CONCEPT: OSMOLARITY FACTORS OF MICROBIAL GROWTH

●*Recall:* _____ concentrations control the direction of osmosis across a cell membrane.

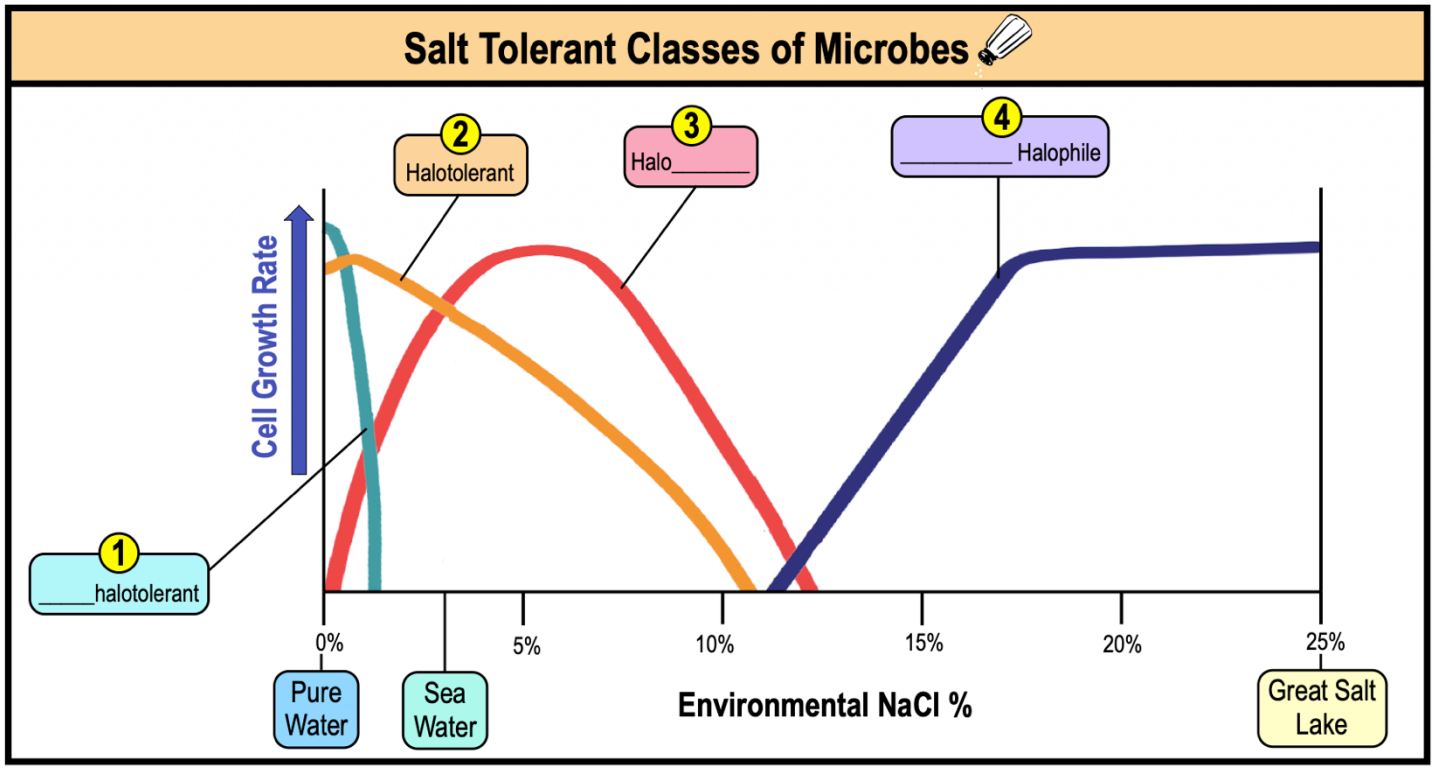
□ Water always flows from _____tonic to _____tonic solutions.

□ Solutes such as _____ *(NaCl)* can interact with water molecules which the cell can no longer use.

Salt Tolerant Classes of Microbes

●Different microbes have different tolerances to salt concentrations in their environment:

1. **Non-halotolerants:** can _____ tolerate moderate salt concentrations.
2. **Halo*tolerants*:** can _____ moderate salt concentrations (like your skin).
3. **Halophiles:** require _____ levels of salt (between 1-14%) to survive (marine bacteria).
4. ***Extreme* Halophiles**: require *very high* levels of salt (_____ than 15%) to survive.



PRACTICE: An organism that requires an environment of high salt concentration describes an *Extreme*:

a) Halophile.

b) Thermophile.

c) Acidophile.

d) Alkaliphile.

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PRACTICE: A cell is most likely to experience plasmolysis (contraction or shrinking of the cell) when:

a) The solute concentration inside of the cell is equal to the solute concentration outside the cell.
b) The solute concentration inside of the cell is less than the solute concentration outside of the cell.
c) The solute concentration inside of the cell is greater than the solute concentration outside of the cell.

PRACTICE: All organisms have specific environmental conditions in which they thrive. Most organisms cannot live in extremely salty environments. If a bacterium that normally lives in a fresh water environment is placed in an environment that is excessively salty, what will happen?

a) The bacterium's cytoplasm will fill with water and cause the plasma membrane to rupture.
b) Water will leave the bacterium's cytoplasm causing the plasma membrane to shrivel.
c) Nothing will happen, salt concentrations outside of the cell do not affect the cytoplasm within the cell.

PRACTICE: There are two groups of bacteria which live in the Great Salt Lake: Halobacterium and Halococcus. The Great Salt Lake's average salinity is around 13%. What class of microbes do the Halobacterium and Halococcus species belong to?

a) Non-halotolerant.
b) Halotolerant.
c) Halophile.
d) Extreme Halophile.