Nerves

EXAMPLE PAGE

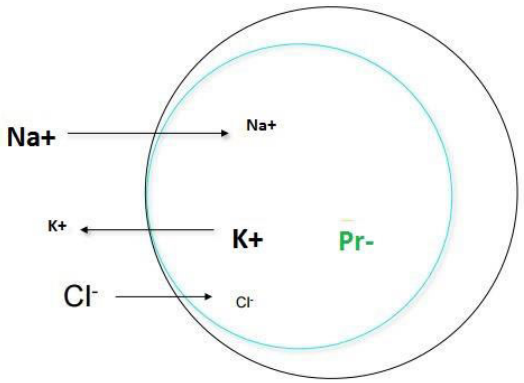
Patellar Reflex- Tap on Patellar tendon → Sensory neurons detect a stretch of the extensor muscle → send signal to spinal cord (CNS) → motor neuron to extensor activated, motor neuron to flexor inhibited.

Organisation of the Nervous System

- **Afferent Nerves-** Information **to** CNS.
- **Efferent Nerves-** Information **out** away from the CNS.
  - **Somatic Nervous System-** Voluntary movement (motor neurons → skeletal muscle)
  - **Autonomic Nervous System-** Involuntary movement (breathing, heartbeat, e.t.c.)
    - **Parasympathetic-** Conserves energy.
    - **Sympathetic-** Fight or flight.

Distribution of Ions

- **In Cell-** K^+, Mg^{2+}, PO_4^{3-}, $Protein^-$
- **Outside Cell-** Na^+, Ca^{2+}, CL^-, HCO_3^-
- **Depolarisation-** Na^+ channels open- Na^+ diffuses into the cell.
- **Repolarisation-** K^+ channels open- K^+ diffuses out of the cell.



Membrane Potential- Difference in charge between inside and outside of the cell.

Non-Excitable Cells- Membrane potential= -90 mV

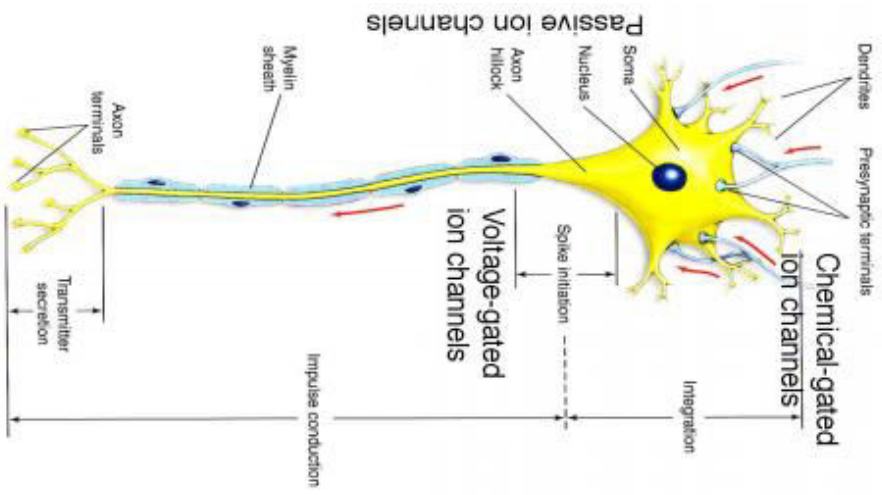
- Lots of K^+ channels, no Na^+ or Cl^- channels.
- As +ve charges increase cell starts repelling further K^+ movement.

Excitable Cells (Nerves, muscles, many hormone producing cells)- Resting Membrane Potential= -70 mV

- Lots of K^+ channels, some Na^+ channels.
- Resting Membrane Potential lower than in non-excitablebecause of Na^+
- Na^+ diffuses into cell (depolarisation), K^+ diffuses out of the cell (repolarisation)
- **Graded Potential**- When membrane potential becomes less -ve (Na^+ diffuses in) but not enough for action potential.

Structure of Nerves

- Cell body or soma- Connect to earlier nerves
- Axon hillock- Energy summation
- Axon- Long, thin and can be surrounded by myelin (insulated= faster transport. Signal jumps from one node of Ranvier to another)
- Axon terminals- connect to adjacent nerve or muscle.
- Neuron → Neuron- release



neurotransmitters to send signal.