

Muscle Tissue Quiz Answer Key PDF

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How does the phosphagen system contribute to muscle metabolism?

The phosphagen system contributes to muscle metabolism by rapidly regenerating ATP from creatine phosphate, enabling sustained muscle contraction during short, intense physical activities.

Which structure releases calcium ions to initiate muscle contraction?

- A. T-tubules
- B. Sarcoplasmic reticulum ✓**
- C. Myofibrils
- D. Sarcolemma

Explain the role of calcium ions in muscle contraction.

Calcium ions are released from the sarcoplasmic reticulum into the cytoplasm, where they bind to troponin, causing a conformational change that moves tropomyosin away from actin's binding sites, enabling myosin to bind to actin and facilitate muscle contraction.

Which factors contribute to muscle fatigue?

- A. Lactic acid accumulation ✓**
- B. Oxygen debt ✓**
- C. Increased ATP production
- D. Depletion of glycogen stores ✓**

Which muscle tissue type is found in the walls of hollow organs?

- A. Skeletal Muscle
- B. Cardiac Muscle
- C. Smooth Muscle ✓**

D. All of the above

What neurotransmitter is involved at the neuromuscular junction?

- A. Dopamine
- B. Serotonin
- C. Acetylcholine ✓**
- D. GABA

Which condition is characterized by a progressive loss of muscle mass due to aging?

- A. Muscular dystrophy
- B. Myasthenia gravis
- C. Sarcopenia ✓**
- D. Hyperplasia

Which muscle fiber type is more resistant to fatigue?

- A. Fast-twitch fibers
- B. Slow-twitch fibers ✓**
- C. Intermediate fibers
- D. None of the above

Which of the following are components of a motor unit?

- A. Single motor neuron ✓**
- B. All muscle fibers it innervates ✓**
- C. Intercalated discs
- D. T-tubules

Which disorders are associated with muscle tissue?

- A. Muscular dystrophy ✓**
- B. Osteoporosis
- C. Myasthenia gravis ✓**
- D. Arthritis

What is the function of satellite cells in muscle repair and regeneration?

Satellite cells are responsible for muscle repair and regeneration by activating in response to injury, proliferating, and differentiating into myoblasts that contribute to muscle fiber formation.

What is the primary function of cardiac muscle?

- A. Movement of bones
- B. Pumping blood ✓**
- C. Digestion
- D. Heat production

Which type of muscle tissue is under voluntary control?

- A. Cardiac Muscle
- B. Smooth Muscle
- C. Skeletal Muscle ✓**
- D. None of the above

Which of the following are characteristics of skeletal muscle?

- A. Striated appearance ✓**
- B. Involuntary control
- C. Multinucleated cells ✓**
- D. Found in heart walls

What is the main energy source for muscle contraction?

- A. Glucose
- B. ATP ✓**
- C. Fatty acids
- D. Protein

Describe the differences between hypertrophy and hyperplasia in muscle growth.

Hypertrophy is the enlargement of existing muscle fibers due to increased workload and resistance training, whereas hyperplasia is the formation of new muscle fibers, which is less common in

humans and typically occurs in response to certain stimuli.

What processes are involved in muscle contraction according to the sliding filament theory?

- A. Actin and myosin interaction ✓**
- B. Release of calcium ions ✓**
- C. Breakdown of glycogen
- D. Use of ATP ✓**

What is the significance of intercalated discs in cardiac muscle?

Intercalated discs are significant in cardiac muscle because they enable electrical coupling and mechanical adhesion between adjacent cardiac myocytes, ensuring coordinated heart contractions.

Discuss the impact of aging on muscle tissue and how it leads to sarcopenia.

The impact of aging on muscle tissue includes a reduction in muscle fiber size and number, hormonal changes that affect muscle maintenance, and decreased physical activity, all contributing to sarcopenia.

What are the roles of smooth muscle in the body?

- A. Peristalsis ✓**
- B. Blood flow regulation ✓**
- C. Heat production
- D. Movement of bones