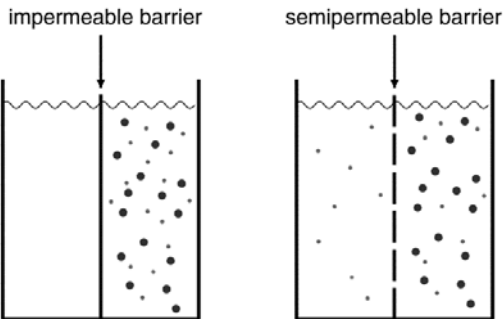


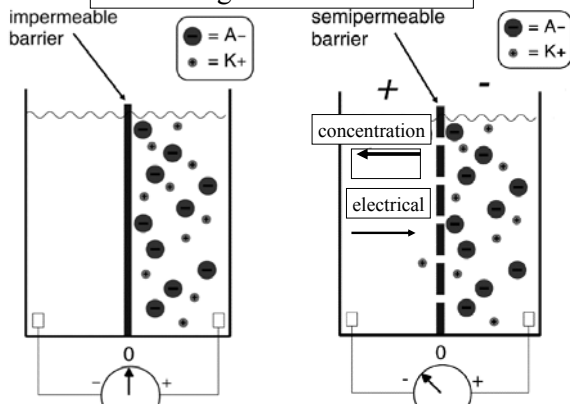
Electrical Disequilibrium

- Given $[ions]_{ICF}$ & $[ions]_{ECF}$, calculate: absolute charge, relative charge & membrane potential difference
- For an ion, determine direction of concentration gradient, electrical gradient and point of balance (Nernst Equilibrium potential)
- Predict the movement of an ion through an open channel

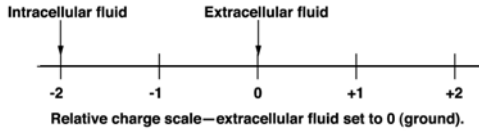
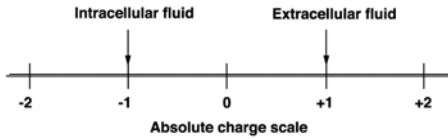
Diffusion along a concentration gradient



Electrical gradient also for ions



Comparison of absolute and relative charge scales



Nernst equation:

$$E_{\text{ion}} = \frac{61}{\text{charge}} \log \frac{[\text{ion}]_{\text{ECF}}}{[\text{ion}]_{\text{ICF}}}$$

E_{ion} gives the membrane potential difference that would balance the concentration gradient.
