**Seminar 2 – Osmolarity, diffusion, membrane transport and resting membrane potential – Student’s protocol**

**1. Transport across the membrane**

in groups, solve the transport puzzle and note it down

add energy consumption Yes/No + individual examples of transported molecules

**2. Osmosis - program**

How does a significant change in the concentration of low molecular weight organic substances affect the movement of water across the membrane?

Draw the changes in volume and osmolarity of intracellular and extracellular fluids:

1. After infusion of 1l of 10% glucose solution (after reaching osmotic balance)?

EX

IN

1. After infusion of 1l of 0.9% sodium chloride solution (after reaching osmotic balance)?

EX

IN

1. After drinking 1 liter of pure water (after achieving osmotic balance)?

EX

IN

**3. Equilibrium and resting membrane potential - program**

Write the equation to calculate the equilibrium potential. What is the name of the equation? Explain what the equation describes.

Calculate the equilibrium potential for K+, Na+, Cl- and Ca2+ ions on the cell membrane under physiological conditions.

Write the Goldman-Hodgkin-Katz equation. What relationships does this equation describe? What is the relationship (difference) between the Goldman equation and the Nernst equation?

Based on it, calculate the membrane potential on the cell membrane under physiological conditions.

**4. Resting membrane potential in various cell types - program**

Explain why different cell types have different RMP?

* + Neuron
  + Cardiac striated muscle cells
  + Erythrocyte