

# A&P 10 Muscle Tissue Essay Quiz

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## 4. Chapter: A&P 10 Muscle Tissue Essay Quiz

### 1. A&P 10 Muscle Tissue Essay Quiz Questions

#### 4.1.1. Watch this video (<http://openstaxcollege.org//micromacro>) to learn...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org//micromacro>) to learn more about macro- and microstructures of skeletal muscles.

- (a) What are the names of the "junction points" between sarcomeres?
  - (b) What are the names of the "subunits" within the myofibrils that run the length of skeletal muscle fibers?
  - (c) What is the "double strand of pearls" described in the video?
  - (d) What gives a skeletal muscle fiber its striated appearance?
- (a) Z-lines.  
(b) Sarcomeres.  
(c) This is the arrangement of the actin and myosin filaments in a sarcomere.  
(d) The alternating strands of actin and myosin filaments.

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege](http://openstaxcollege.org//micromacro) OpenStax College Anatomy

#### 4.1.2. Every skeletal muscle fiber is supplied by a motor neuron at the NM...

Author: OpenStax College

Every skeletal muscle fiber is supplied by a motor neuron at the NMJ.

Watch this video (<http://openstaxcollege.org/l/skelmuscfiber>) to learn more about what happens at the neuromuscular junction.

(a) What is the definition of a motor unit?

(b) What is the structural and functional difference between a large motor unit and a small motor unit? Can you give an example of each?

(c) Why is the neurotransmitter acetylcholine degraded after binding to its receptor?

- (a) It is the number of skeletal muscle fibers supplied by a single motor neuron.  
(b) A large motor unit has one neuron supplying many skeletal muscle fibers for gross movements, like the Temporalis muscle, where 1000 fibers are supplied by one neuron.  
A small motor has one neuron supplying few skeletal muscle fibers for very fine movements, like the extraocular eye muscles, where six fibers are supplied by one neuron.  
(c) To avoid prolongation of muscle contraction.

Check the answer of this question online at QuizOver.com:

Question: [Every skeletal muscle fiber is supplied OpenStax College Anatomy](#)

#### 4.1.3. The release of calcium ions initiates muscle contractions.

Watch th...

Author: OpenStax College

The release of calcium ions initiates muscle contractions.

Watch this video (<http://openstaxcollege.org/l/calciumrole>) to learn more about the role of calcium.

(a) What are "T-tubules" and what is their role?

(b) Please also describe how actin-binding sites are made available for cross-bridging with myosin heads during contraction.

- (a) The T-tubules are inward extensions of the sarcolemma that trigger the release of  $\text{Ca}^{++}$  from SR during an Action Potential.
- (b)  $\text{Ca}^{++}$  binds to tropomyosin, and this slides the tropomyosin rods away from the binding sites.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [The release of calcium ions initiates OpenStax College Anatomy Quest](#)

#### 4.1.4. Why is elasticity an important quality of muscle tissue?

Author: OpenStax College

Why is elasticity an important quality of muscle tissue?

- It allows muscle to return to its original length during relaxation after contraction.

Check the answer of this question online at QuizOver.com:

Question: [Why is elasticity an important quality of OpenStax College Anatomy](#)

#### 4.1.5. What would happen to skeletal muscle if the epimysium were destroyed?

Author: OpenStax College

What would happen to skeletal muscle if the epimysium were destroyed?

- Muscles would lose their integrity during powerful movements, resulting in muscle damage.

Check the answer of this question online at QuizOver.com:

Question: [What would happen to skeletal muscle if OpenStax College Anatomy](#)

#### 4.1.6. Describe how tendons facilitate body movement.

Author: OpenStax College

Describe how tendons facilitate body movement.

- When a muscle contracts, the force of movement is transmitted through the tendon, which pulls on the bone to produce skeletal movement.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Describe how tendons facilitate body OpenStax College Anatomy Quest](#)

#### 4.1.7. What are the five primary functions of skeletal muscle?

Author: OpenStax College

What are the five primary functions of skeletal muscle?

- Produce movement of the skeleton, maintain posture and body position, support soft tissues, encircle openings of the digestive, urinary, and other tracts, and maintain body temperature.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [What are the five primary functions of OpenStax College Anatomy Quest](#)

#### 4.1.8. What are the opposite roles of voltage-gated sodium channels and vo...

Author: OpenStax College

What are the opposite roles of voltage-gated sodium channels and voltage-gated potassium channels?

- The opening of voltage-gated sodium channels, followed by the influx of  $\text{Na}^+$ , transmits an Action Potential after the membrane has sufficiently depolarized. The delayed opening of potassium channels allows  $\text{K}^+$  to exit the cell, to repolarize the membrane.

Check the answer of this question online at QuizOver.com:

Question: [What are the opposite roles of voltage OpenStax College Anatomy Quest](#)

#### 4.1.9. How would muscle contractions be affected if skeletal muscle fibers...

Author: OpenStax College

How would muscle contractions be affected if skeletal muscle fibers did not have T-tubules?

- Without T-tubules, action potential conduction into the interior of the cell would happen much more slowly, causing delays between neural stimulation and muscle contraction, resulting in slower, weaker contractions.

Check the answer of this question online at QuizOver.com:

Question: [How would muscle contractions be affected OpenStax College Anatomy](#)

#### 4.1.10. What causes the striated appearance of skeletal muscle tissue?

Author: OpenStax College

What causes the striated appearance of skeletal muscle tissue?

- Dark A bands and light I bands repeat along myofibrils, and the alignment of myofibrils in the cell cause the entire cell to appear striated.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [What causes the striated appearance of OpenStax College Anatomy Quest](#)

#### 4.1.11. How would muscle contractions be affected if ATP was completely dep...

Author: OpenStax College

How would muscle contractions be affected if ATP was completely depleted in a muscle fiber?

- Without ATP, the myosin heads cannot detach from the actin-binding sites. All of the "stuck" cross-bridges result in muscle stiffness.  
In a live person, this can cause a condition like "writer's cramps." In a recently dead person, it results in rigor mortis.

Check the answer of this question online at QuizOver.com:

Question: [How would muscle contractions be affected OpenStax College Anatomy](#)

#### 4.1.12. Why does a motor unit of the eye have few muscle fibers compared to...

Author: OpenStax College

Why does a motor unit of the eye have few muscle fibers compared to a motor unit of the leg?

- Eyes require fine movements and a high degree of control, which is permitted by having fewer muscle fibers associated with a neuron.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Why does a motor unit of the eye have few OpenStax College Anatomy](#)

#### 4.1.13. What factors contribute to the amount of tension produced in an ind...

Author: OpenStax College

What factors contribute to the amount of tension produced in an individual muscle fiber?

- The length, size and types of muscle fiber and the frequency of neural stimulation contribute to the amount of tension produced in an individual muscle fiber.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [What factors contribute to the amount of OpenStax College Anatomy](#)

#### 4.1.14. Why do muscle cells use creatine phosphate instead of glycolysis to...

Author: OpenStax College

Why do muscle cells use creatine phosphate instead of glycolysis to supply ATP for the first few seconds of muscle contraction?

- Creatine phosphate is used because creatine phosphate and ADP are converted very quickly into ATP by creatine kinase. Glycolysis cannot generate ATP as quickly as creatine phosphate.

Check the answer of this question online at QuizOver.com:

Question: [Why do muscle cells use creatine phosphate OpenStax College Anatomy](#)

#### 4.1.15. Is aerobic respiration more or less efficient than glycolysis? Expl...

Author: OpenStax College

Is aerobic respiration more or less efficient than glycolysis? Explain your answer.

- This content is available for free at <http://cnx.org/content/col11496/1.6> Aerobic respiration is much more efficient than anaerobic glycolysis, yielding 36 ATP per molecule of glucose, as opposed to two ATP produced by glycolysis.

Check the answer of this question online at QuizOver.com:

Question: [Is aerobic respiration more or less OpenStax College Anatomy Quest](#)

#### 4.1.16. What changes occur at the cellular level in response to endurance t...

Author: OpenStax College

What changes occur at the cellular level in response to endurance training?

- Endurance training modifies slow fibers to make them more efficient by producing more mitochondria to enable more aerobic metabolism and more ATP production.  
Endurance exercise can also increase the amount of myoglobin in a cell and formation of more extensive capillary networks around the fiber.

Check the answer of this question online at QuizOver.com:

Question: [What changes occur at the cellular level OpenStax College Anatomy](#)

#### 4.1.17. What changes occur at the cellular level in response to resistance ...

Author: OpenStax College

What changes occur at the cellular level in response to resistance training?

- Resistance exercises affect muscles by causing the formation of more actin and myosin, increasing the structure of muscle fibers.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [What changes occur at the cellular level OpenStax College Anatomy](#)

#### 4.1.18. What would be the drawback of cardiac contractions being the same d...

Author: OpenStax College

What would be the drawback of cardiac contractions being the same duration as skeletal muscle contractions?

- An action potential could reach a cardiac muscle cell before it has entered the relaxation phase, resulting in the sustained contractions of tetanus.  
If this happened, the heart would not beat regularly.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [What would be the drawback of cardiac OpenStax College Anatomy Quest](#)

#### 4.1.19. How are cardiac muscle cells similar to and different from skeletal...

Author: OpenStax College

How are cardiac muscle cells similar to and different from skeletal muscle cells?

- Cardiac and skeletal muscle cells both contain ordered myofibrils and are striated.  
Cardiac muscle cells are branched and contain intercalated discs, which skeletal muscles do not have.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [How are cardiac muscle cells similar to OpenStax College Anatomy](#)

#### 4.1.20. Why can smooth muscles contract over a wider range of resting lengt...

Author: OpenStax College

Why can smooth muscles contract over a wider range of resting lengths than skeletal and cardiac muscle?

- Smooth muscles can contract over a wider range of resting lengths because the actin and myosin filaments in smooth muscle are not as rigidly organized as those in skeletal and cardiac muscle.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Why can smooth muscles contract over a OpenStax College Anatomy Quest](#)

#### 4.1.21. Describe the differences between single-unit smooth muscle and mult...

Author: OpenStax College

Describe the differences between single-unit smooth muscle and multiunit smooth muscle.

- Single-unit smooth muscle is found in the walls of hollow organs; multiunit smooth muscle is found in airways to the lungs and large arteries.  
Single-unit smooth muscle cells contract synchronously, they are coupled by gap junctions, and they exhibit spontaneous action potential. Multiunit smooth cells lack gap junctions, and their contractions are not synchronous.

Check the answer of this question online at QuizOver.com:

Question: [Describe the differences between single OpenStax College Anatomy](#)

#### 4.1.22. Why is muscle that has sustained significant damage unable to produ...

Author: OpenStax College

Why is muscle that has sustained significant damage unable to produce the same amount of power as it could before being damaged?

- If the damage exceeds what can be repaired by satellite cells, the damaged tissue is replaced by scar tissue, which cannot contract.

Check the answer of this question online at QuizOver.com:

Question: [Why is muscle that has sustained significant OpenStax College Anatomy](#)

#### 4.1.23. Which muscle type(s) (skeletal, smooth, or cardiac) can regenerate ...

Author: OpenStax College

Which muscle type(s) (skeletal, smooth, or cardiac) can regenerate new muscle cells/fibers? Explain your answer.

- Smooth muscle tissue can regenerate from stem cells called pericytes, cells found in some small blood vessels. These allow smooth muscle cells to regenerate and repair much more readily than skeletal and cardiac muscle tissue.

Check the answer of this question online at QuizOver.com:

Question: [Which muscle type s skeletal smooth or OpenStax College Anatomy Quest](#)