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Microscopic Anatomy and Organization of Skeletal Muscle

Skeletal Muscle Cells and Their Packaging into Muscles

1. What capability is most highly expressed in muscle tissue? contractility

2. Use the items on the right to correctly identify the structures described on the left.

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|-----------------------|--|----------------|
| <u>g; perimysium</u> | 1. connective tissue ensheathing a bundle of muscle cells | a. endomysium |
| <u>c; fascicle</u> | 2. bundle of muscle cells | b. epimysium |
| <u>i; sarcomere</u> | 3. contractile unit of muscle | c. fascicle |
| <u>d; fiber</u> | 4. a muscle cell | d. fiber |
| <u>a; endomysium</u> | 5. thin reticular connective tissue investing each muscle cell | e. myofilament |
| <u>h; sarcolemma</u> | 6. plasma membrane of the muscle fiber | f. myofibril |
| <u>f; myofibril</u> | 7. a long filamentous organelle with a banded appearance found within muscle cells | g. perimysium |
| <u>e; myofilament</u> | 8. actin- or myosin-containing structure | h. sarcolemma |
| <u>k; tendon</u> | 9. cord of collagen fibers that attaches a muscle to a bone | i. sarcomere |
| | | j. sarcoplasm |
| | | k. tendon |

3. Why are the connective tissue wrappings of skeletal muscle important? (Give at least three reasons.)

The connective tissue wrappings (a) bundle the muscle fibers together, increasing coordination of their activity; (b) add strength to the muscle; and (c) provide a route for entry and exit of blood vessels and nerves to the muscle fibers.

4. Why are indirect— that is, tendinous— muscle attachments to bone seen more often than direct attachments?

They conserve space (less bulky than fleshy muscle attachments) and are more durable than muscle tissue where bony prominences must be spanned.

5. How does an aponeurosis differ from a tendon? An aponeurosis is a sheet of white fibrous connective tissue; a tendon is a band or cord of the same tissue. Both serve to attach muscles to bones (or to other muscles).