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Crash Course BIOLOGY (2012 SERIES) 40 Episode Series Bundle

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Crash Course Biology (2012) #5: Membranes and Transport

Name: _____ Date: _____

You can access the video here → <https://youtu.be/dPKy1f1D1e54?si=0FU0mxGXWVpTN88>

- Cells, like nightclubs, must be _____ to work—letting in what they need and kicking out trash.
- _____ is the diffusion of water across a membrane that helps cells regulate water content.
- In cells, _____ transport doesn't require any energy.
- A solution that's higher in concentration inside the cell than outside is _____; lower inside is hypotonic.
- When concentrations match on both sides, the system is _____.
- Water and ions pass through _____ proteins; the water-specific channels are aquaporins.
- Each aquaporin can pass roughly _____ water molecules per second.
- Because membranes are a _____ bilayer, their hydrophobic core makes water passage difficult without channels.
- Moving substances from low to high concentration goes against the gradient and needs ATP.
- ATP stands for _____; the "credit card" of the cell's energy transactions.
- The _____ pump uses ATP to push 3 Na⁺ out and bring 2 K⁺ in.
- To power the pump, an enzyme breaks a _____ bond on one phosphate of ATP.
- Active, vesicle-based transport of materials is called _____, which includes endo- and exocytosis.
- Taking materials into a cell via vesicles can be _____ ("devouring cell action") or pinocytosis ("drinking").
- When membrane receptors cluster and form a vesicle to capture scarce molecules, it's _____ endocytosis.

Crash Course Biology (2012) #5: Membranes and Transport - KEY

- Cells, like nightclubs, must be **selectively permeable** to work—letting in what they need and kicking out trash.
- Osmosis** is the diffusion of water across a membrane that helps cells regulate water content.
- In cells, **passive** transport doesn't require any energy.
- A solution that's higher in concentration inside the cell than outside is **hypertonic**; lower inside is hypotonic.
- When concentrations match on both sides, the system is **isotonic**.
- Water and ions pass through **channel** proteins; the water-specific channels are aquaporins.
- Each aquaporin can pass roughly **3 billion** water molecules per second.
- Because membranes are a **phospholipid bilayer**, their hydrophobic core makes water passage difficult without channels.
- Moving substances from low to high concentration goes against the **concentration** gradient and needs ATP.
- ATP stands for **adenosine tri-phosphate**; the "credit card" of the cell's energy transactions.
- The **sodium-potassium pump** uses ATP to push 3 Na⁺ out and bring 2 K⁺ in.
- To power the pump, an enzyme breaks a **covalent** bond on one phosphate of ATP.
- Active, vesicle-based transport of materials is called **cytosis**, which includes endo- and exocytosis.
- Taking materials into a cell via vesicles can be **phagocytosis** ("devouring cell action") or pinocytosis ("drinking").
- When membrane receptors cluster and form a vesicle to capture scarce molecules, it's **receptor-mediated endocytosis**.

15 Questions

Answer Key Included

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