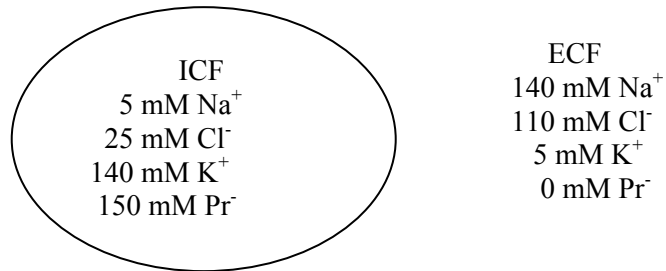


Answer the questions below about the cell diagrammed here.



1. Absolute charge inside the cell (ICF)? _____ outside the cell (ECF)? _____
2. What is the membrane potential difference (relative charge of ICF with ECF set to zero)?
3. What is the direction of the concentration gradient for Na⁺? into the cell or out of the cell
[Molecules diffuse from high to low concentrations.]
4. What is the direction of the electrical gradient for Na⁺? into the cell or out of the cell
[Ions have an electrical force to move towards the opposite charge.]
5. If the cell shown above receives a signal that causes membrane Na⁺ channels to open, which way will Na⁺ move ? into the cell or out of the cell
6. What is the direction of the concentration gradient for Cl⁻? into the cell or out of the cell
7. What is the direction of the electrical gradient for Cl⁻? into the cell or out of the cell
[Since the forces are opposite, which is stronger and will move the ion? What do you expect the charge and magnitude of the membrane potential would be to oppose this concentration gradient?]
8. Use the Nernst equation, p.143 to determine the equilibrium potential for Cl⁻. This is the membrane potential difference that would balance the electrical gradient with the given concentration gradient.
9. If the cell shown above receives a signal that causes membrane Cl⁻ channels to open, which way will Cl⁻ move ? into the cell or out of the cell
10. What is the direction of the concentration gradient for K⁺? into the cell or out of the cell
11. What is the direction of the electrical gradient for K⁺? into the cell or out of the cell
12. What is the equilibrium potential for K⁺?
13. If the cell shown above receives a signal that causes membrane K⁺ channels to open, which way will K⁺ move ? into the cell or out of the cell