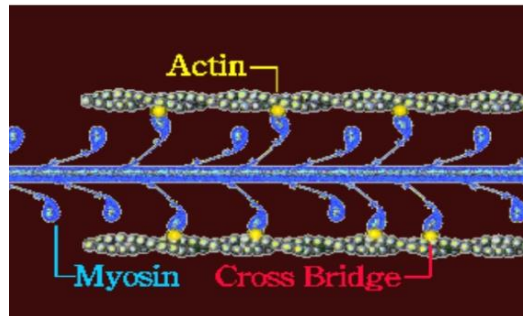


## PHYSIOLOGY OF MUSCLE CONTRACTION:

Muscle contraction is the activation of tension-generating sites within muscle fibers. In physiology, muscle contraction does not mean muscle shortening because muscle tension can be produced without changes in muscle length such as holding a heavy book or a dumbbell at the same position.



Muscles are composed of two major protein filaments: a thick filament composed of the protein myosin and a thin filament composed of the protein actin. Muscle contraction occurs when these filaments slide over one another in a series of repetitive events.

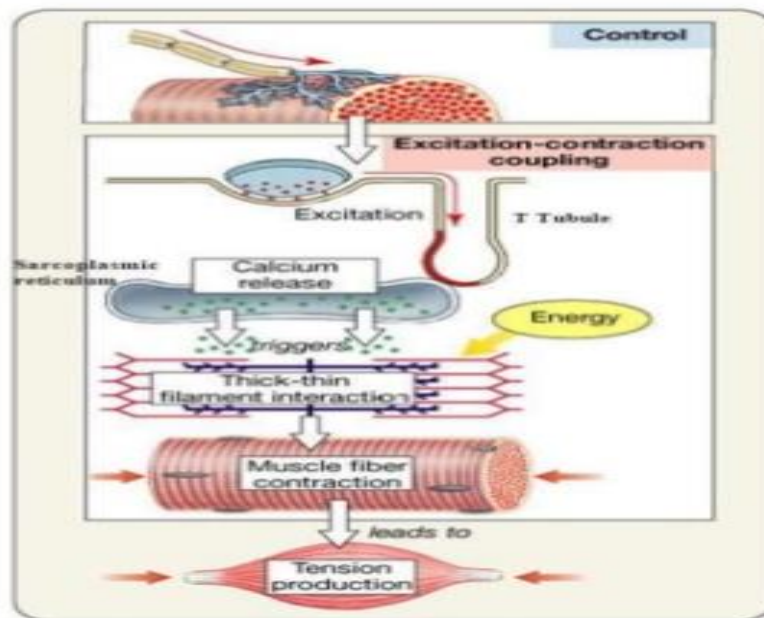


Figure from: Martini, *Anatomy & Physiology*, Prentice Hall, 2001

Physiology of muscle contraction:

- 1) Motor neuron firing
- 2) Depolarization of muscle cells
- 3) Release of calcium from sarcoplasmic reticulum
- 4) Shortening of sarcomeres

- 5) Shortening of sarcomeres
- 6) Shortening of muscles and tension produced