

Biological membrane and membrane transport

Methods of substance transmission through the membrane

Membrane transport:

1. **Active transport**
2. **Passive transport**
 1. Diffusion:
 1. Simple diffusion
 2. Facilitated diffusion

Mechanism of substance transport through membrane:

Transport in a membrane continuum means that the transported substances remain separated from the cytosol by a membrane. The intake of material is called **endocytosis**, the outtake **exocytosis**, and if the material is only passing through the cell, it is called **transcytosis**. Both endocytosis and exocytosis usually transport larger molecules.

1. **Exocytosis**: secretion outside the cell. Secreted vesicles or granules are then carried from the Golgi apparatus to the cell membrane, with which they fuse, and their content is poured into extracellular space. An example of this can be the secretion of insulin, or the transmission of neurotransmitters from neurons
2. **Endocytosis**: receiving substances. (e. g. ions, molecules, other cells) from the surrounding of the cell. The membrane forms an invagination with substances which later breaks away and becomes a vesicle that can deliver its contents to the cytosol itself.

There are a three basic types of endocytosis:

1. **Phagocytosis**: receiving larger solid particles (e.g. bacteria, microorganisms – “cell eating”). The cell uses pseudopodias to surround particles.
2. **Pinocytosis**: receiving liquids ("cell drinking"). The cell non-specially absorbs part of the extracellular liquid.
3. **Receptor**- mediated endocytosis: binding of the molecule to the specific receptor in the plasmatic membrane. The membrane with the bound molecule invaginates and forms a coated pit, and later a coated vesicle, which can be carried further to the cytosol.

Subquestions

- Lipid bilayer
- Biological membrane – differences in structure and permeability for different molecules
- Passive membrane transport
 - Ion channel – biophysical principle of transport by channels, types of ion channels
- Active membrane transport (primary and secondary)
- Comparison of transport by carrier protein and channel
- Facilitate diffusion

Notice

This exam question was prepared as: Forum:Seminar papers/Biophysics/2. LF/2014-2015/Group 2