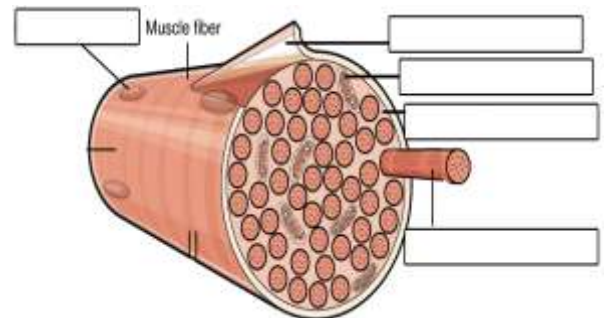


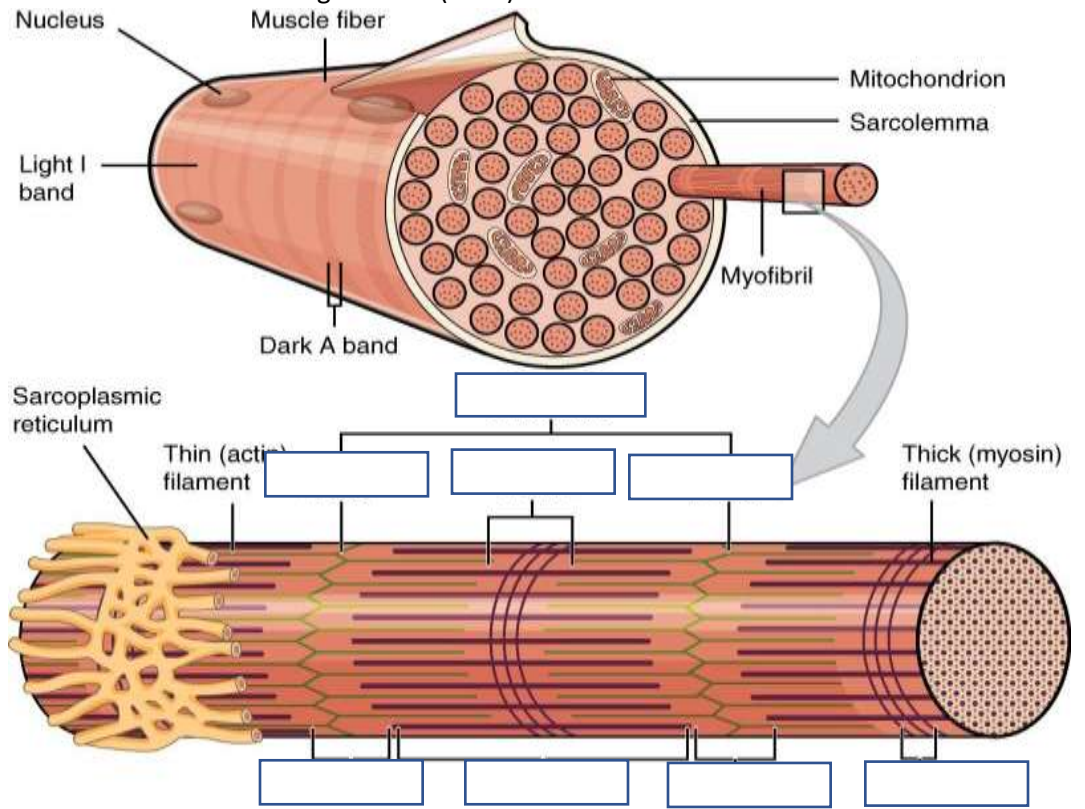
# Muscular System Intro

EQ: Compare and contrast the muscle bundle/organization with a nerve bundle/organization.

- I. Types of Muscle
  - a. Function is to produce movement
    - i. Cardiac – heart
      1. Found only in the heart
      2. Function is to pump blood (involuntary)
      3. Cells attached to other cardiac muscle cells at intercalated disks
      4. Cells are striated
      5. One nucleus per cell
    - ii. Skeletal – striated & voluntary
      1. Involuntary muscle
      2. Surrounds hollow organs
      3. Attached to other smooth muscle cells
      4. No visible striations
      5. One nucleus per cell
    - iii. Smooth – involuntary
      1. Can be controlled voluntarily
      2. Cells attach to connective tissue
      3. Cells are striated
      4. Cells have more than one nucleus
- II. The Big Picture
  - a. You have over 600 muscles
  - b. Muscles can do only one thing; contract
  - c. Muscles are either contracted or relaxed
  - d. A muscle, like your triceps, is actually a muscle trunk.
  - e. The muscle trunk is divided into muscle fascicles, which are divided into muscle fibers or cells.
  - f. The cells are further divided into myofibrils
  - g. Myofibrils are divided into actin & myosin filaments
- III. Muscles and Muscle Fiber Structure
  - a. Muscles are composed of many **FIBERS** that are arranged in bundles called **FASCICLES**
  - b. Individual muscles are separated by **FASCIA**, which also forms **tendons**
  - c. Connective Tissue Around Muscles
    - i. **EPIMYSIUM** = outermost layer, surrounds entire muscle
    - ii. **PERIMYSIUM** = separates and surrounds fascicles (bundles of muscle fibers)
    - iii. **ENDOMYSIUM** = surrounds each individual muscle fiber
- IV. Muscle Cells
  - a. **Sarcolemma**: muscle fiber membrane
  - b. **Sarcoplasm**: inner material surrounding fibers (like cytoplasm)
  - c. **Myofibrils**: individual muscle fibers, made of myofilaments
    - i. **ACTIN** = thin filaments
    - ii. **MYOSIN** = thick filaments
    - iii. form dark and light bands



1. A band = dArk • thick (myosin)
2. I band = lIght • thIn (actin)



- d.
- e. It is important to remember the hierarchy

