Lecture 3: Action Potentials

Notebook: Physiology
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- **Polarization**: changing the membrane potential of the cell
  - **Depolarization:** reducing of the membrane potential (removing polarization, **making potential LESS NEGATIVE aka MORE POSITIVE**)
  - **Hyperpolarization:** increase of membrane potential (adding polarization, **Making MORE NEGATIVE**)
  - **Repolarization:** return back to ***resting membrane potential (rmp)***
- Depolarizing above the threshold (15-20 mV above rmp) leads to an **Action Potential (AP)**
  - adding any more voltage will not increase action potential
  - AP is an all or nothing response
  - below threshold yields no AP
- **Scenario: Someone has low K+ levels in blood, what would this do?**
  - **Answer:** Hyperpolarize cells, because a low [K+] outside would pull K+ out of the cell making it more negative inside. This would cause the heart beat to slow
- **Voltage Gated Ion Channels**
  - Na+ and K+ channels involved in an AP open and close during an action potential because they are voltage gated rather than being sensitive to chemicals
  - In a resting membrane the channel is closed
  - The channel opens in response to threshold level of depolarization; this permits diffusion of ions necessary for an AP
  - After a brief period the channel is inactivated by the "ball and chain" portion of a polypeptide chain during the **refractory period** of the response; during this period the channel cannot be open by depolarization)