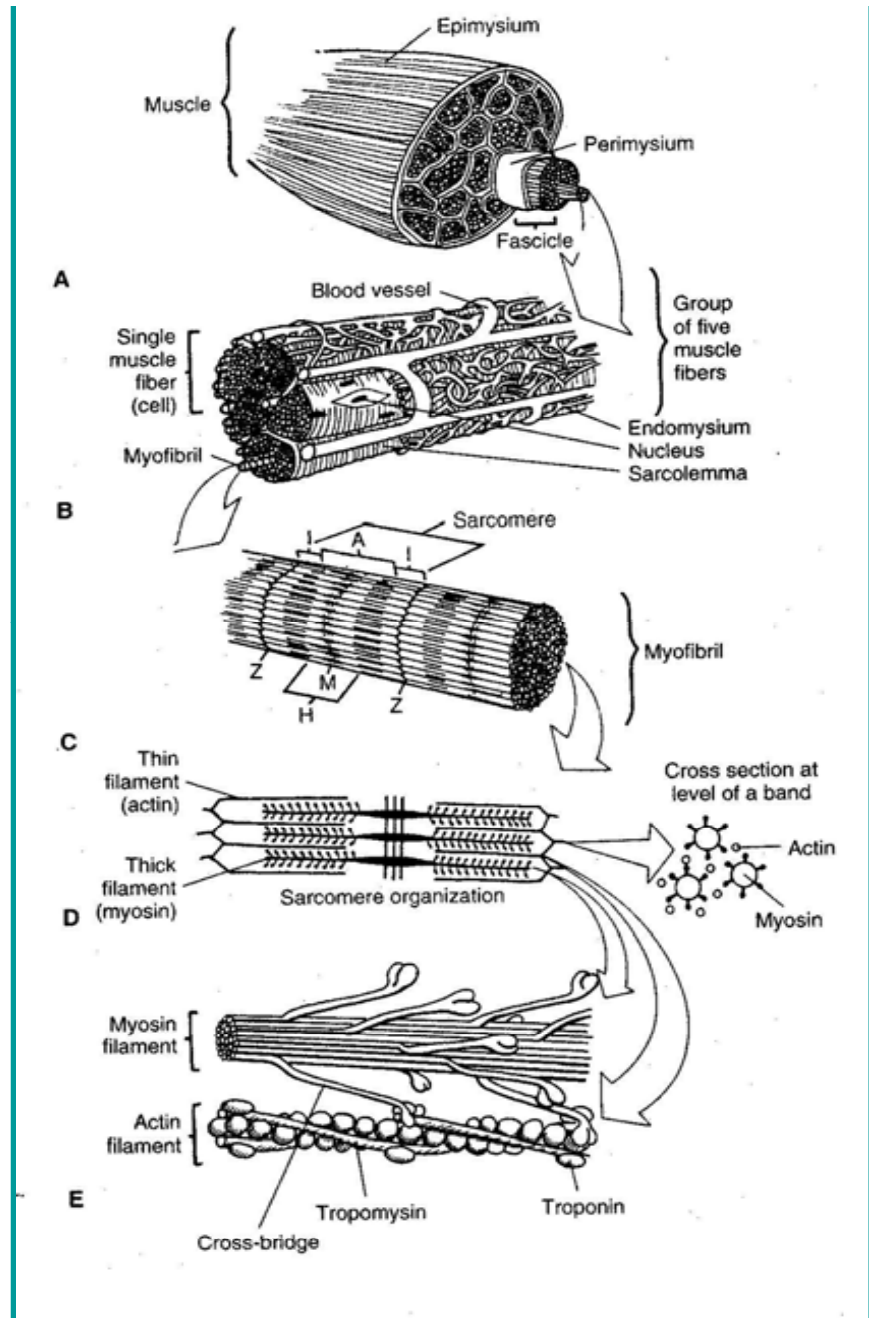


Section 39: Muscle – Micro- and Macro-Structure

Microscopic-Macroscopic Structure of Skeletal Muscle

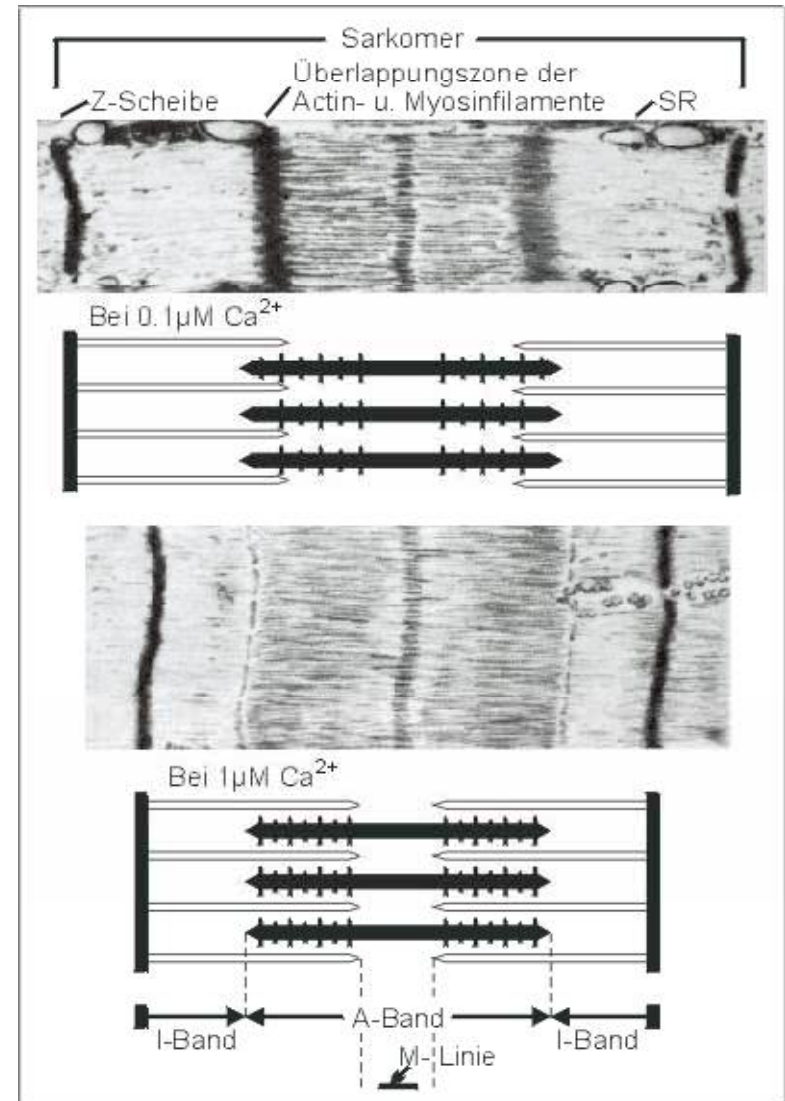


Muscle Structure

- Structural unit of skeletal muscle is the multinucleated muscle cell or fiber (thickness: 10-100 μm , length: 1-30 cm)
- Muscle fibers consist of myofibrils (sarcomeres in series: basic contractile unit of muscle)
- Myofibrils consist of myofilaments (actin and myosin)

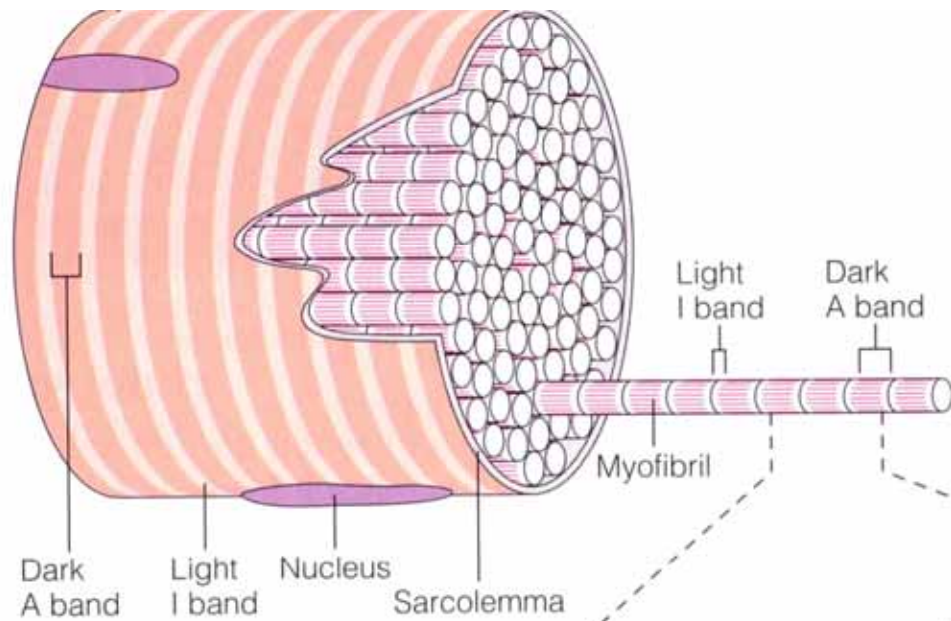
Muscle Architecture - Micro

- Key Words:
- sarcomere
- Actin -double strand, wound
- Myosin- twisted golf clubs, heads facing out in a spiral fashion down the bundled tails
- titan
- Z- line , M - line
- cross bridges
- Contractile mechanism



Muscle Structure (continued)

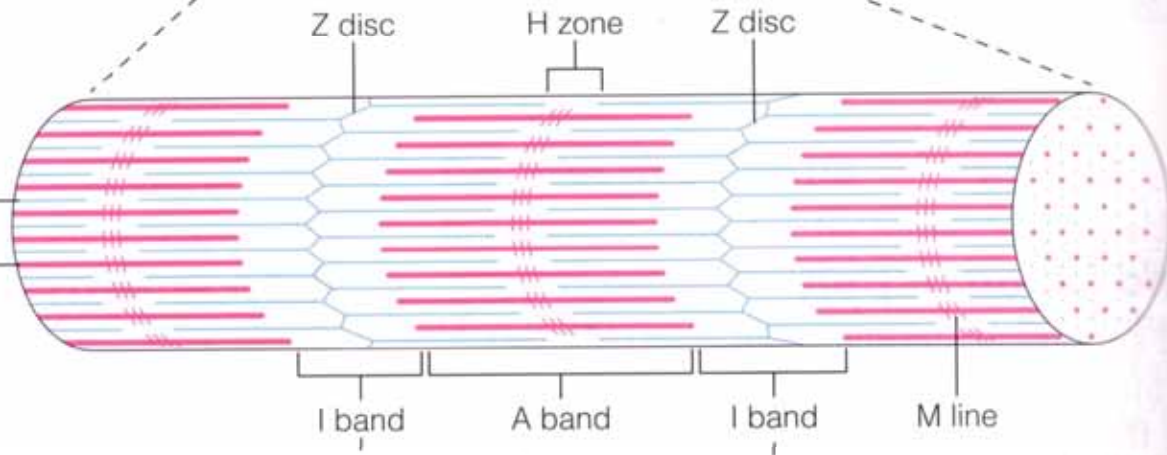
- Composition of sarcomere
 - Z line to Z line (\cong 1.27-3.6 μm in length)
 - Thin filaments (actin: 5 nm in diameter)
 - Thick filaments (myosin: 15 nm in diameter)
 - Myofilaments in parallel with sarcomere
 - Sarcomeres in series within myofibrils



(b) Portion of a skeletal muscle fiber (cell)

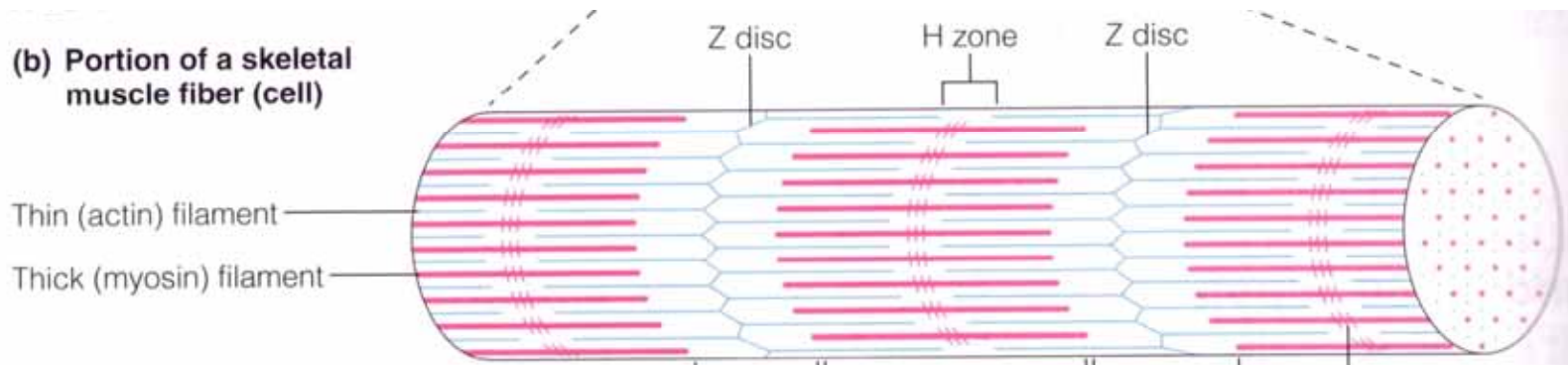
Thin (actin) filament
Thick (myosin) filament

(c)

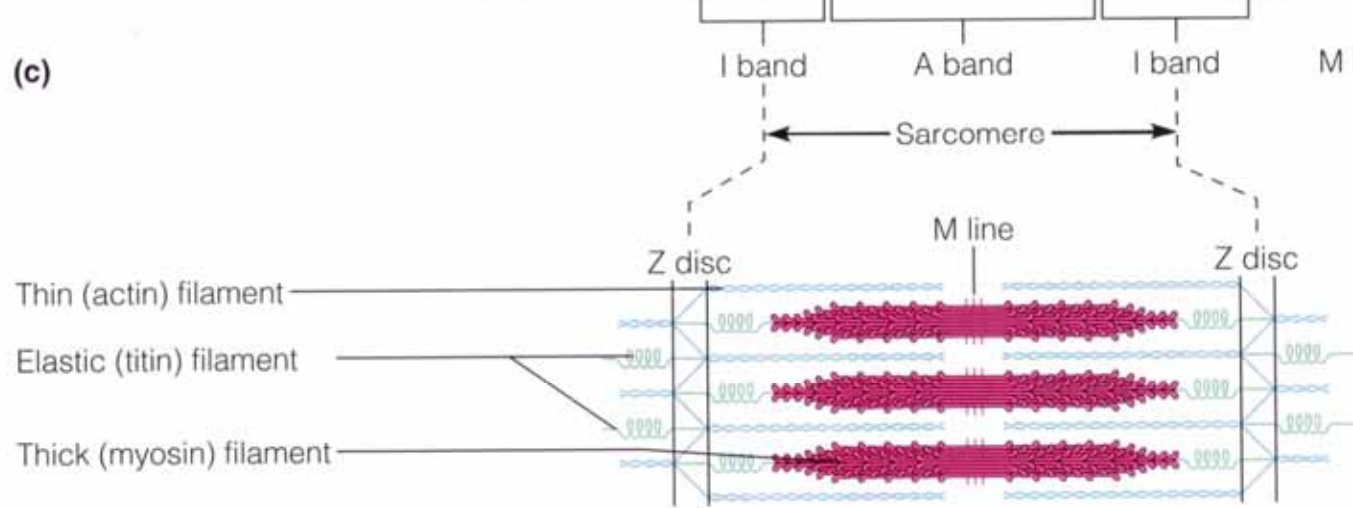


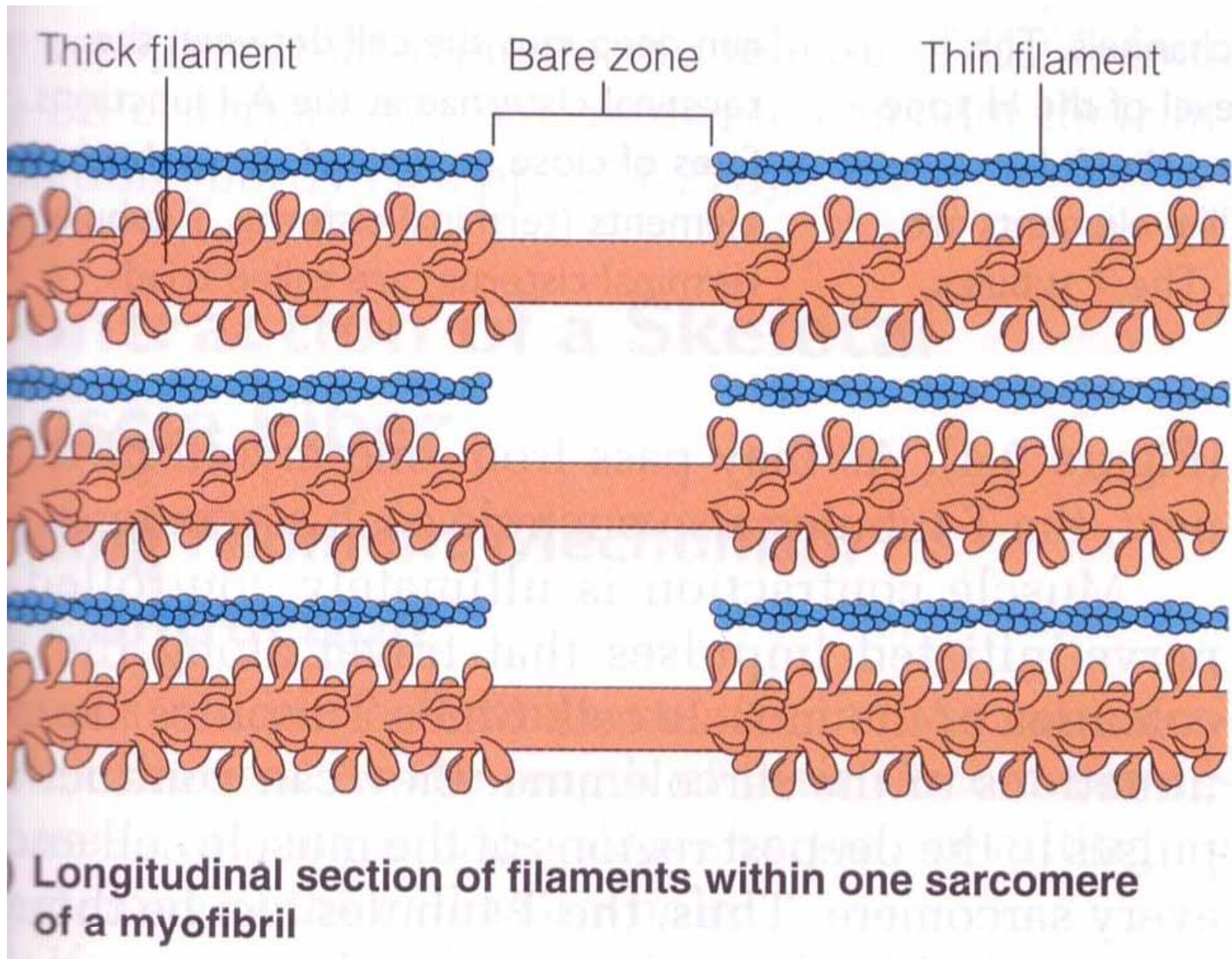
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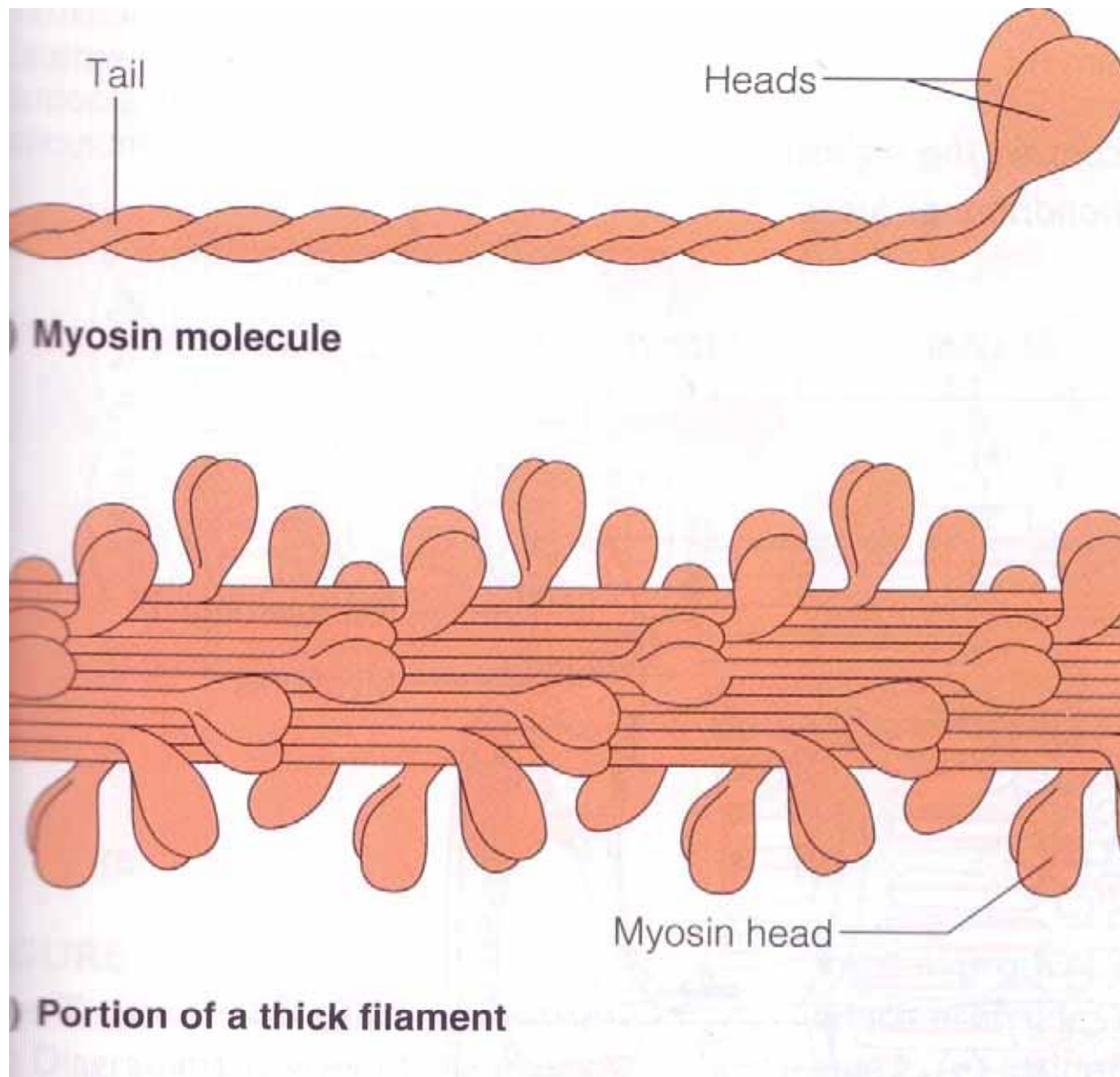
(b) Portion of a skeletal muscle fiber (cell)

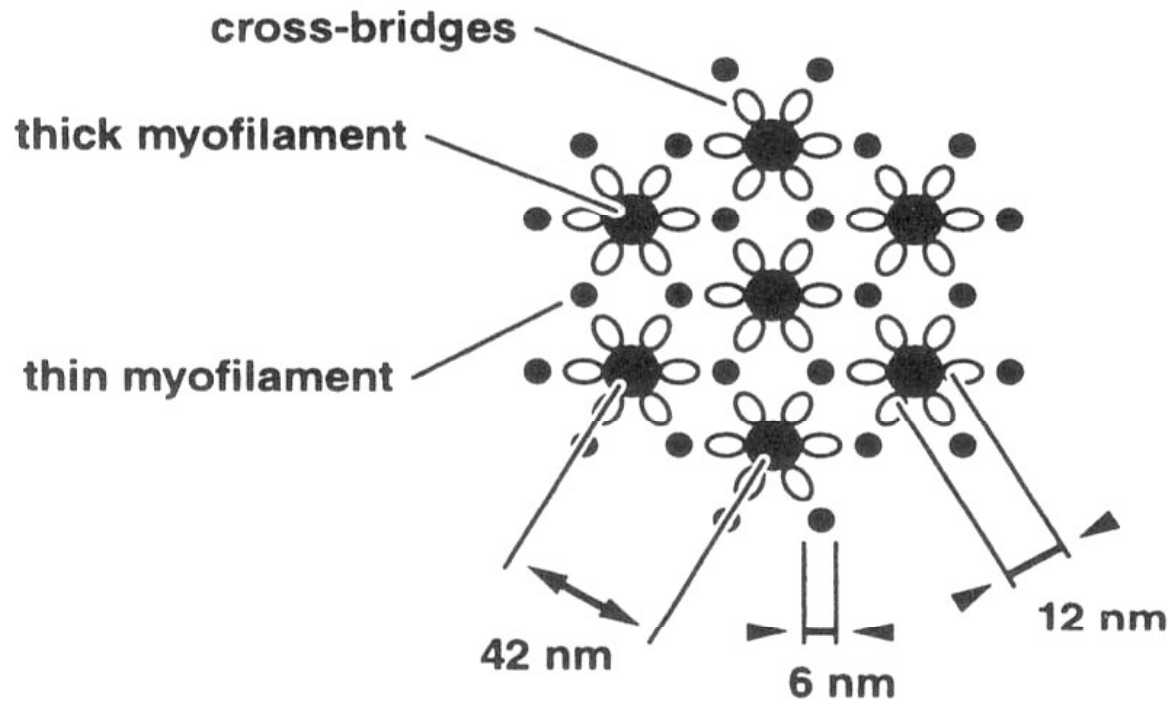


(c)









Muscle Architecture - Micro

- Key Words:
- sarcomere
- Actin -double strand, wound
- Myosin- twisted golf clubs, heads facing out in a spiral fashion down the bundled tails
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