

Membrane Potentials Learning Outcomes

As a result of study the theory and related practical class on membrane potentials you should:

1. Be able to describe what is meant by the term potential difference.
2. Understand how potential difference is measured and what its units are.
3. Understand the difference between monovalent and divalent cations and anions.
4. Appreciate that ions with different charges are attracted to each other while similarly charged ions repel each other.
5. Be able to explain what a membrane potential is and how you would measure it.
6. Understand the difference between a concentration gradient and an electrical gradient.
7. Appreciate that when studying the effects of ions flowing across membrane we only need consider what is happening inside the cell.
8. Understand that we can predict the polarity of the membrane potential if we know what ion channels are open and the relative concentration of these ions inside and outside the cell.
9. Appreciate that the magnitude of the membrane potential is dependent upon the size of the concentration gradient of the ion across the membrane.
10. Understand what an equilibrium potential is and why it is useful.
11. Know the historical origins of the Nernst equation and be able to use it calculate the equilibrium potential for monovalent anions and cations at body temperature.
12. Be able to explain the fundamental assumption that is made when you use the Nernst equation to predict membrane potentials.