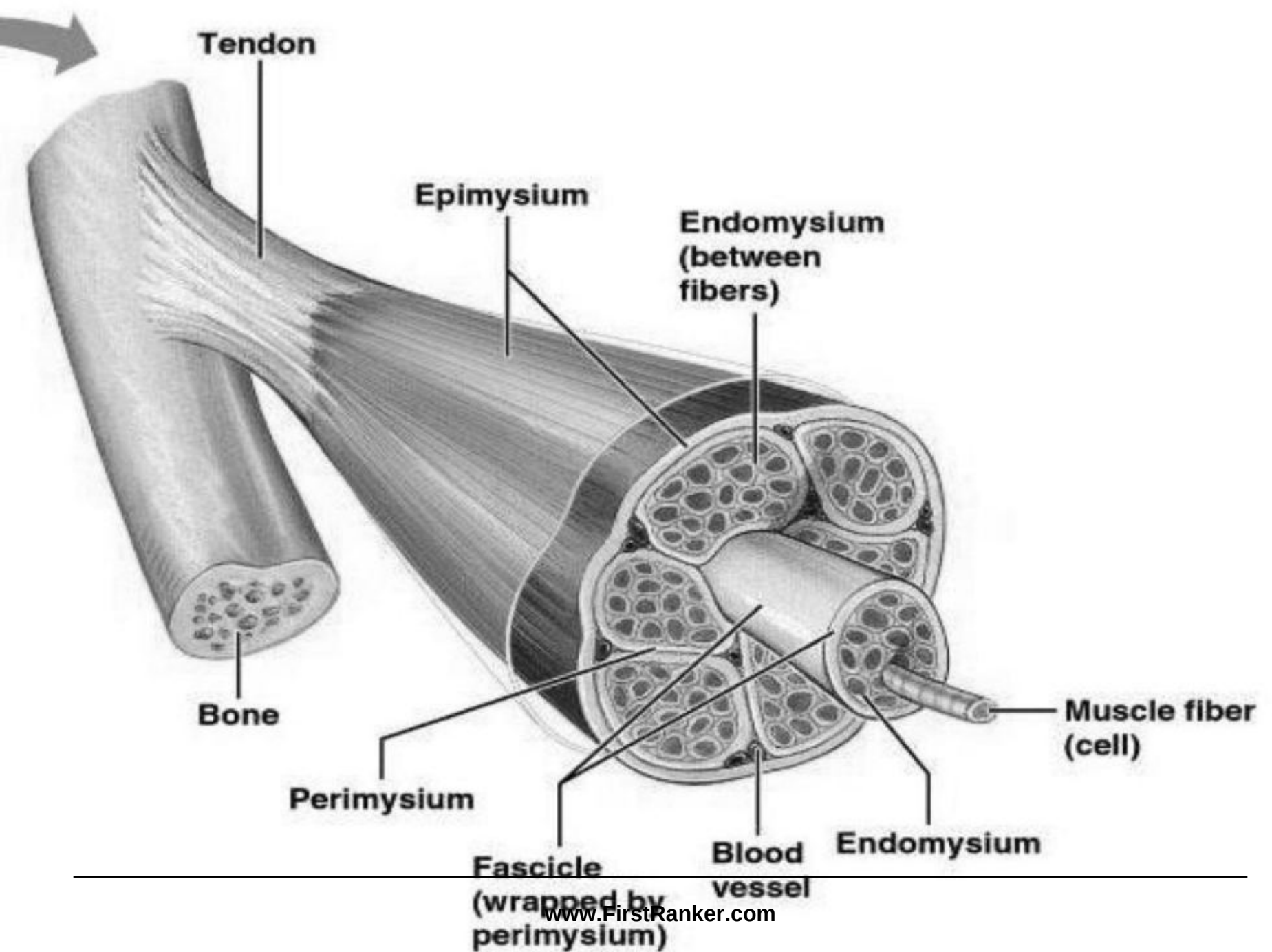
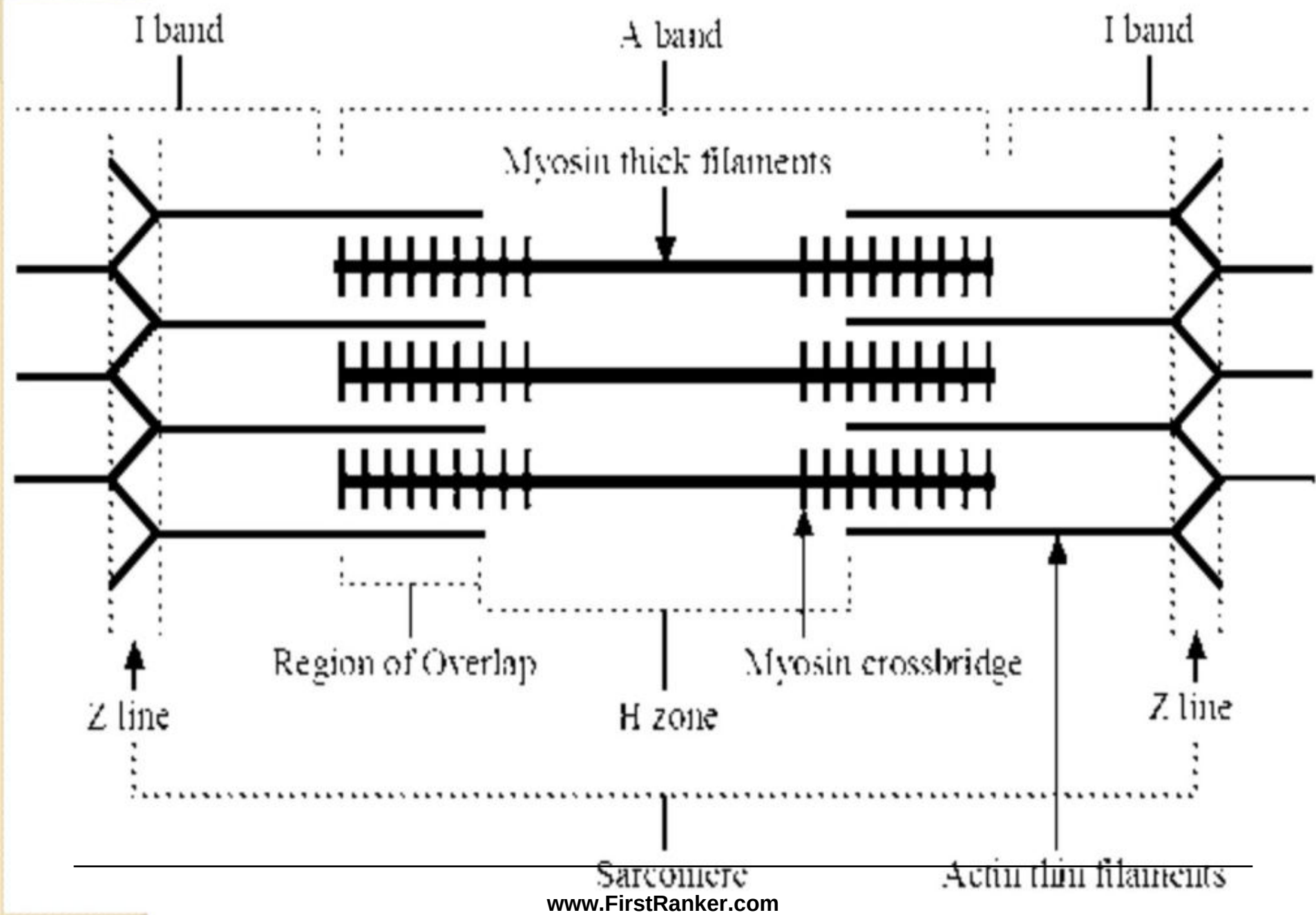
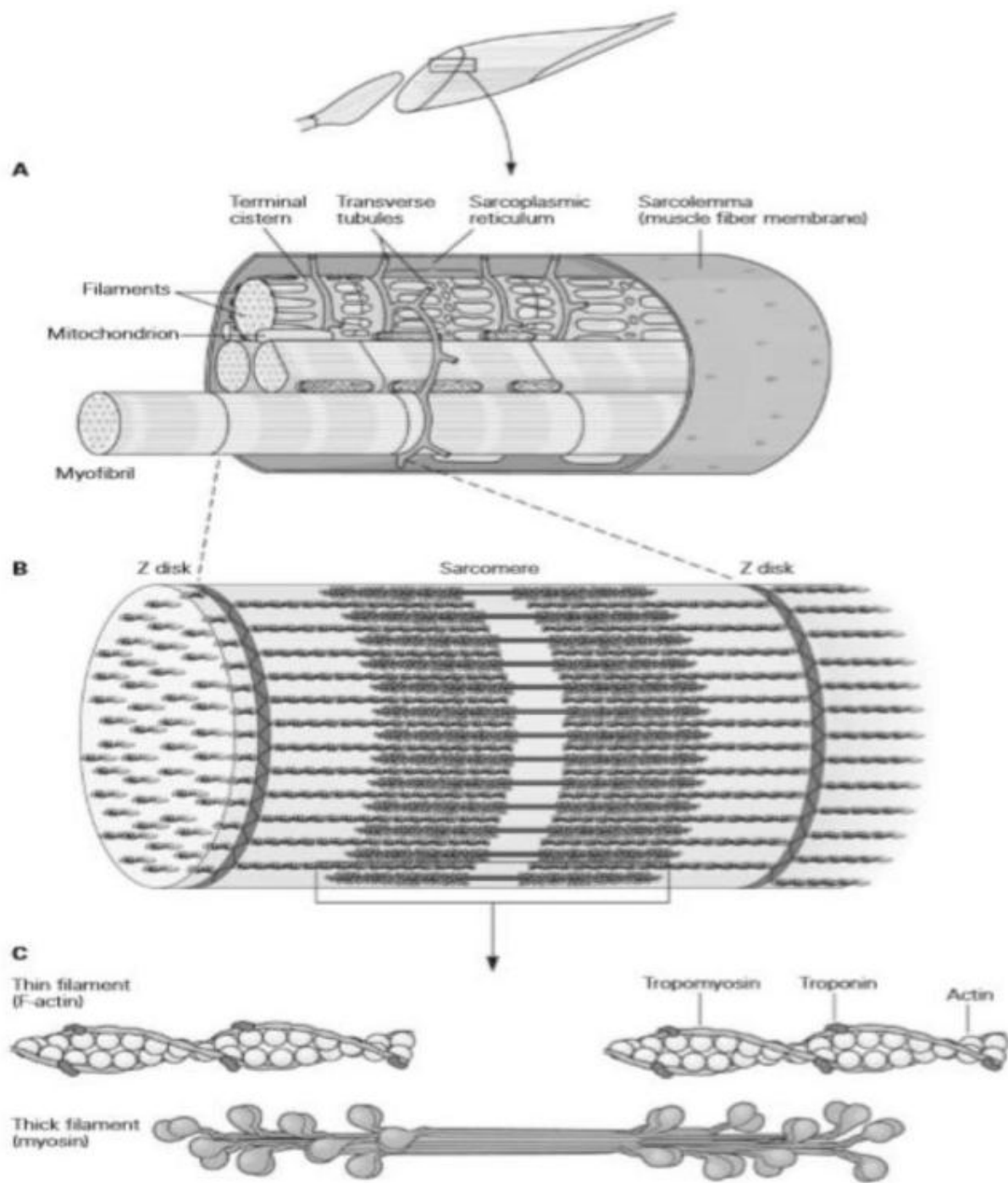
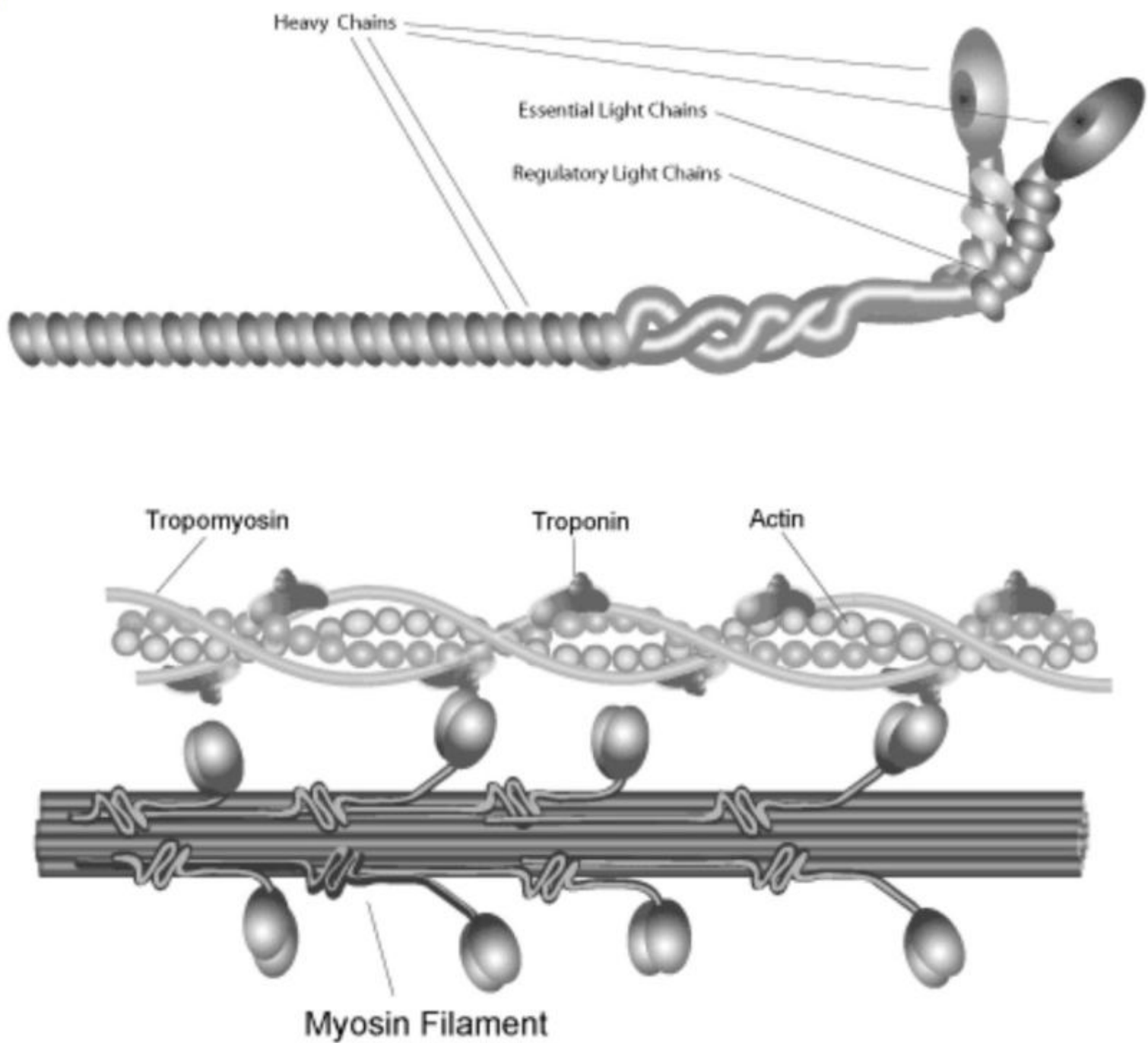


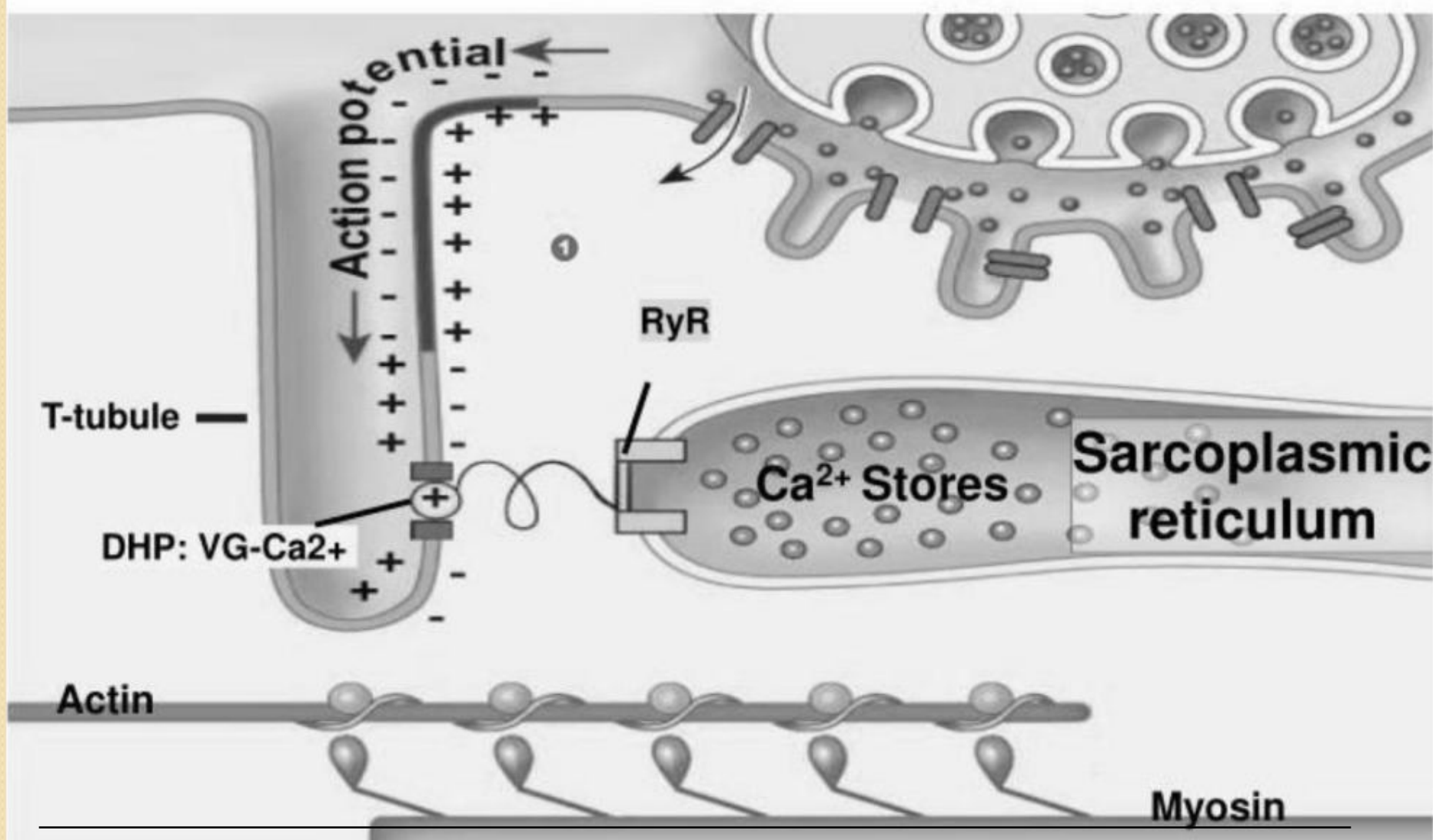
Skeletal Muscles







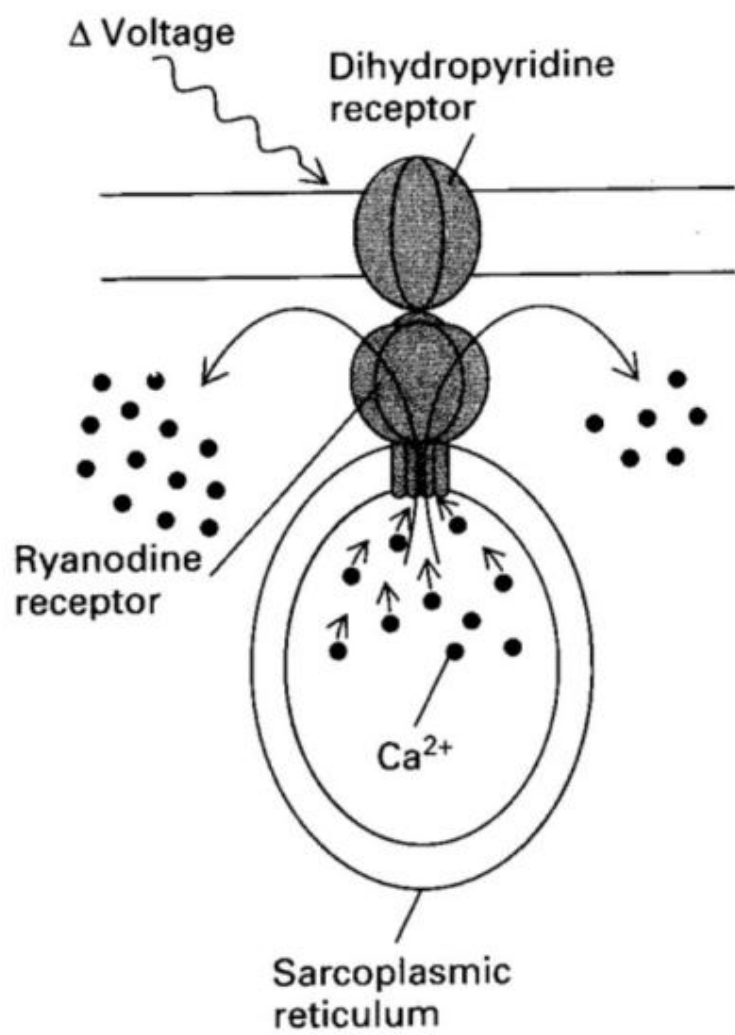
Calcium initiates muscle contraction:
Where does Ca^{2+} come from in Skeletal Muscle?



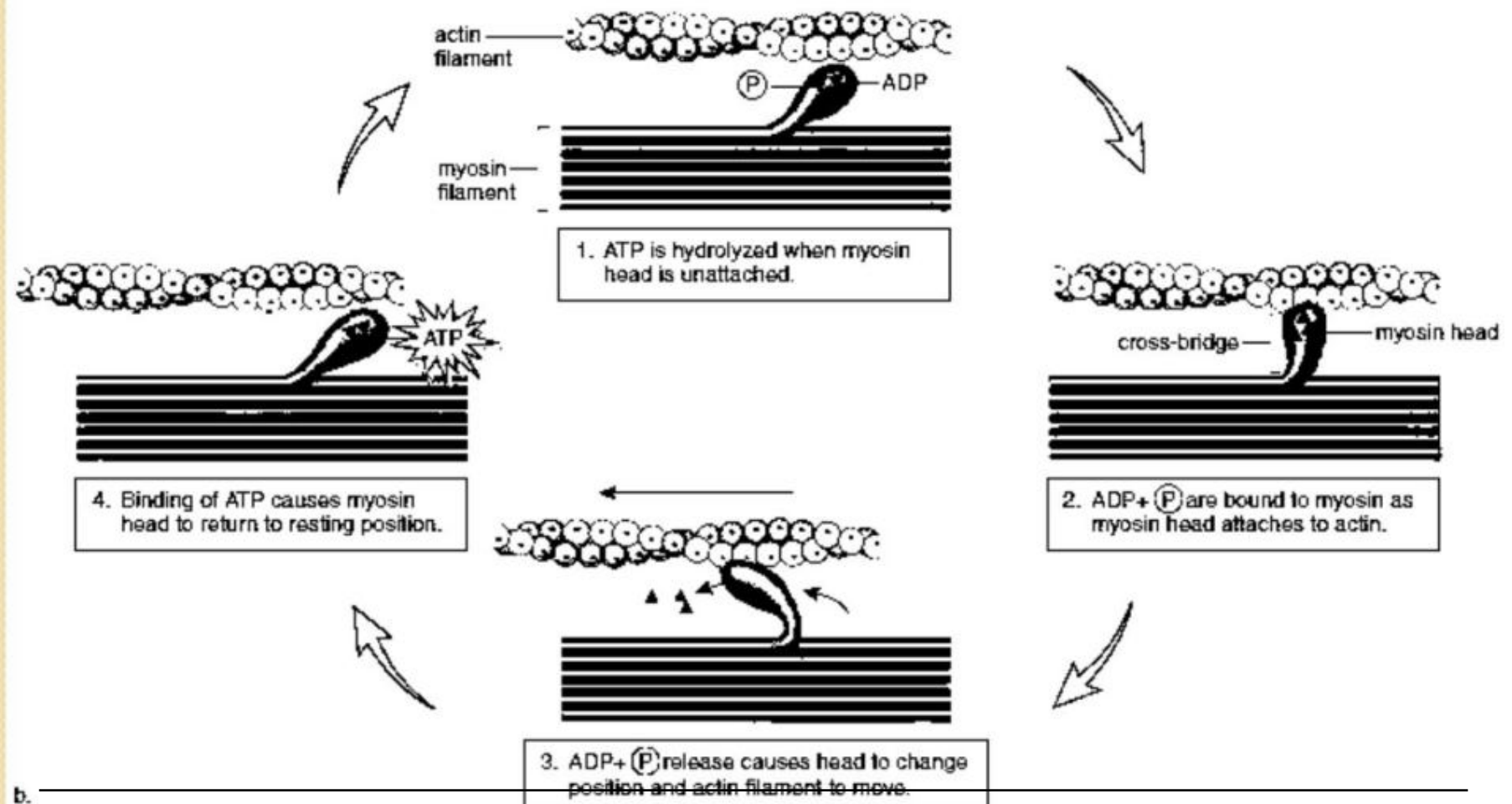
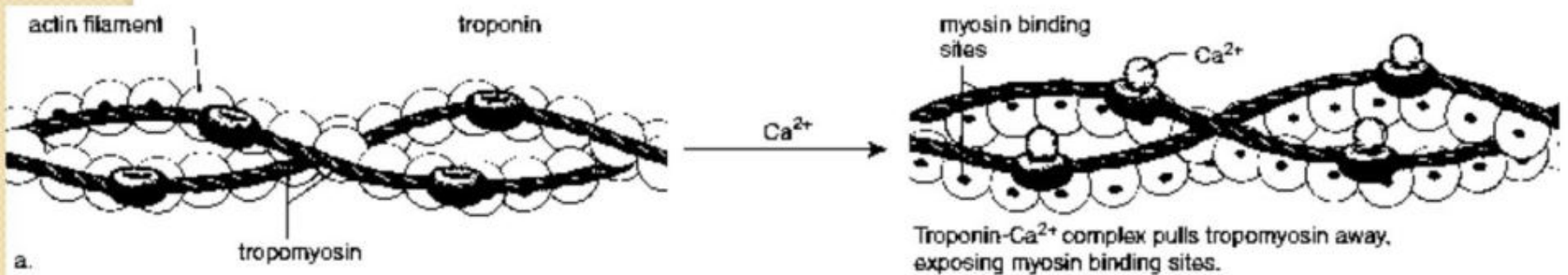
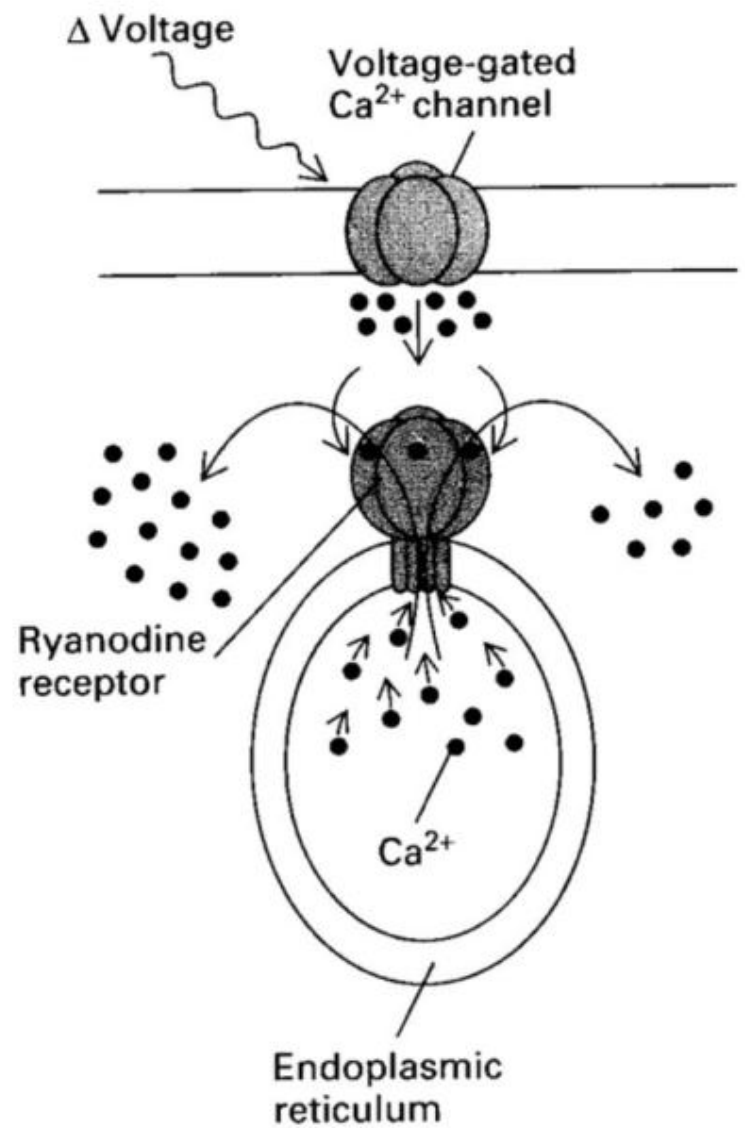
RyR = Ryanodine Receptor-channel

DHP = Dihydropyridine Ca^{2+} channel

(a) Voltage-sensitive RYR (skeletal muscle)

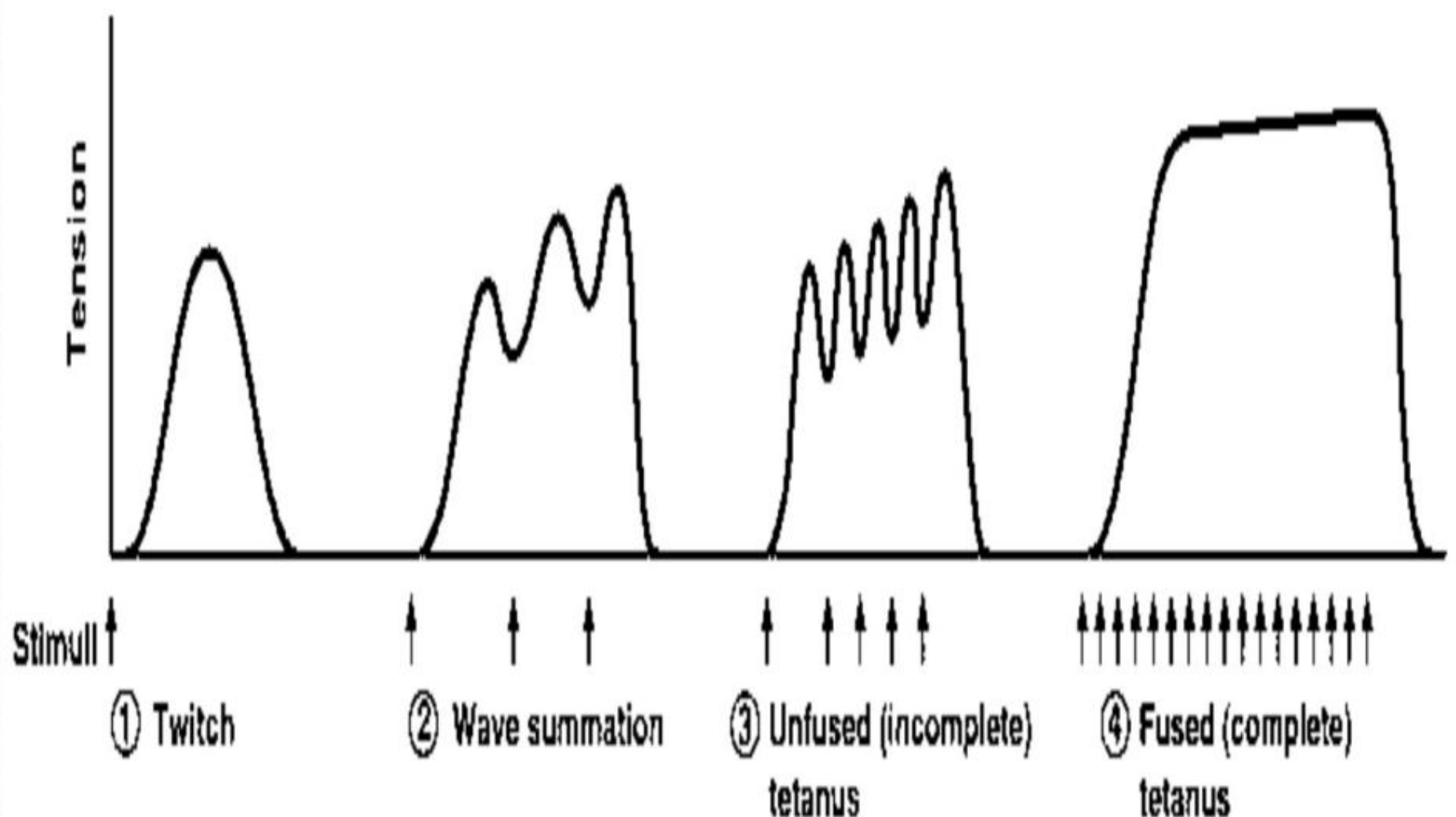


(b) Ca^{2+} -sensitive RYR (cardiac muscle, neurons)

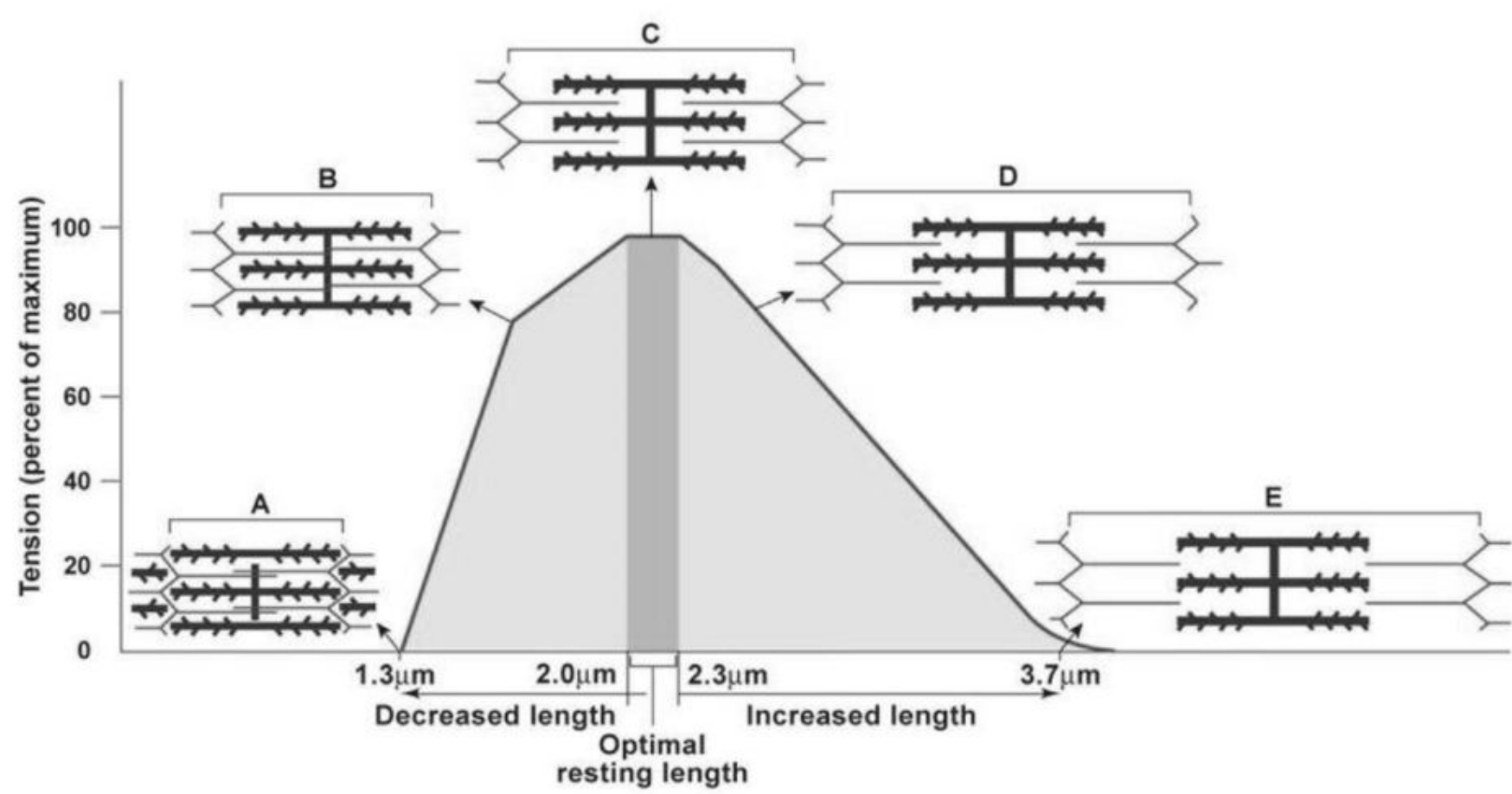


Properties of skeletal muscles

- Summation of contraction
- Staircase phenomenon
- Tetanization
- Post-tetanic potentiation
- Length – tension relationship
- Length-velocity relationship



Length-Tension Relationships in Contracting Skeletal Muscle



	Type I fibers	Type II a fibers	Type II x fibers	Type II b fibers
Contraction time	Slow	Moderately Fast	Fast	Very fast
Size of motor neuron	Small	Medium	Large	Very large
Resistance to fatigue	High	Fairly high	Intermediate	Low
Activity Used for	Aerobic	Long-term anaerobic	Short-term anaerobic	Short-term anaerobic
Maximum duration of use	Hours	<30 minutes	<5 minutes	<1 minute
Power produced	Low	Medium	High	Very high
Mitochondrial density	High	High	Medium	Low
Capillary density	High	Intermediate	Low	Low
Oxidative capacity	High	High	Intermediate	Low
Glycolytic capacity	Low	High	High	High
Major storage fuel	Triglycerides	Creatine phosphate, glycogen	Creatine phosphate, glycogen	Creatine phosphate, glycogen
Myosin heavy chain, human genes	MYH7	MYH2	MYH1	MYH4 &