What is Muscle Tissue?

Worksheet

Muscle tissue is composed of elongated cells called muscle fibers that contract using actin and myosin filaments, producing movement, force, and heat throughout the body.

Questions

1. Which muscle type is both striated and involuntary?

A) Skeletal
B) Smooth
C) Cardiac
D) Epithelial

2. What proteins slide past each other to cause muscle contraction?

A) Collagen and elastin
B) Actin and myosin
C) Keratin and tubulin
D) Hemoglobin and myoglobin

3. Where would you find smooth muscle tissue?

A) Biceps
B) Heart wall
C) Intestinal wall
D) Quadriceps

4. What structural feature is unique to cardiac muscle?

A) Multinucleation
B) Intercalated discs
C) Spindle shape
D) Voluntary control

5. Identify the muscle type: striated, voluntary fibers found in the biceps that move the arm.

6. Which muscle type lines the walls of the stomach and intestines to push food along involuntarily?

7. What muscle type is found only in the heart, is striated but works involuntarily, and has intercalated discs?

8. Define: What are the three types of muscle tissue?

9. Define: What proteins are responsible for muscle contraction?

10. Define: Which muscle type is voluntary?

Answer Key

1. C) Cardiac - Cardiac muscle is striated like skeletal muscle but contracts involuntarily.

2. B) Actin and myosin - Actin and myosin filaments interact via the sliding filament mechanism to shorten muscle fibers.

3. C) Intestinal wall - Smooth muscle lines hollow organs like the intestines, controlling involuntary movements such as peristalsis.

4. B) Intercalated discs - Intercalated discs connect cardiac muscle cells, enabling coordinated, synchronized contractions.

5. Voluntary movement of a limb points to muscle under conscious control. Striated appearance under a microscope confirms banded actin/myosin arrangement. Answer: Skeletal muscle.

6. Involuntary movement of hollow organs suggests non-skeletal muscle. Spindle-shaped, non-striated cells with a single nucleus match this tissue. Answer: Smooth muscle.

7. Striated appearance rules out smooth muscle. Involuntary control rules out skeletal muscle. Unique intercalated discs confirm the answer: Cardiac muscle.

8. Skeletal, smooth, and cardiac muscle.

9. Actin and myosin filaments that slide past each other.

10. Skeletal muscle is under conscious (voluntary) control.