

TOPIC: STRUCTURE OF A SKELETAL MUSCLE

Organization of Muscle Tissue

- Muscles are comprised of:

■ Muscle Fibers

■ Nerves

■ Blood Vessels

■ Connective Tissue

- Muscles are made of many wrapped bundles:

2. Fascicle: bundle of muscle _____.

Surrounded by _____mysium.

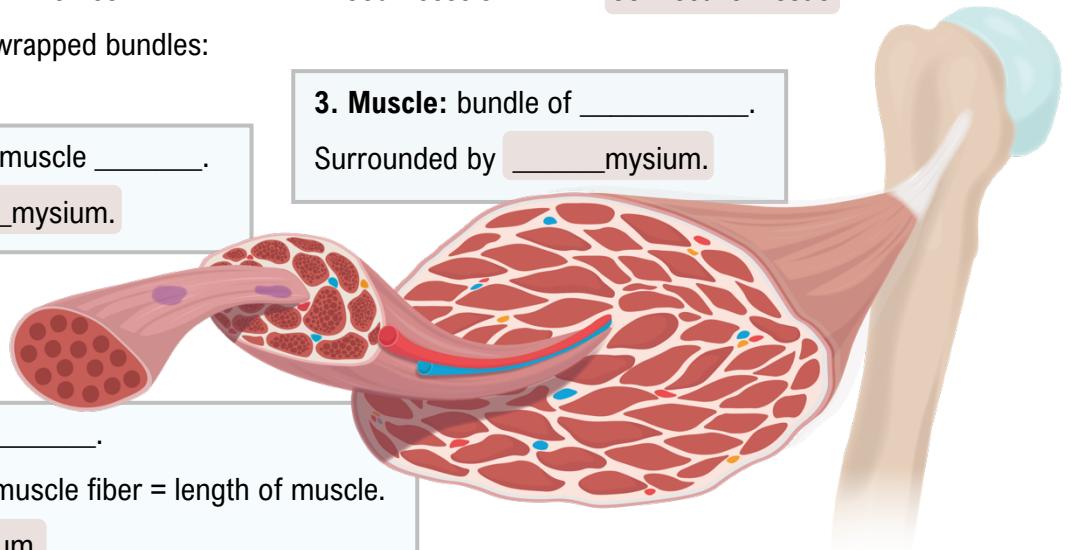
3. Muscle: bundle of _____.

Surrounded by _____mysium.

1. Muscle Fiber: muscle _____.

Long, multinucleated cell: 1 muscle fiber = length of muscle.

Surrounded by _____mysium.



- Connective tissue connections to bones: _____-like **tendons** & _____-like **aponeuroses**.

EXAMPLE: “Marbling” in beef is the presence of fat in the connective tissue layers of the meat. This intramuscular fat makes the meat more tender and flavorful. Below are two cuts of meat displaying differences in marbling. On the left is a typical steak; on the right is Kobe beef, a delicacy from Japan known for its extreme marbling. Because marbling is present in connective tissue, in what structure(s) of the muscle would you predict the to find the excess fat found in Kobe beef?



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PRACTICE: What layer of connective tissue surrounds and separates muscle fibers?

- a) Epimysium.
- b) Perimysium.
- c) Endomysium.
- d) Fascicle.

PRACTICE: A fascicle is a bundle of:

- a) Epimysium.
- b) Muscle Fibers.
- c) Myofilaments.
- d) Muscles.

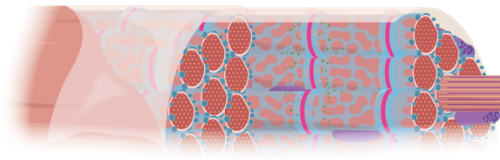
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The Muscle Fiber

- For a muscle fiber to contract, the tissue must _____.

Sarco_____: plasma membrane wrapping myo_____.

- **T-Tubules:** membrane _____ that reach deep myofibrils.



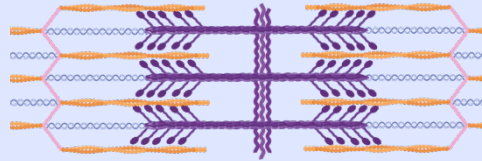
Myo_____: long, rod-shaped organelles.

- Contain myo_____.

Myo_____: Proteins: actin & myosin.

Sarco_____: Contractile _____.

- Creates _____ appearance.



Sarco_____ **Reticulum:**

Endoplasmic reticulum of muscle cells.

- Surrounds myofibrils.
- Store/release Ca^{+2} ions.

EXAMPLE: Arrange the following from superficial to deep by placing the correct letter in each blank.

a) Myofilaments b) Epimysium c) Perimysium d) Endomysium e) Sarcolemma

Superficial → _____ → _____ → Fascicle → _____ → _____ → Myofibrils → _____ → **Deep**

PRACTICE: The plasma membrane of a muscle fiber is called the _____ and it wraps bundles of _____.

- a) Sarcolemma: myofibrils.
- b) Sarcoplasmic reticulum: myofilaments.
- c) Sarcomere: myofilaments.
- d) Sarcoplasmic reticulum: myofibrils.

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PRACTICE: True or False: if false, chose the answer that corrects the statement.

The smallest contractile unit of a muscle is the muscle cell.

- a) True.
- b) False, the smallest contractile unit is the fascicle.
- c) False, the smallest contractile unit is the myofibril.
- d) False, the smallest contractile unit is the sarcomere.