Goldmann equation

Also the Goldman-Hodgkin-Katz equation

- Allows calculation of membrane potential based on intracellular and extracellular ion concentrations,
- based on Nernst equation,
- takes into account the real permeability of the resting membrane for ions.

$$E = \frac{RT}{F} \ln \frac{P_{Na^+}[Na_o^+] + P_{K^+}[K_o^+] + P_{Cl^-}[Cl_i^-]}{P_{Na^+}[Na_i^+] + P_{K^+}[K_i^+] + P_{Cl^-}[Cl_o^-]},$$

where P_x − relative permeability for the given ion.

The result is a resting membrane potential value of *-73 mV*, as opposed to the Nernst equation, where the result is *-90 mV* (Nernst equation does not take into account the real permeability of the membrane to ions) .

Links

Bibliography

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