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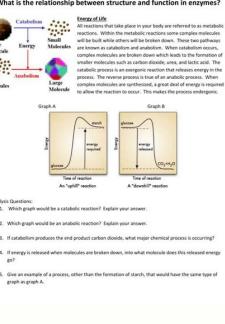
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## Structure and Properties of Cell Membranes

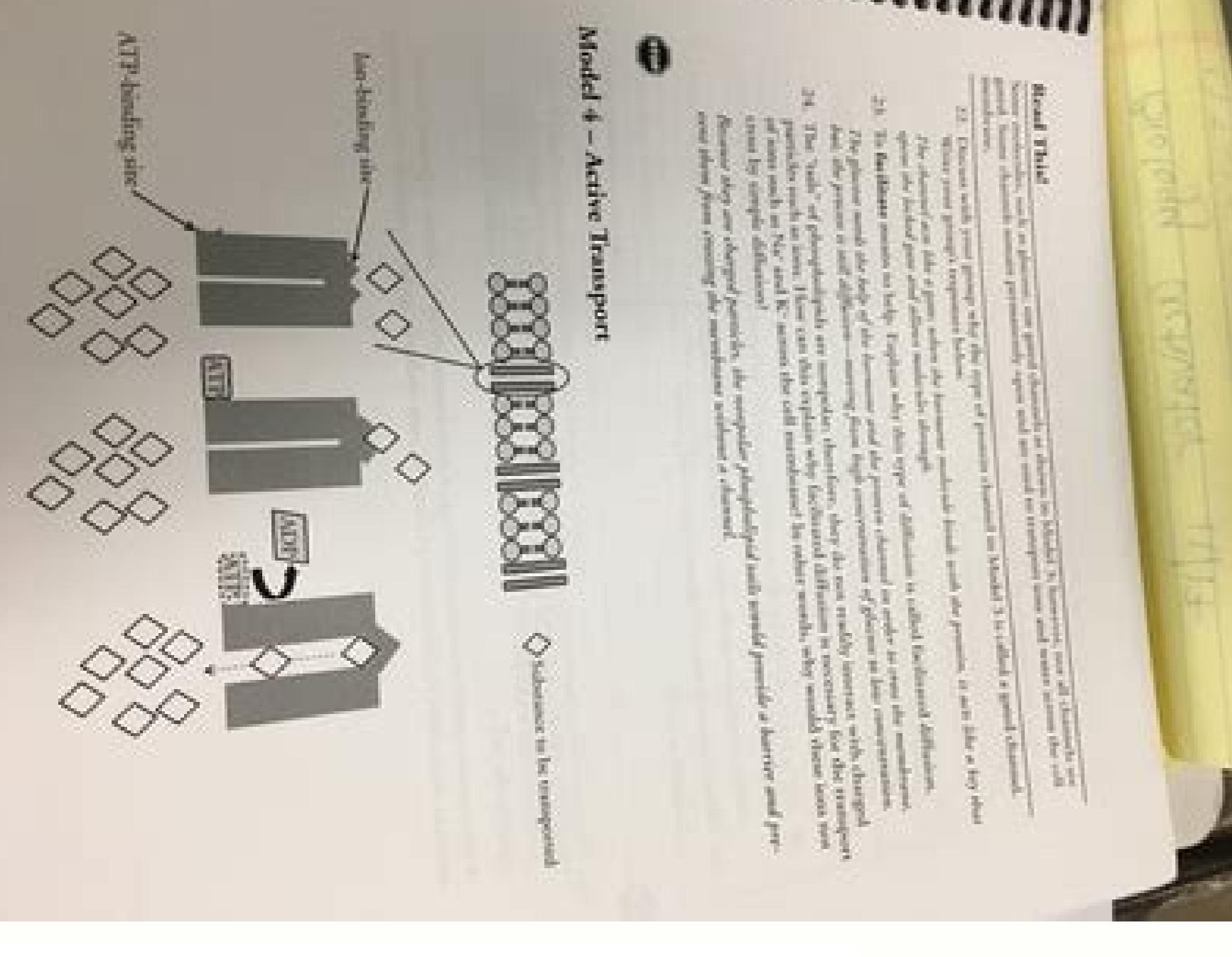
Volume I: A Survey of Molecular Aspects of Membrane Structure and Function

Edited by  
Gheorghe Benga

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Type of Movement	Type of particle is moved	Type part of the membrane is moving through?	How does it move / explain
Diffusion	No energy needed. Passive Transport	O <sub>2</sub> CO <sub>2</sub>	Lipid bi-layer Particles diffuse through the membrane until the concentrations in/out of the cell are balanced (equilibrium).
Osmosis	No energy needed. Passive Transport	H <sub>2</sub> O	Lipid bi-layer Water moves through the membrane until concentrations in/out of the cell are at equilibrium.
Facilitated Diffusion	No energy needed. Passive Transport	Glucose, sodium, potassium, calcium	Protein channel Particles move from high to low concentrations through the protein channel.
Molecular Transport	Energy needed. Active transport	Sodium, calcium, potassium	Protein pump The cell uses energy to pump the particles against the concentration (from low to high).
Endocytosis	Energy needed. Active transport	Large molecules or clumps of material such as glucose.	The whole membrane. The particle(s) are too big to fit through the proteins or lipids so the cell engulfs it, folds in the particles and then pinches off.
Exocytosis	Energy needed. Active	Large molecules, clumps of material such as waste or	The whole membrane The membrane folds and pinches together to allow the particles to escape.



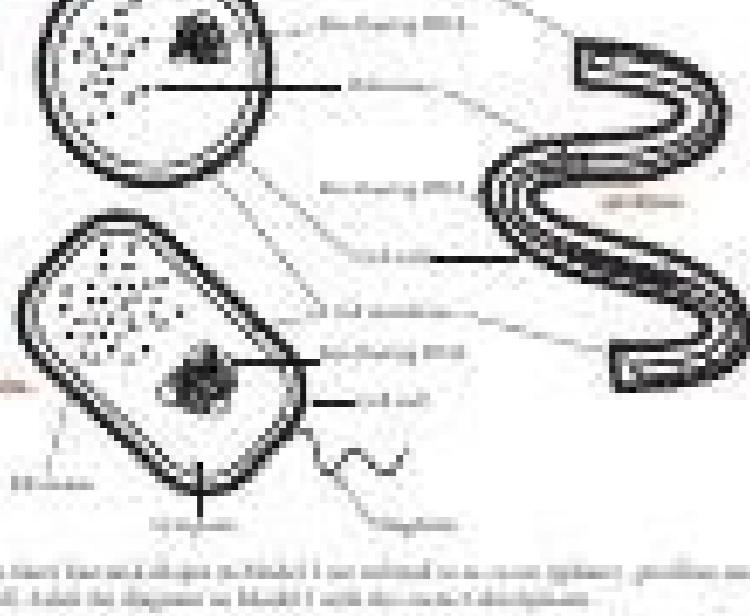
## Prokaryotic and Eukaryotic Cells

See all cells from this species

## Why?

Prokaryotes are unicellular organisms that have a single membrane boundary. It is often called a plasma membrane. In all eukaryotes there is a complex layer containing two main parts: a nucleus (a large, roughly spherical mass of genetic material) and a cytoplasm (the remaining living cytoplasm). In prokaryotes, there is no nucleus. Instead, the genetic material is contained in a nucleoid. The cytoplasm also contains organelles, which are membrane-bound structures that carry out specific functions. These organelles include the endoplasmic reticulum, the Golgi apparatus, and various vesicles. The cell wall is a rigid outer boundary that provides structural support and protection. It is composed of a thin layer of peptidoglycan, which is a polymer of amino acids and sugars. This layer is surrounded by a lipid bilayer membrane, which contains phospholipids and proteins. The phospholipids have hydrophilic heads that face outwards and hydrophobic tails that face inwards. The proteins are embedded in the lipid bilayer and help to regulate the movement of substances in and out of the cell.

## Model 1 – Three Types of Bacterial Cells



1. The many bars and shapes in Model 1 are outlined in orange. Identify positions and labels. Label the diagram in Model 1 with the correct descriptions.
2. What is represented by the small dots found in each of the three cells?
3. What indication of the environment is that found in the drawing placed the model in each cell?
4. Explain how a cell obtained and released this image?
5. How might it be used to get information about the cell?

Bacteria and Archaea

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