## Steps to Muscle Contraction

1. A nerve impulse travels to the neuromuscular junction on a muscle cell. The neuromuscular junction is the point where the axons of the nerve cell meet the muscle cell
2. Ach is released from the axon terminal to receptors on the sarcolemma
3. The binding of Ach causes depolarization of the sarcolemma by opening voltage gated ion channels and allowing Na+ into the muscle cell
4. Na+ diffuses into the muscle fiber and depolarization occurs
5. Depolarization creates a wave of action potential across the sarcolemma
6. The action potential travels down the T-tubules which triggers the sarcoplasmic reticulum (SR) to release calcium
7. As ca2+ levels rise, CA2+ binds the Troponin complex which removes Tropomyosin from the Myosin binding sites on Actin Fibers (Myosin can now bind Actin and form cross bridges which begin the contraction phase)
8. In order to contract, myosin must hydrolyze ATP to provide the energy for the myosin to cock its head to the high energy position
9. Actin and myosin now bind together forming the cross bridge
10. The myosin heads then pull the actin filaments inward and release the ADP & Pi returning to their low energy position
11. If more ATP binds myosin, the cycle will repeat further contracting the muscle. This process continues as long as there are Ca2+ ions and ATP available.

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