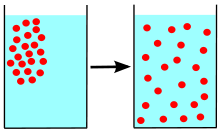
Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Living Environment: Diffusion-Part 2

**Diffusion: Part 2**

* Recall that diffusion is the movement of molecules from an area of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to an area of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ down a concentration gradient.
* Requires no energy and is sometimes called “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”

**Diffusion: Part 2**

* Also recall that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Requires no energy
* Also passive transport.

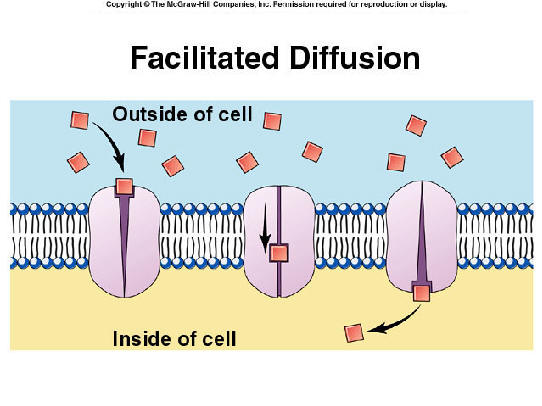
**Facilitated Diffusion**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a process whereby a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Facilitated Diffusion**

* The facilitator is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that spans the width of the membrane.
* The force that drives the molecule from one side of the membrane to the other is the force of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [.](http://academic.brooklyn.cuny.edu/biology/bio4fv/page/diffusi.htm)

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**Facilitated Diffusion**

* In the figure right, K+ ions are passing through

a membrane using a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* The ions are moving \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ so the process is a diffusion of K+ ions.

**Facilitated Diffusion**

* Facilitated diffusion \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* If there is a higher concentration of a specific molecule outside the cell than inside, then facilitated diffusion will work to facilitate entry of that molecule into the cell until equilibrium is reached.

**Facilitated Diffusion**

* If there is a higher concentration of a specific molecule inside the cell than outside, then facilitated diffusion will work to facilitate movement of that molecule out of the cell until equilibrium is reached.
* Among other things, facilitated diffusion can be used to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Facilitated Diffusion Animation (Quiz)**

1. Facilitated diffusion requires

**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifenzymes.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifcarrier proteins.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**C)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.giflipid carriers.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**D)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifcarbohydrate carriers.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**E)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.giflipid or carbohydrate carriers.

1. Facilitated diffusion occurs

**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifinto the cell only.

**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifout of the cell only.

**C)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifin either direction depending on the temperature.

**D)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifin either direction depending on the concentration gradient of the molecule. **E)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifin either direction depending on the size of the molecule.

1. Facilitated diffusion is used to transport

**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifsugars and amino acids.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifH2O and O2.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**C)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifCO2 and O2. **D)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifCO2 and H2O.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**E)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifsugars and H2O.

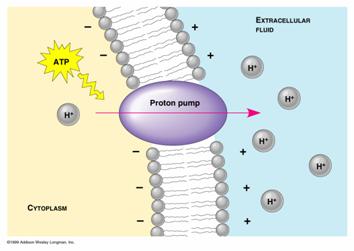
1. Unlike simple diffusion, facilitated diffusion requires energy expenditure by the cell.

**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifTruehttp://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifFalse

1. Facilitated diffusion requires a specific transporter for a specific molecule.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifTruehttp://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifFalse

**Active Transport**

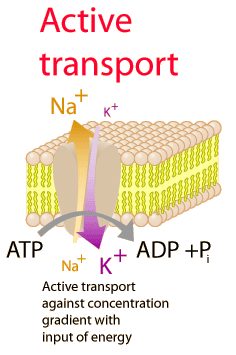
* When cells need to take in or remove substances against a concentration gradient they must use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Active transport is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Active Transport**

* When a cell expends ATP directly during active transport, the process is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Using another energy source, such as the potential energy stored in an ion gradient, is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Active Transport**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an example of an active transport mechanism.

**Sodium-Potassium Pump Animation (Quiz)**

1. The sodium-potassium pump functions to pump

**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifsodium ions out of the cell and potassium ions into the cell.

**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifsodium ions into the cell and potassium ions out of the cell.

**C)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifsodium and potassium ions into the cell.

**D)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifsodium and potassium ions out of the cell.

**E)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifsodium and potassium ions in both directions across the cell membrane.

1. What is the source of energy used to power the sodium-potassium pump?http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifbreakdown of ATP **B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifformation of ATP

**C)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.giftransport of ATP by the pump **D)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifbreakdown of GTP

**E)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.giftransport of GTP by the pump

1. During one cycle, the sodium-potassium pump binds and moves.

**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif1 Na+ and 2 K+.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif2 Na+ and 2 K+.

**C)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif2 Na+ and 3 K+.http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**D)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif3 Na+ and 2 K+.

**E)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif3 Na+ and 3 K+.

1. The sodium-potassium pump is a trans-membrane protein.

http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifTruehttp://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifFalse

1. The binding and release of sodium or potassium ions are due to conformational changes in the protein.

http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**A)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifTruehttp://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gif**B)**http://highered.mcgraw-hill.com/olcweb/styles/shared/spacer.gifFalse