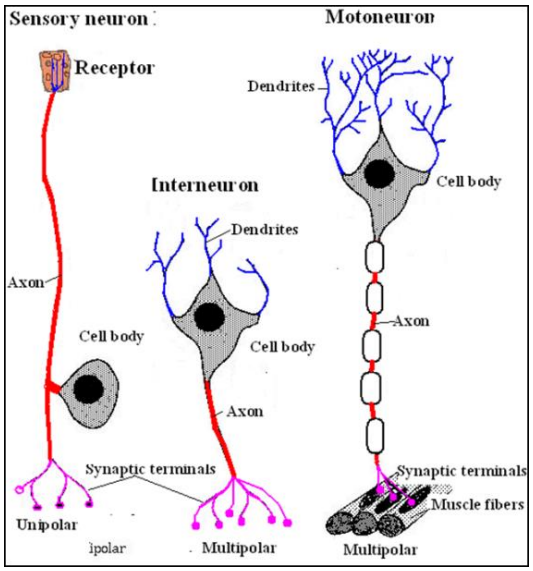
Membrane potential and excitation

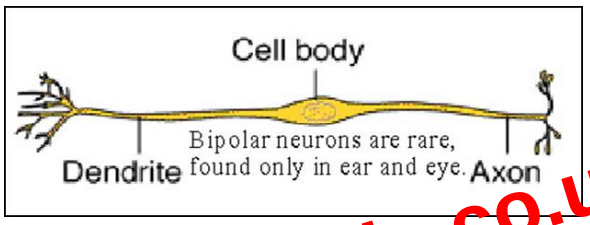
Somatic reflex arc:

- Pain receptor
- 2 – 3 (at least) neural connections
- Sensory neurons
- Motor neurons



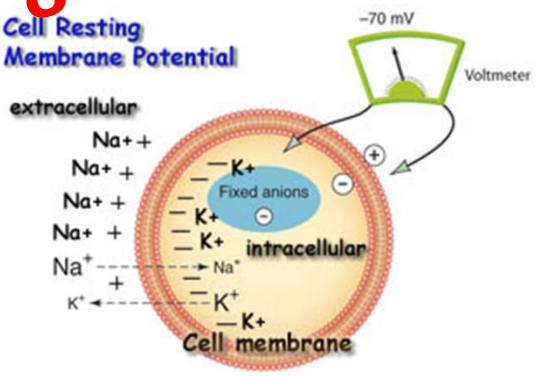
Unipolar sensory neurons have one long axon which connects receptors to the spinal cord or brain
(A unipolar neuron has only one neurite extending from the cell body)

Multipolar inter- and motoneurons have many dendrites and one axon



Bipolar neurons have one dendrite and one axon

Cell resting membrane potential



- High K^+ concentration inside
- High Na^+ concentration outside
- Cl^- ions outside help to balance positive charge
- Negatively charged proteins help balance charge from positive ions inside the cell – everything's electrically neutral
- Resting conditions: potential difference across membrane of -70mv: inside relatively more negative than outside
- Membrane potential is very specific to the concentration of the ions: can alter it by changing ion concentration
- Charge moves across the cell by charged ions through transport channels, creating a voltage difference:
  - K^+ that leaks out is actively transported back in
  - Na^+ is actively transported out
  - 2 K^+ in, 3 Na^+ out (Na^+/K^+ ATPase)
- K^+ has a resting potential of -90mv. Na^+ and Cl^- raise this to -70mv