

Topic: Muscle Contraction
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Faculty Name : Dr. Kumari Sushma Saroj

Department: Zoology

College: Dr. L. K. V. D College, Tajpur, Samastipur

- In vertebrates, skeletal muscle contractions are neurogenic as they require synaptic inputs from motor neurons to produce muscle contractions.
- A single motor neuron is able to innervate multiple muscle fibers, thereby causing the fibers to contract at the same time.

- Once innervated, the protein filaments within each skeletal muscle fiber slide past each other to produce a contraction,
- which is explained by the sliding filament theory.
- The contraction produced can be described as a twitch, summation, or tetanus, depending on the frequency of action potentials

- In skeletal muscles, muscle tension is at its greatest when the muscle is stretched to an intermediate length as described by the length-tension relationship.
- Unlike skeletal muscle, the contractions of smooth and cardiac muscles are myogenic (meaning that they are initiated by the smooth or heart muscle cells themselves instead of being stimulated by an outside event such as nerve stimulation), although they can be modulated by stimuli from the autonomic nervous system

- The mechanisms of contraction in these muscle tissues are similar to those in skeletal muscle tissues.