

Which of the following processes involves apoptosis for refining neural connections?

A. Muscle contraction

B. Neural development ✓

C. Bone ossification

D. Blood clotting

Which of the following are pro-apoptotic proteins? (Select all that apply)

A. Bax ✓

B. Bcl-2

C. Bak ✓

D. IAPs

Discuss the role of apoptosis in the immune system, particularly in preventing autoimmunity.

Apoptosis is essential in the immune system as it helps to remove self-reactivity by inducing programmed cell death in lymphocytes that recognize self-antigens, thus preventing autoimmunity.

Which diseases are associated with increased apoptosis? (Select all that apply)

A. Alzheimer's disease ✓

B. Cancer

C. Parkinson's disease ✓

D. Autoimmune diseases

How does dysregulated apoptosis contribute to the development of cancer?

Dysregulated apoptosis contributes to cancer by allowing abnormal cells to evade death, leading to their accumulation and the potential for malignant transformation.

How do pro-apoptotic and anti-apoptotic proteins regulate the apoptotic process?

Pro-apoptotic proteins, such as Bax and Bak, promote apoptosis by facilitating mitochondrial outer membrane permeabilization and activating caspaces, while anti-apoptotic proteins, like Bcl-2 and Bcl-xL, prevent apoptosis by inhibiting these processes and maintaining mitochondrial integrity.

Explain the significance of apoptosis in embryonic development.

Apoptosis plays a significant role in embryonic development by regulating cell numbers, eliminating excess cells, and facilitating the formation of structures such as fingers and toes through the removal of cells in between them.

What is apoptosis?

A. A form of programmed cell death ✓
B. A type of cell division
C. A process of cell growth
D. A form of cellular respiration

Which processes are regulated by apoptosis during development? (Select all that apply)

A. Digit separation ✓
B. Neural pruning ✓
C. Blood vessel formation ✓
D. Muscle hypertrophy

What triggers the extrinsic pathway of apoptosis?

A. Mitochondrial signals
B. Death receptors ✓

C. DNA damage
D. Oxidative stress

What are the functions of caspasess in apoptosis? (Select all that apply)

A. Initiate cell division
B. Execute cell death ✓
C. Activate DNA repair
D. Cleave cellular proteins ✓

What roles do IAPs play in apoptosis? (Select all that apply)

A. Promote apoptosis
B. Inhibit caspasess ✓
C. Prevent apoptosis ✓
D. Activate mitochondrial pathways

Which protein family is primarily responsible for executing apoptosis?

A. Kinases
B. Phosphatases
C. Caspases ✓
D. Cyclins

Which disease is associated with reduced apoptosis?

A. Alzheimer's disease
B. Cancer ✓
C. Parkinson's disease
D. Autoimmune disease