

Lesson 2

- Skeletal Muscle Structure
 - connective tissue wrappings
 - microscopic anatomy

Connective Tissue Wrappings of Skeletal Muscle

- **Cells are surrounded and bundled by connective tissue**
 - **Endomysium — encloses a single muscle fiber**
 - **Perimysium — wraps around a fascicle (bundle of muscle fibers)**
 - **Epimysium — covers the entire skeletal muscle**
 - **Fascia — on the outside of the epimysium**

Connective Tissue Wrappings of Skeletal Muscle

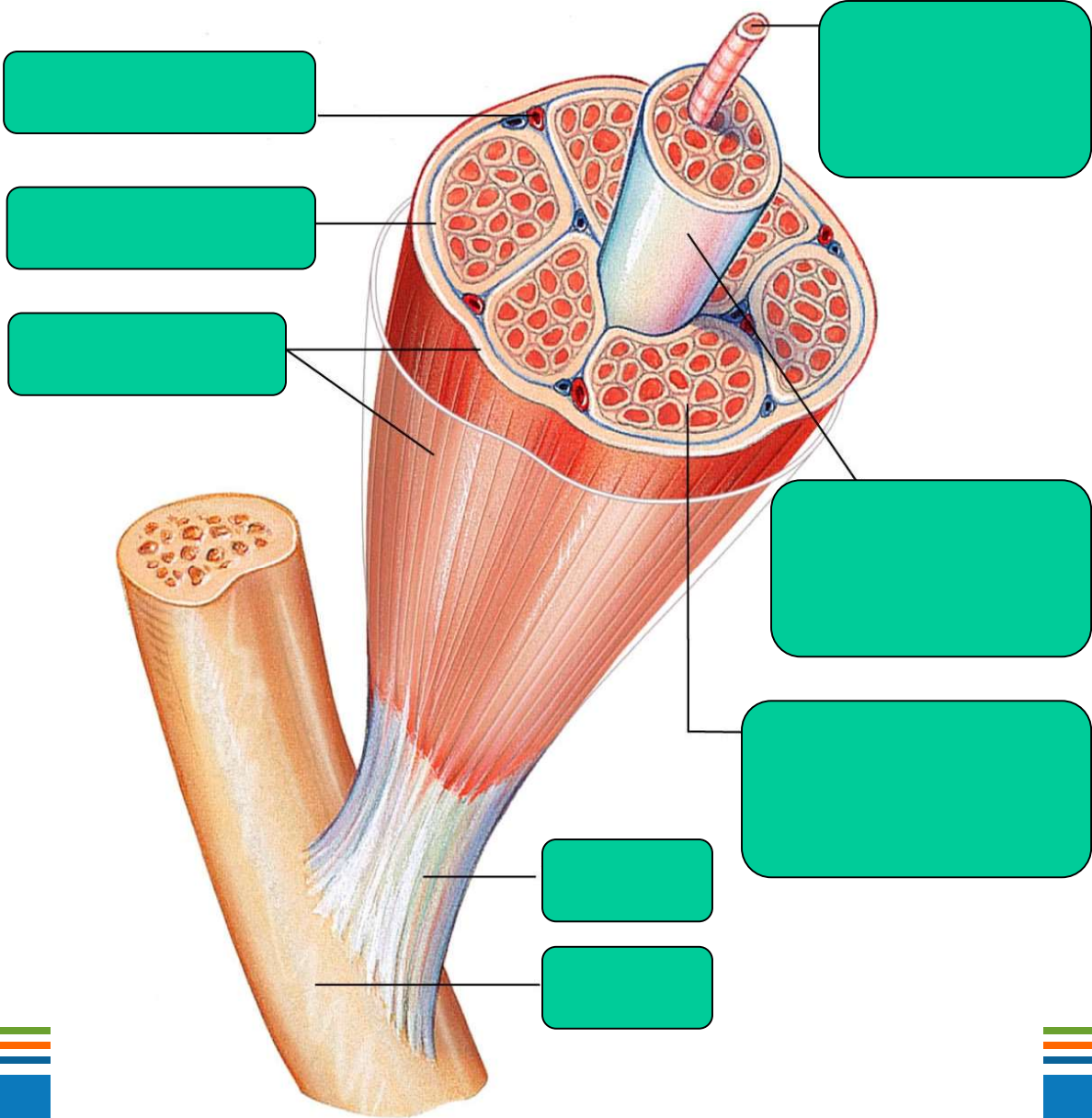


Figure 6.1

Connective Tissue Wrappings of Skeletal Muscle

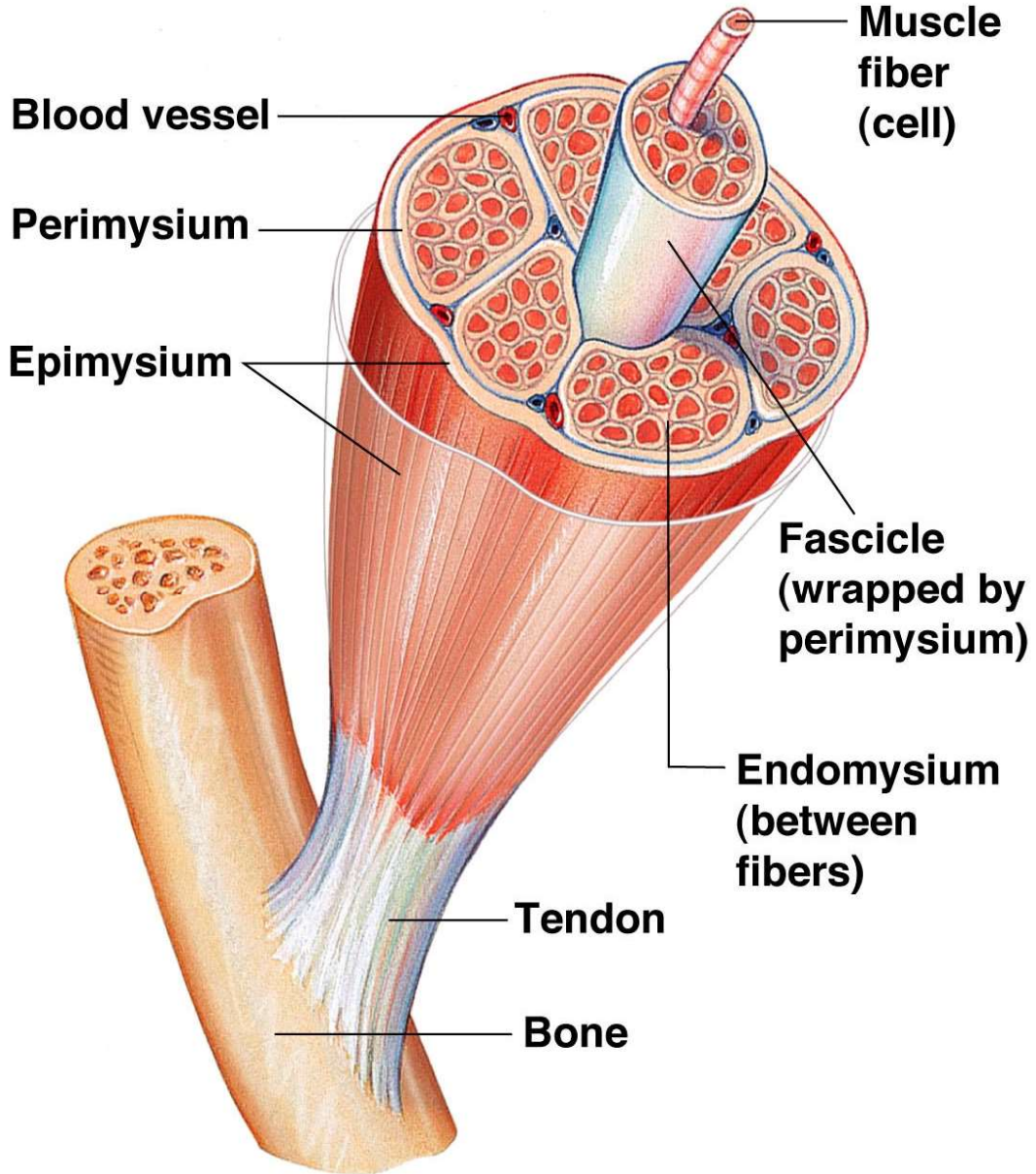
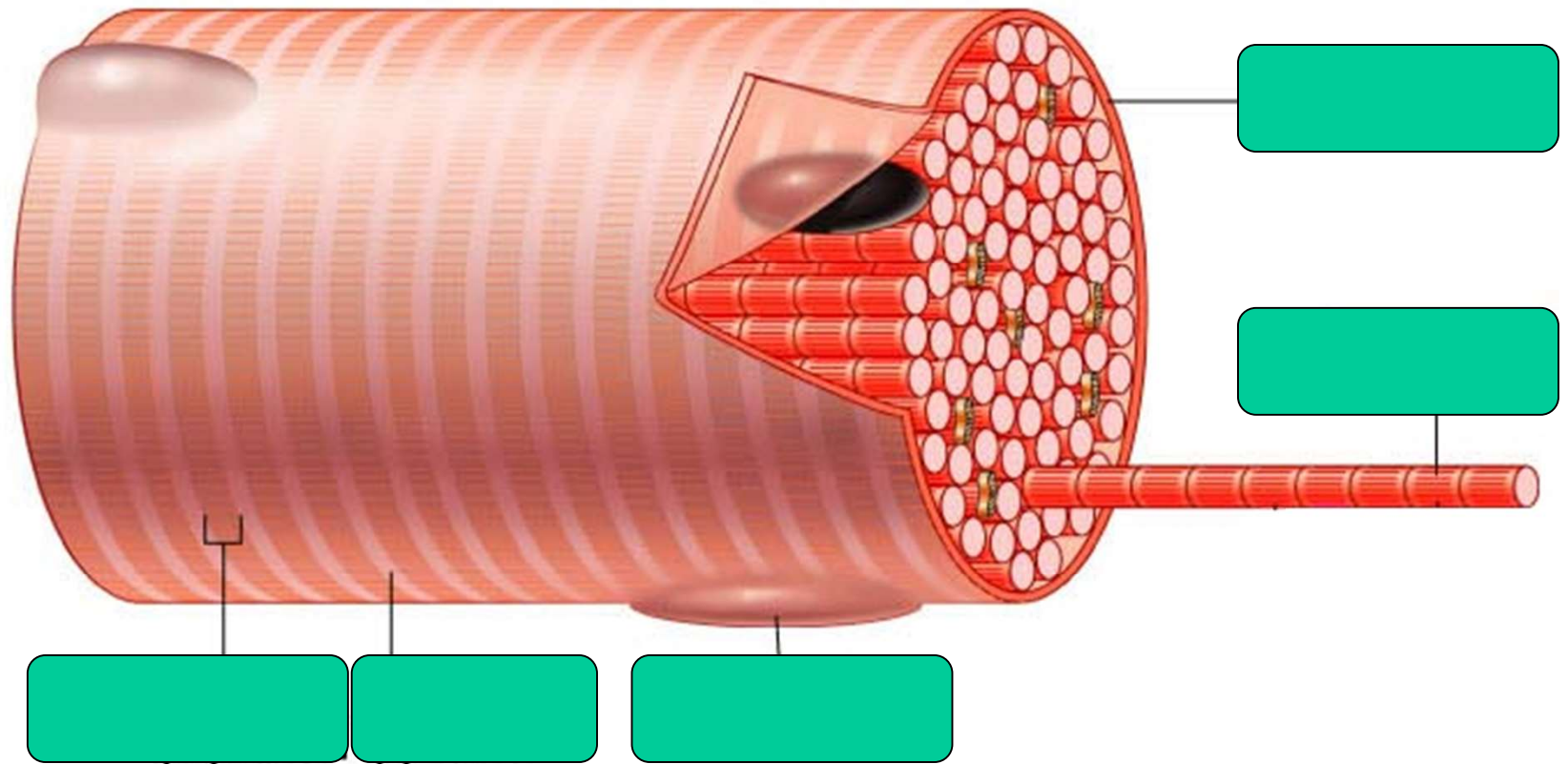


Figure 6.1

Microscopic Anatomy of Skeletal Muscle

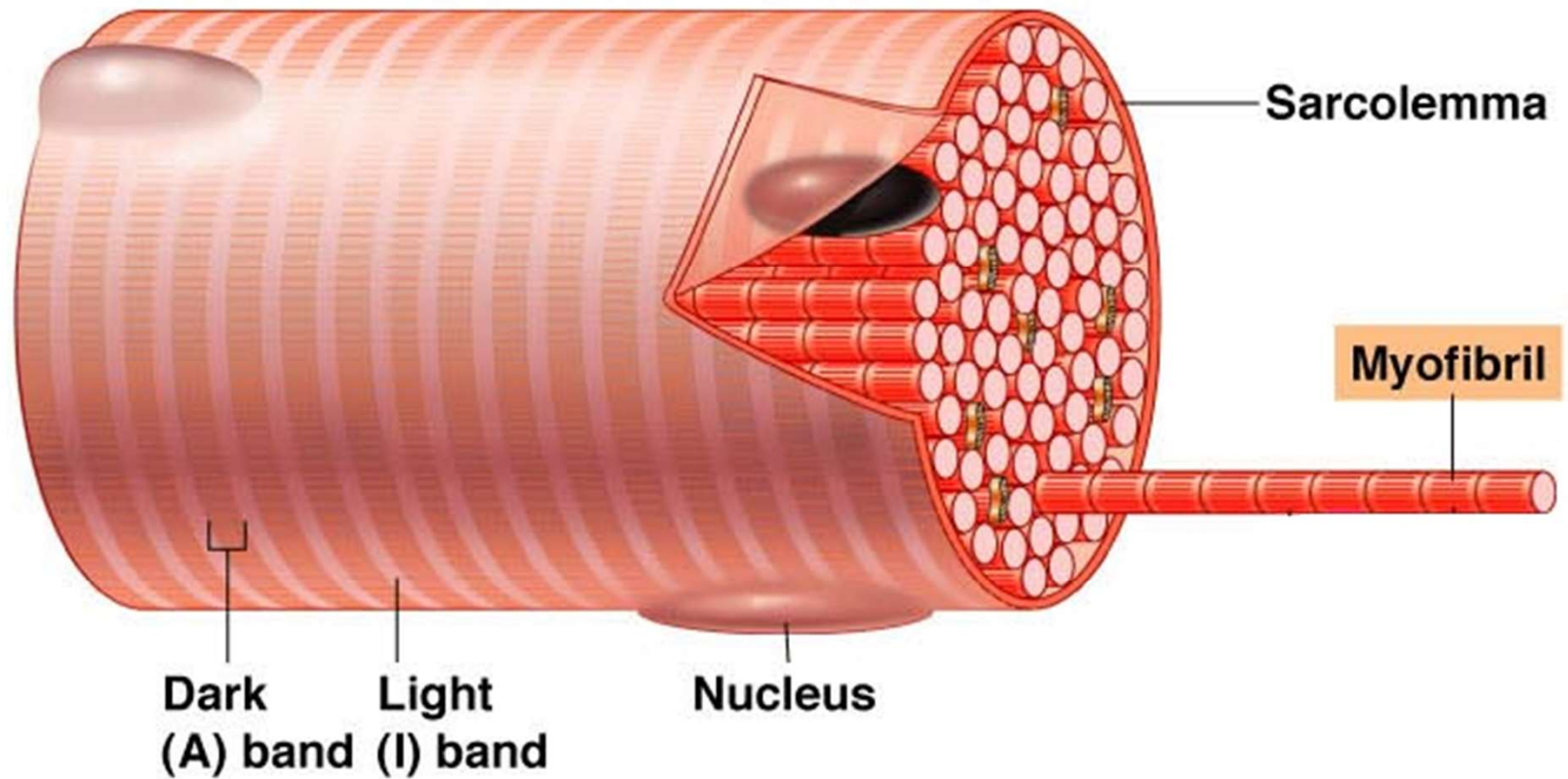
- **Sarcolemma**— specialized plasma (cell) membrane
- **Myofibrils**— long organelles inside muscle cell
- **Sarcoplasmic reticulum**— specialized smooth endoplasmic reticulum

Microscopic Anatomy of Skeletal Muscle Figure 6.3a



(a) Segment of a **muscle fiber (cell)**

Microscopic Anatomy of Skeletal Muscle Figure 6.3a

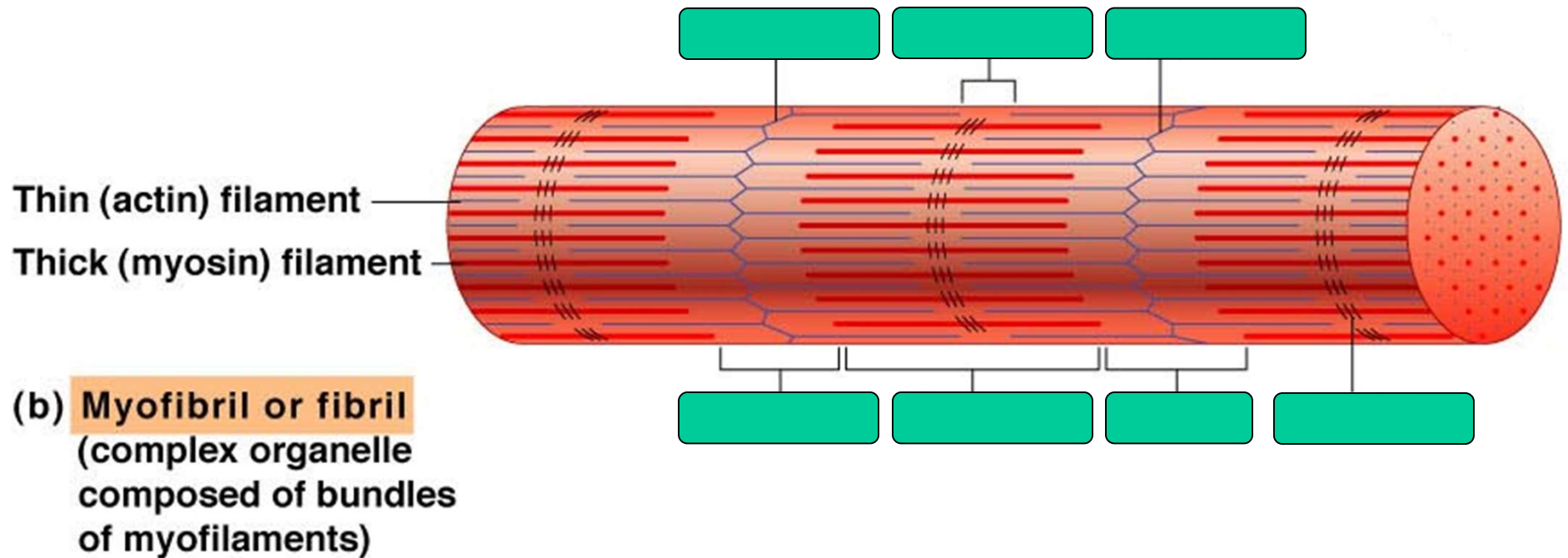


(a) Segment of a **muscle fiber** (cell)

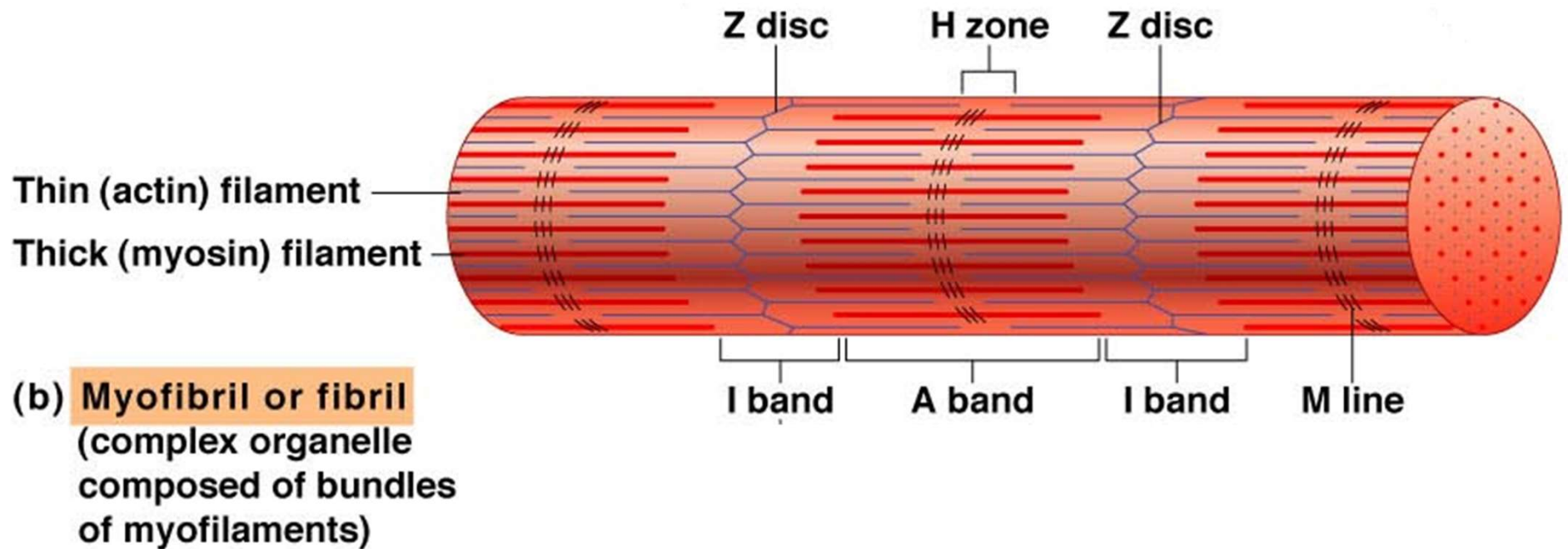
Microscopic Anatomy of Skeletal Muscle

- Myofibrils are aligned to give distinct bands
 - I band = **light band**
 - Contains only **thin** filaments (actin)
 - A band = **dark band**
 - Contains the entire length of the **thick** filaments (myosin)

Microscopic Anatomy of Skeletal Muscle Figure 6.3b



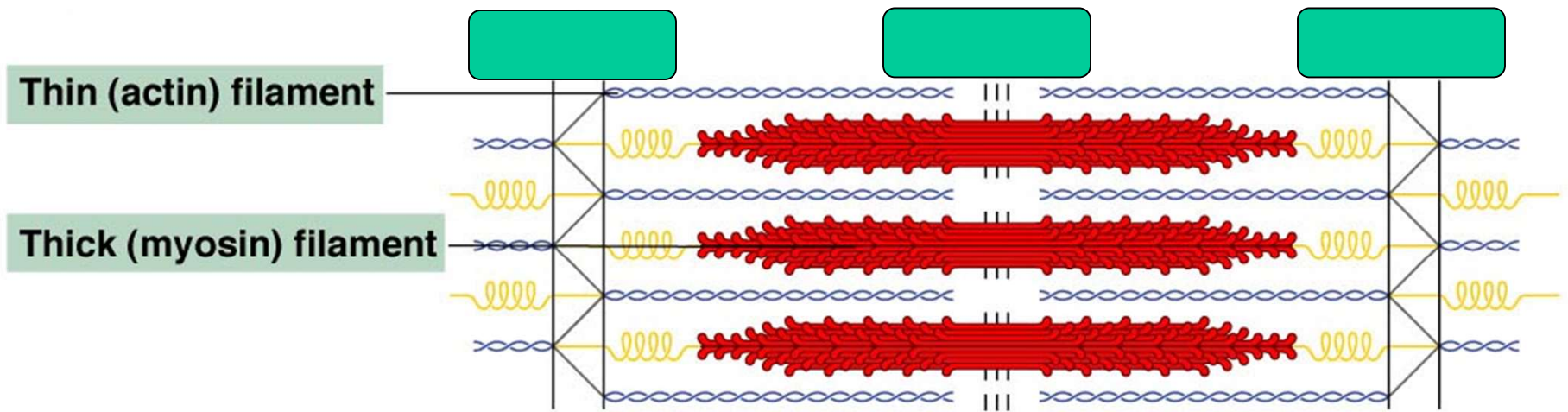
Microscopic Anatomy of Skeletal Muscle Figure 6.3b



Microscopic Anatomy of Skeletal Muscle

- Sarcomere— **contractile unit of a muscle fiber**
- Organization of the sarcomere
 - **Thick filaments**
 - Composed of the protein **myosin**
 - have heads (extensions, or **cross bridges**)
 - **Thin filaments**
 - Composed of the protein **actin**
 - Anchored to the **Z disc**

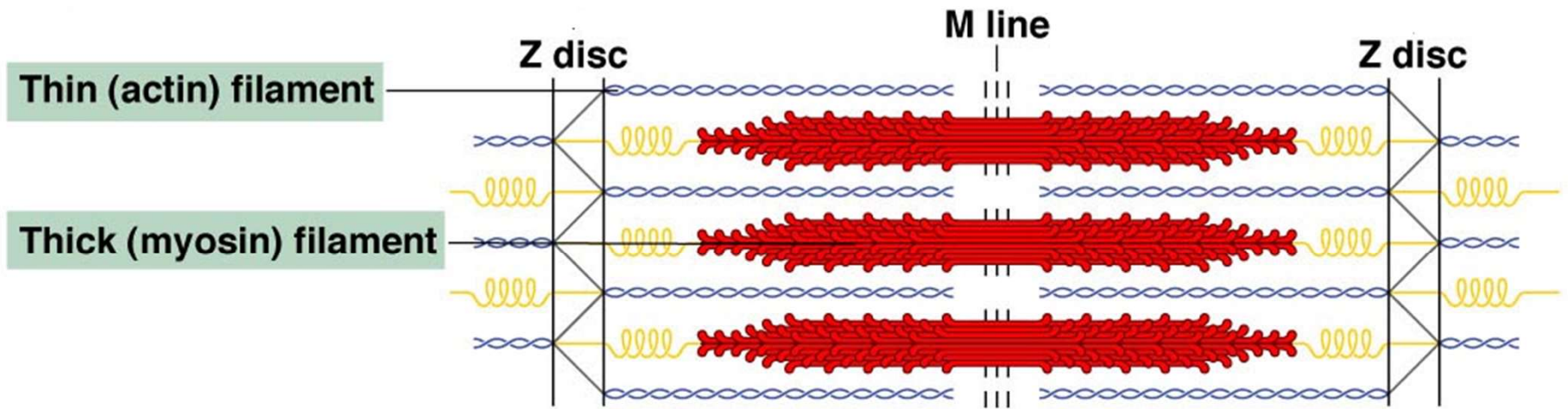
Microscopic Anatomy of Skeletal Muscle



(c) Sarcomere (segment of a myofibril)

Figure 6.3c

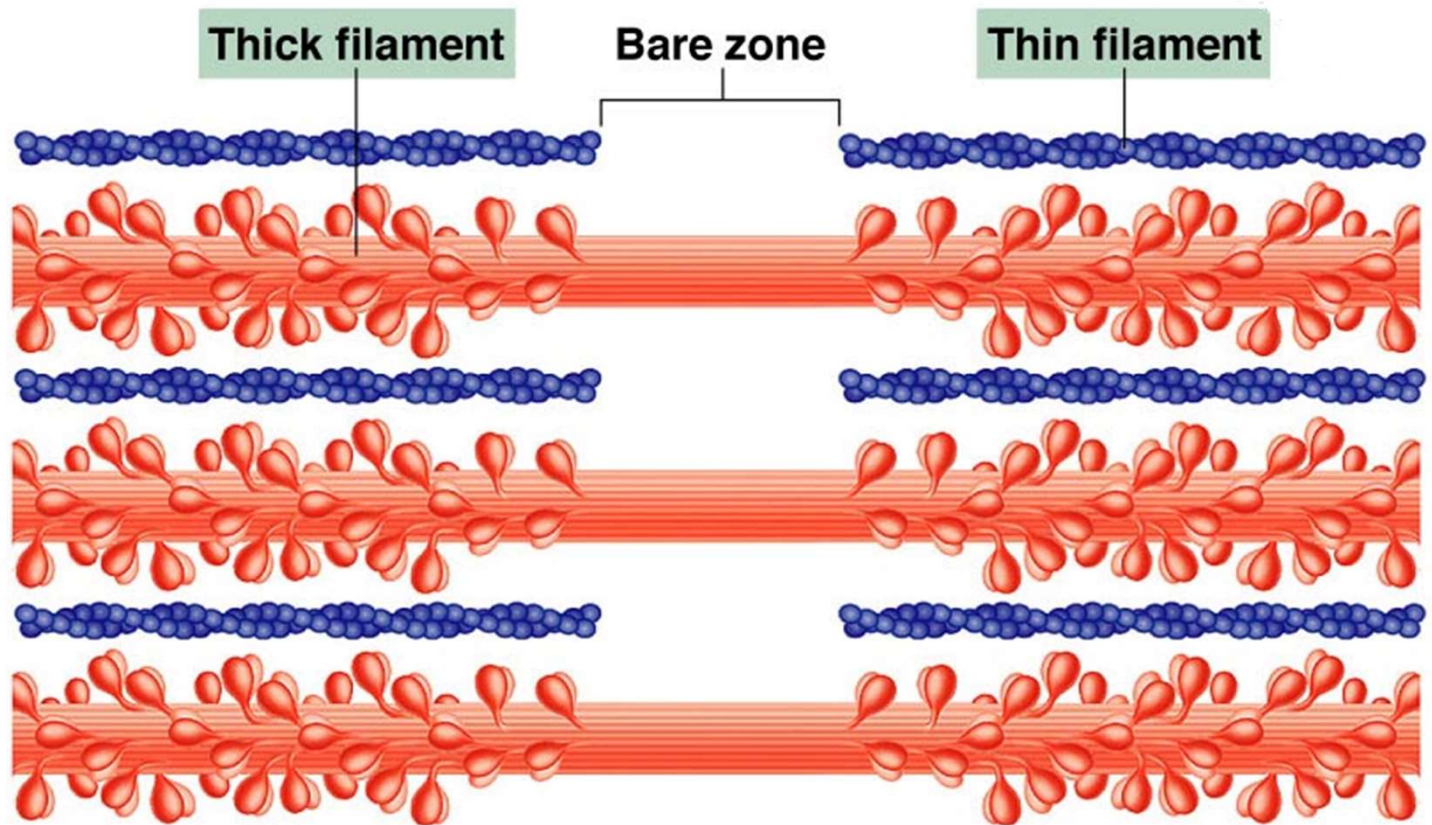
Microscopic Anatomy of Skeletal Muscle



(c) Sarcomere (segment of a myofibril)

Figure 6.3c

Microscopic Anatomy of Skeletal Muscle



(d) Myofilament structure (within one sarcomere)

Figure 6.3d

Microscopic Anatomy of Skeletal Muscle

- At rest, there is a bare zone that lacks actin filaments called the **H zone**
- Sarcoplasmic reticulum (SR)
 - Stores and releases **calcium**
 - Surrounds the **myofibril**