

What is the Structure of Skeletal Muscle?

Worksheet

Skeletal muscle is organized hierarchically: epimysium-wrapped muscle, perimysium-wrapped fascicles, endomysium-wrapped fibers, myofibrils, and finally sarcomeres - the actin-and-myosin units that actually contract.

Questions

1. What connective tissue surrounds an entire skeletal muscle?
A) Endomysium
B) Perimysium
C) Epimysium
D) Periosteum
2. What is a bundle of muscle fibers called?
A) Sarcomere
B) Fascicle
C) Myofibril
D) Tendon
3. What is the basic contractile unit of muscle?
A) Fascicle
B) Myofibril
C) Sarcomere
D) Fiber
4. Which filament type forms the thick filaments of a sarcomere?
A) Actin
B) Myosin
C) Titin
D) Collagen
5. Trace the connective tissue wrappings from a whole muscle down to a single fiber.
6. What structure inside a muscle fiber is responsible for the striated appearance under a microscope?
7. Identify the boundaries and main filaments of a single sarcomere.
8. Define: What connective tissue wraps a whole skeletal muscle?
9. Define: What wraps a fascicle (bundle of fibers)?
10. Define: What wraps a single muscle fiber?

Answer Key

1. C) Epimysium - The epimysium is the outer connective tissue layer around the whole muscle.
2. B) Fascicle - A fascicle is a bundle of muscle fibers wrapped in perimysium.
3. C) Sarcomere - The sarcomere, built from actin and myosin, is the smallest contractile unit.
4. B) Myosin - Myosin forms the thick filaments that interact with thin actin filaments.
5. The whole muscle is wrapped in epimysium inside it, fascicles (bundles of fibers) are wrapped in perimysium each individual muscle fiber within a fascicle is wrapped in endomysium.
6. Muscle fibers are packed with myofibrils myofibrils are made of repeating sarcomeres the alternating actin (thin) and myosin (thick) filaments create the light and dark bands (striations).
7. A sarcomere runs from one Z-disc to the next thin actin filaments anchor at the Z-discs thick myosin filaments occupy the center (A band), overlapping the actin during contraction.
8. The epimysium.
9. The perimysium.
10. The endomysium.

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