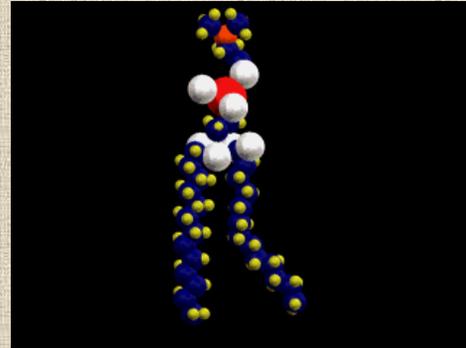
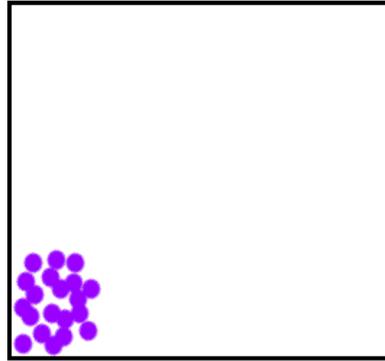


# Cells and their Environment

Transport occurs across the cell membrane and helps a cell to maintain homeostasis.

Cell part responsible:

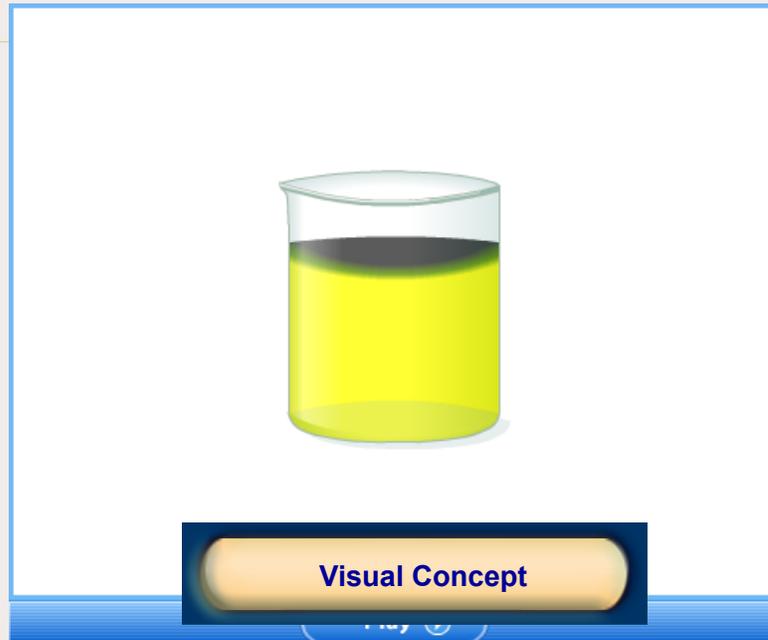


1

1. Movement of materials across the membrane is called transport.

- A. Passive Transport - WITHOUT the use of energy
  - Driven by Kinetic energy/Brownian motion
- B. Active Transport - WITH the use of energy- against a concentration gradient

## 2. Concentration Gradient- difference in concentration from one area to another



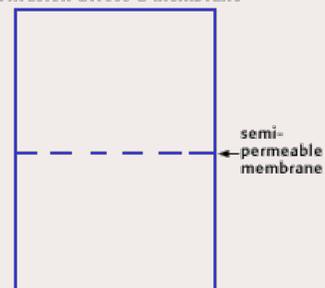
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## 3. Diffusion is passive/no energy.

- a) Diffusion- high to low concentration.
- b) Quicker at higher temps
- c) Occurs until an equilibrium is reached

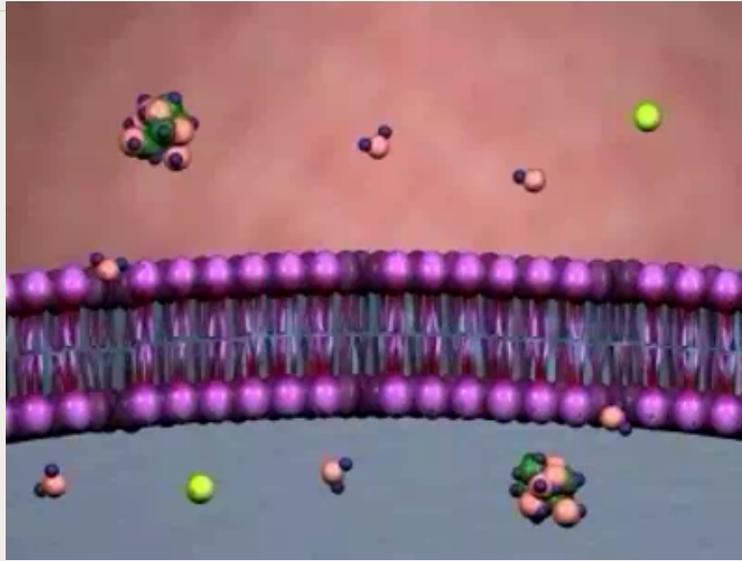
Diffusion across a membrane



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4. Osmosis is the diffusion of water molecules directly through the cell's membrane.



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5. If a cell is in a solution that is.....

- a) Hypertonic it shrinks (higher concentration of dissolved particles outside than inside of the cell)
- b) Hypotonic it expands (lower concentration of dissolved particles outside compared with inside of the cell)
- c) Isotonic no change (same concentration of dissolved particles outside as inside of the cell).

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# Graphic Organizer

Hypertonic

Hypotonic

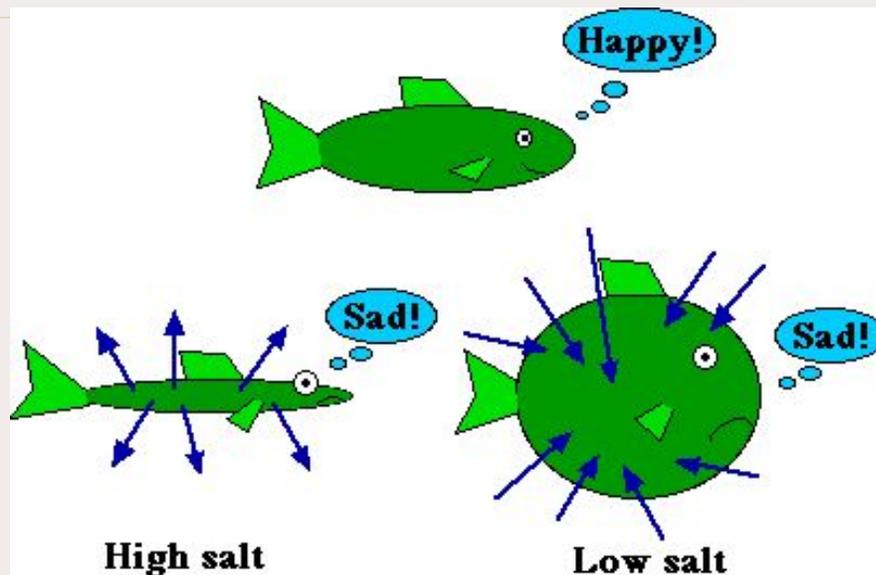
Isotonic

**DRAWINGS:** For each category, draw a cell in solution. For each picture, show solute particles in your solution and also in your cell. Label solvent line and solute particles. Show if water is entering or leaving the cell using arrows.

**WRITE ABOUT IT:** For each category, answer the following in complete sentences. 1) Is water moving into or out of the cell, or neither? 2) Is the cell shrinking, expanding or staying the same? 3) Are there more solute particles inside the cell or in solution, or neither?

7

Question: What would happen to an animal cell placed into a HYPERTonic solution?



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(It would shrink- plasmolysis)

8

## 6. Cell Coping- examples

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- a) Examples: kidneys- homeostasis of body fluid, lungs – gasses, fish use gills
- b) Contractile vacuole (not passive)- operates to expel water in paramecia. (What would cause it to work harder?)
- c) Plasmolysis- cell shrinking
- d) Cytolysis- cell rupture
- e) Turgor pressure- exerted by water onto cell wall

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## 7. Proteins in plasma membrane- helps regulate particle movement

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- a) Marker - ID invading cells & can allow molecules in
- b) Transport - transport large particles
- c) Receptor -capture signal molecules
- d) Enzymes- such as ATP synthase

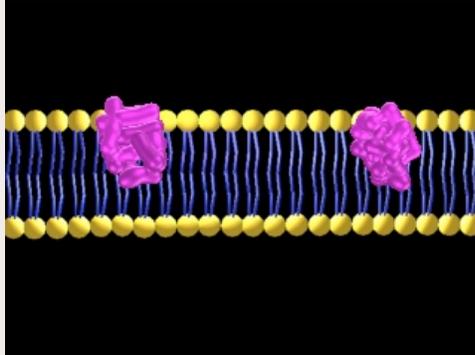
What do you suppose ATP synthase helps to make?

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## 7. Proteins in plasma membrane.....

### Marker



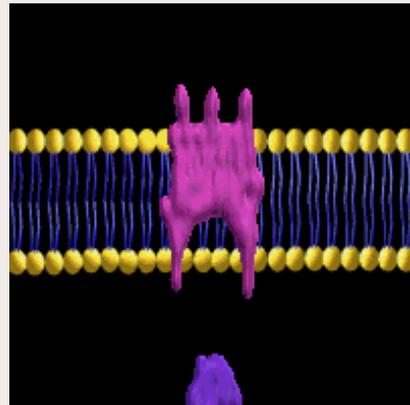
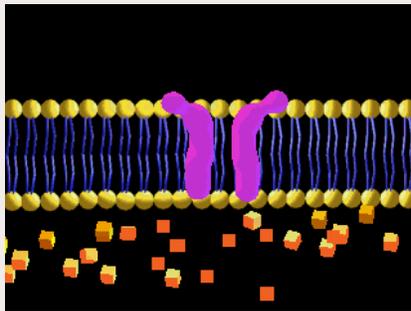
Marker  
movie

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## 7. Proteins in plasma membrane.....

### Transport



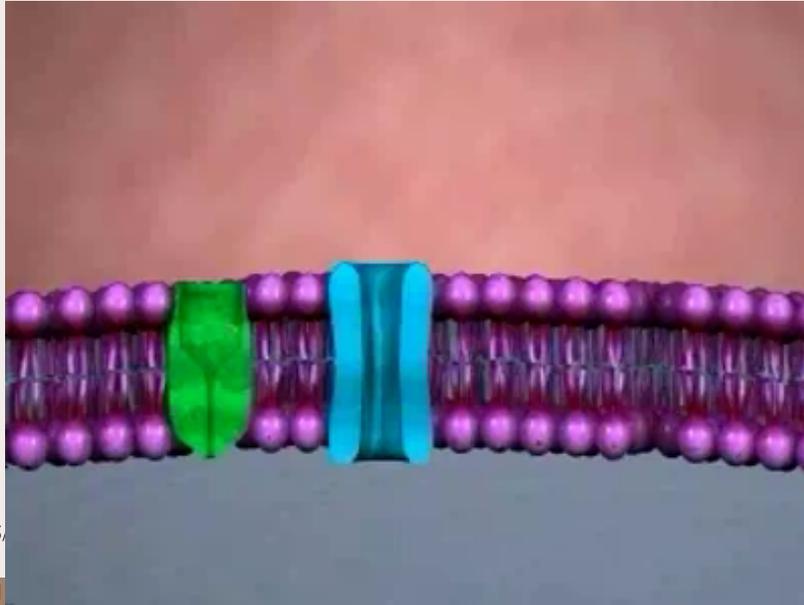
**Receptor**

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8. Membrane Protein **Transport Channels**- passive

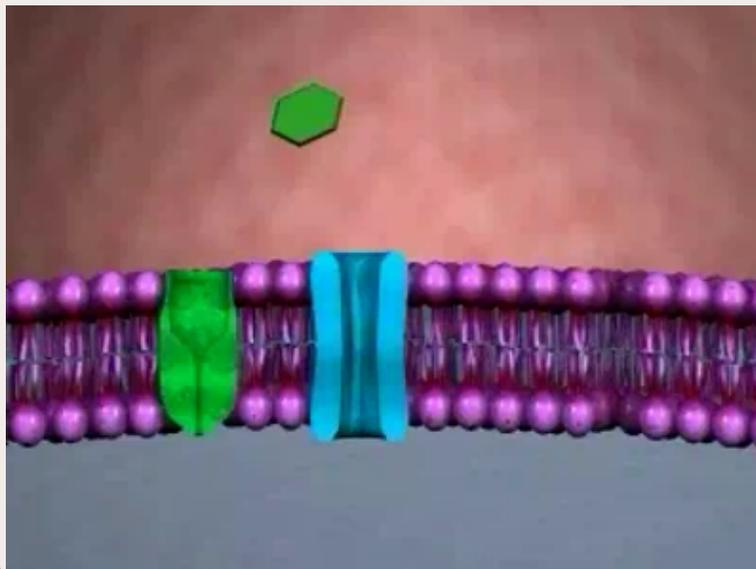
a) Ion channels -membrane proteins that transport specific ions



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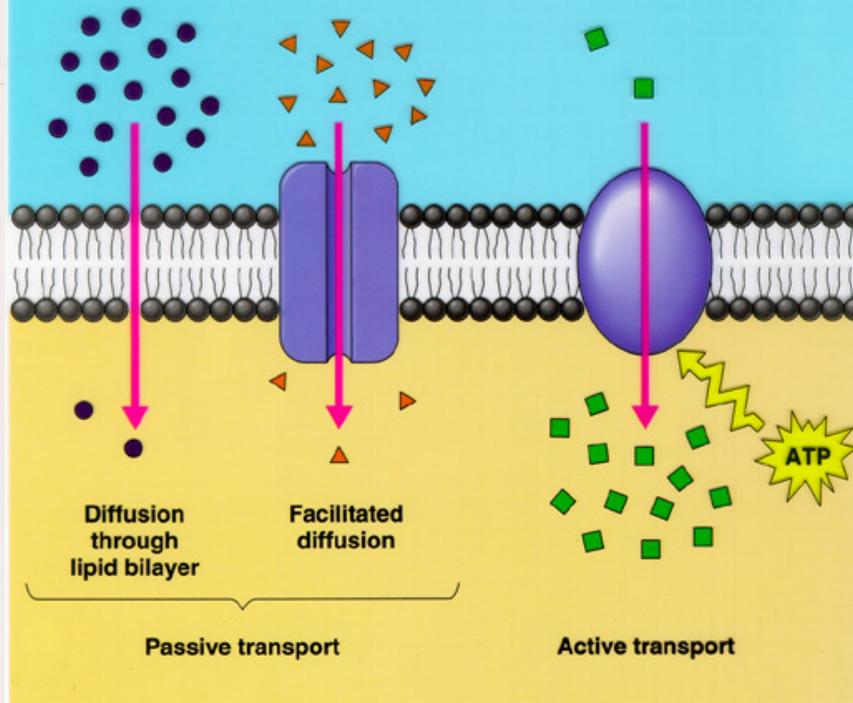
b) Carrier proteins - facilitated diffusion- helps move large molecules such as glucose



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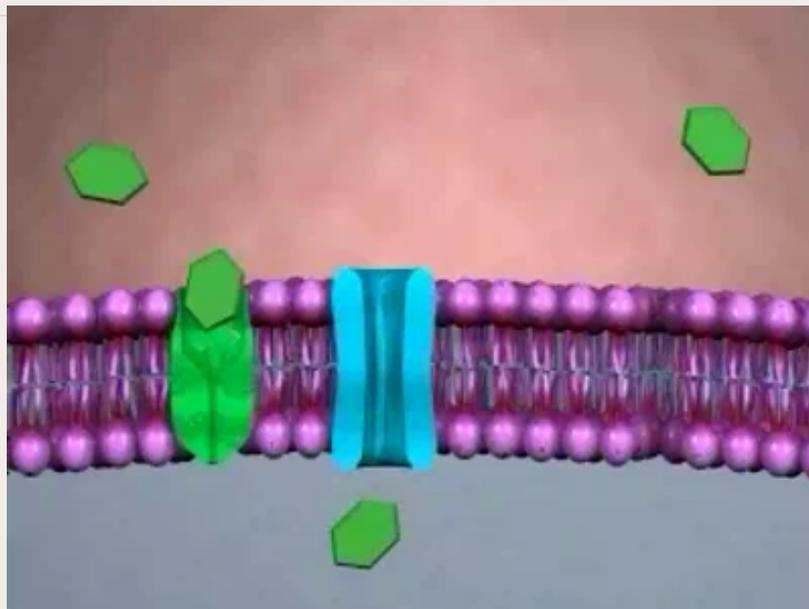
## Comparison - Passive vs. Active



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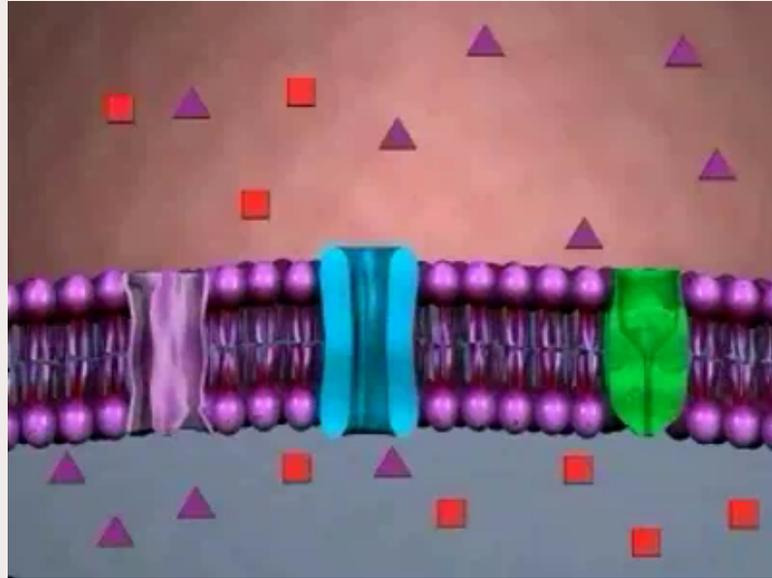
9. Active Transport- substances move from low to high concentration (HOW? Energy provided by ATP)



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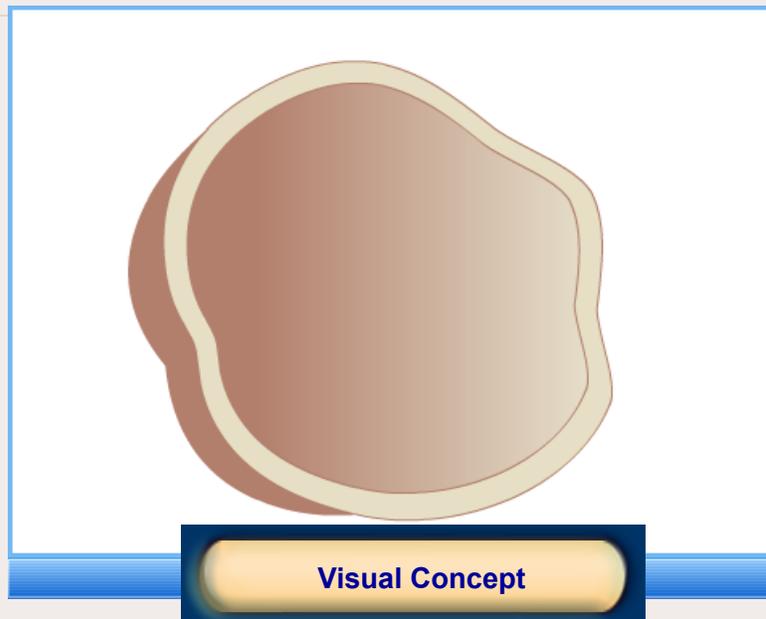
10. Sodium Potassium Pump- transports Na and K ions against their concentration gradient Na out & K in- (where does the energy come from to do this?)



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11. Endocytosis- Movement of molecules into a cell by a vesicle (how does it get the energy to do this?)



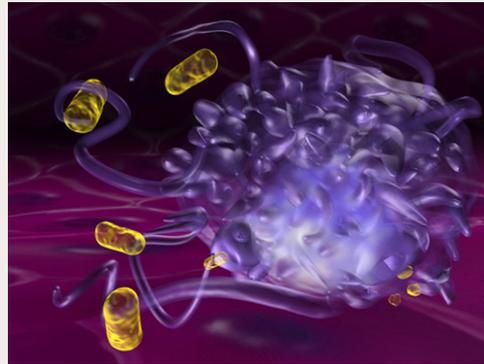
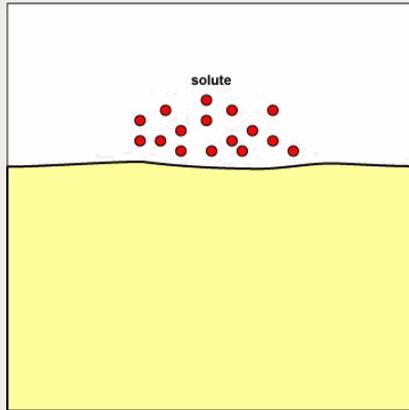
Visual Concept

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## 11. Endocytosis, continued

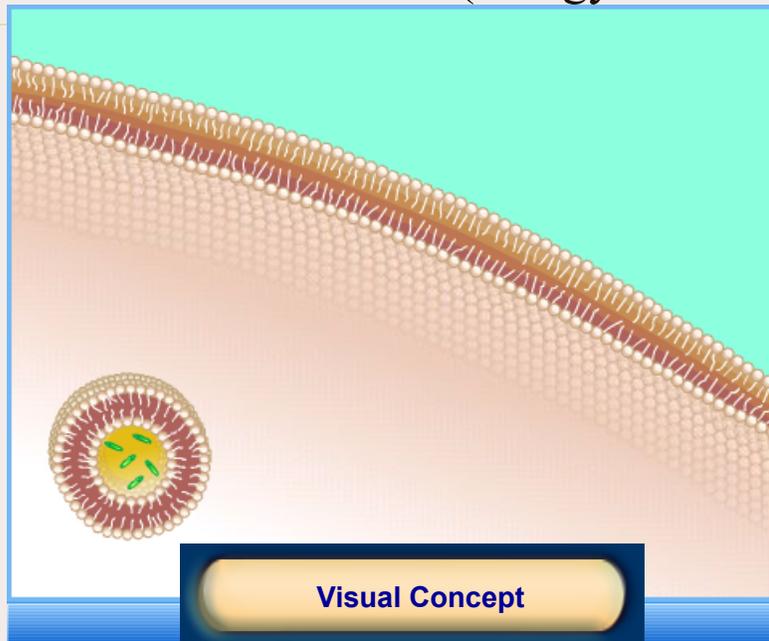
- a) Pinocytosis- cell drinking
- b) Phagocytosis- cell eating



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## 12. Exocytosis- movement of substances to the outside of the cell (energy source?)

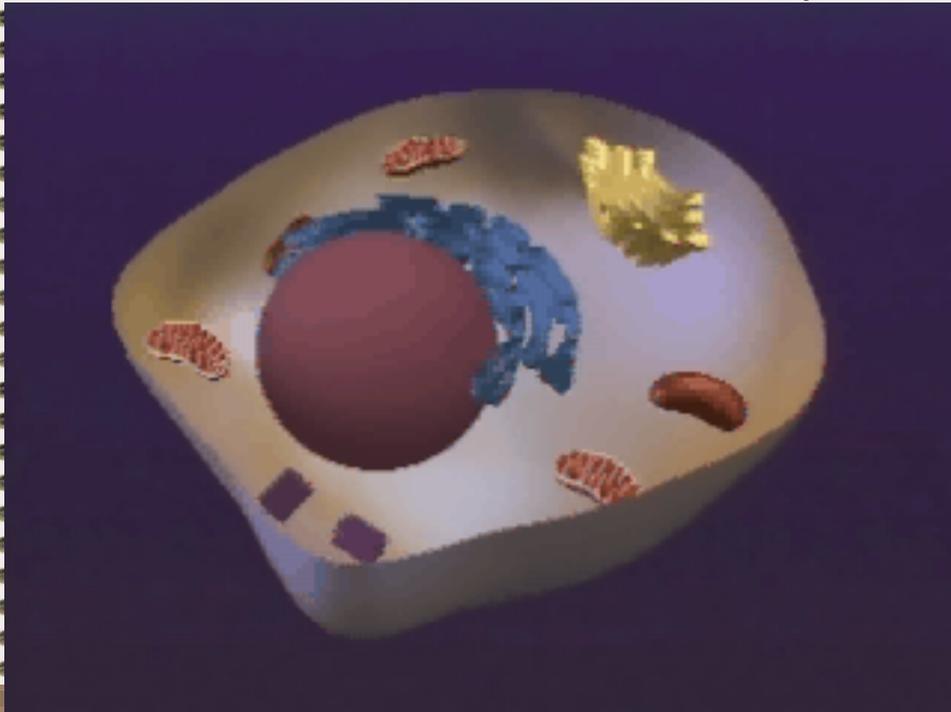


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Visual Concept

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Another view of Endo and Exo- cytosis



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