

The background is a light blue gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. The main title is centered in the middle of the page.

# DIFFUSION AND OSMOSIS

7<sup>TH</sup> GRADE LIFE SCIENCE

# HOMEOSTASIS

STABILITY – KEEP A CONSTANT INTERNAL STATE IN A CHANGING ENVIRONMENT

TO MAINTAIN HOMEOSTASIS, CELLS MUST:

- EXCHANGE MATERIALS

- ELIMINATE

WASTE

- OBTAIN

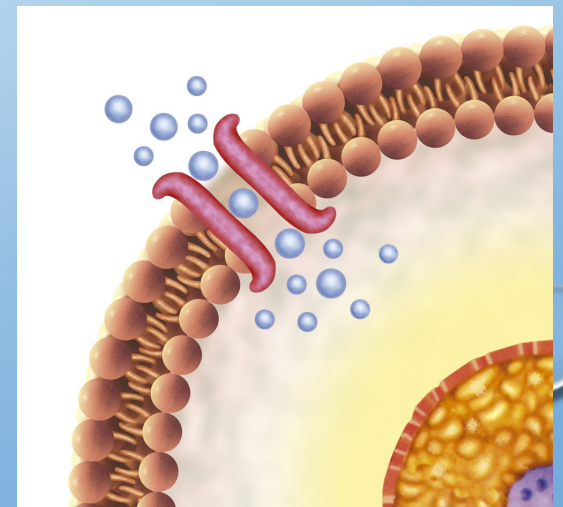
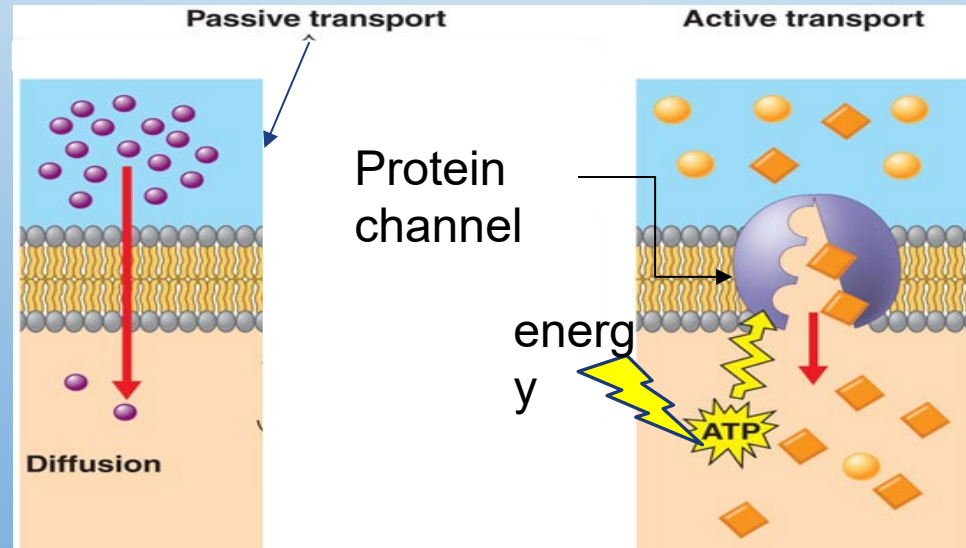
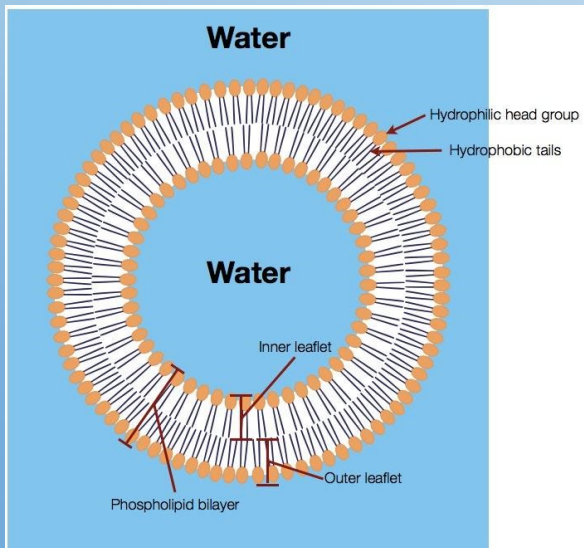
AND USE ENERGY

- MAKE NEW CELLS

# EXCHANGE OF MATERIALS FOR THE CELL

CELL MEMBRANES ARE SEMIPERMEABLE – ONLY CERTAIN PARTICLES CAN MOVE IN OR OUT OF CELL (SELECTIVE)


- **PASSIVE TRANSPORT**: TRANSPORT OF MATERIALS STRAIGHT THROUGH THE CELL MEMBRANE (DOES NOT USE ENERGY)
- **ACTIVE TRANSPORT**: TRANSPORT OF MATERIALS THROUGH PROTEIN CHANNELS IN CELL MEMBRANE (REQUIRES ENERGY)





# Concentration Gradient

Molecules move randomly from **high** concentration to **low** concentration.

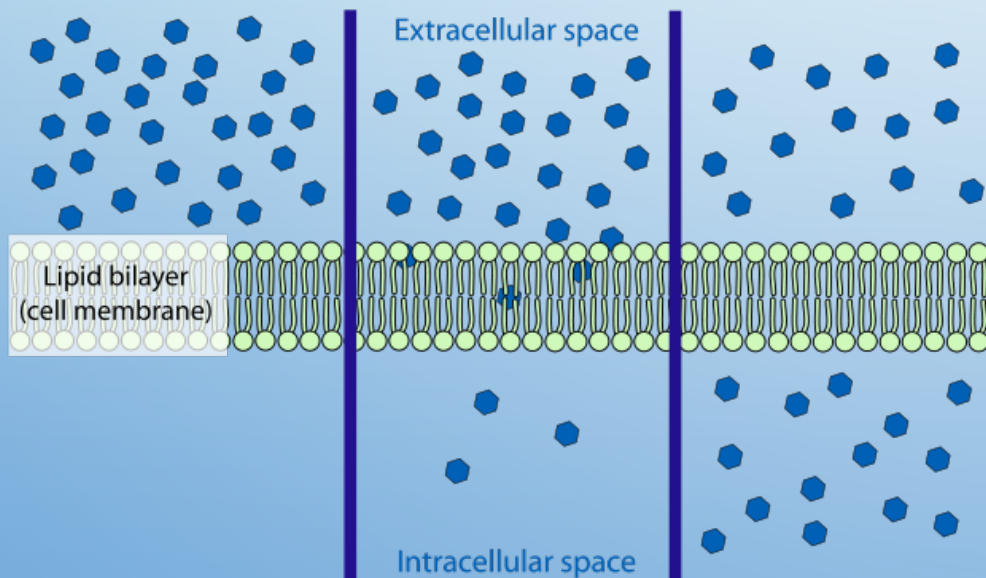


# DIFFUSION AND OSMOSIS

## (PASSIVE TRANSPORT)

### DIFFUSION

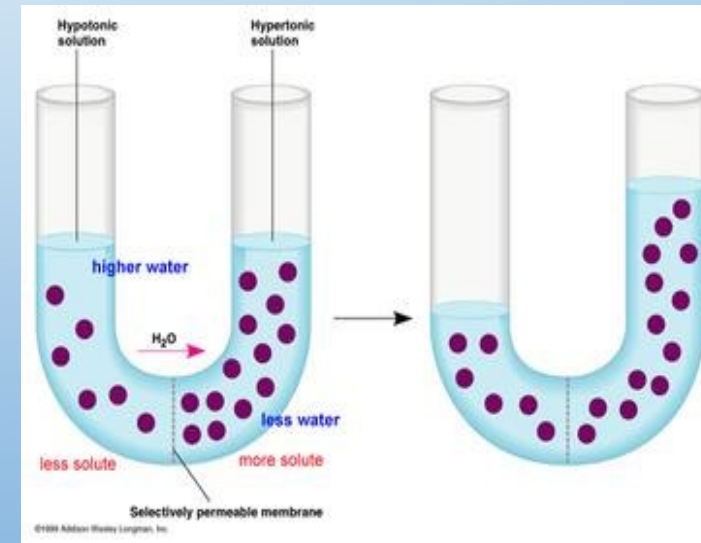
- MOVEMENT OF MOLECULES FROM HIGH CONCENTRATION TO LOW CONCENTRATION



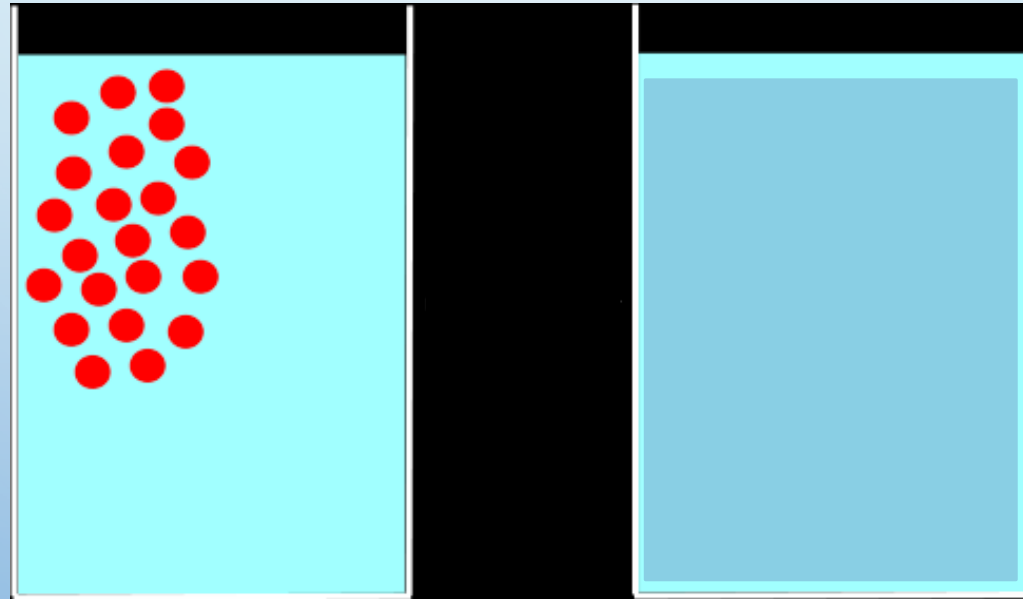
TIME

### OSMOSIS

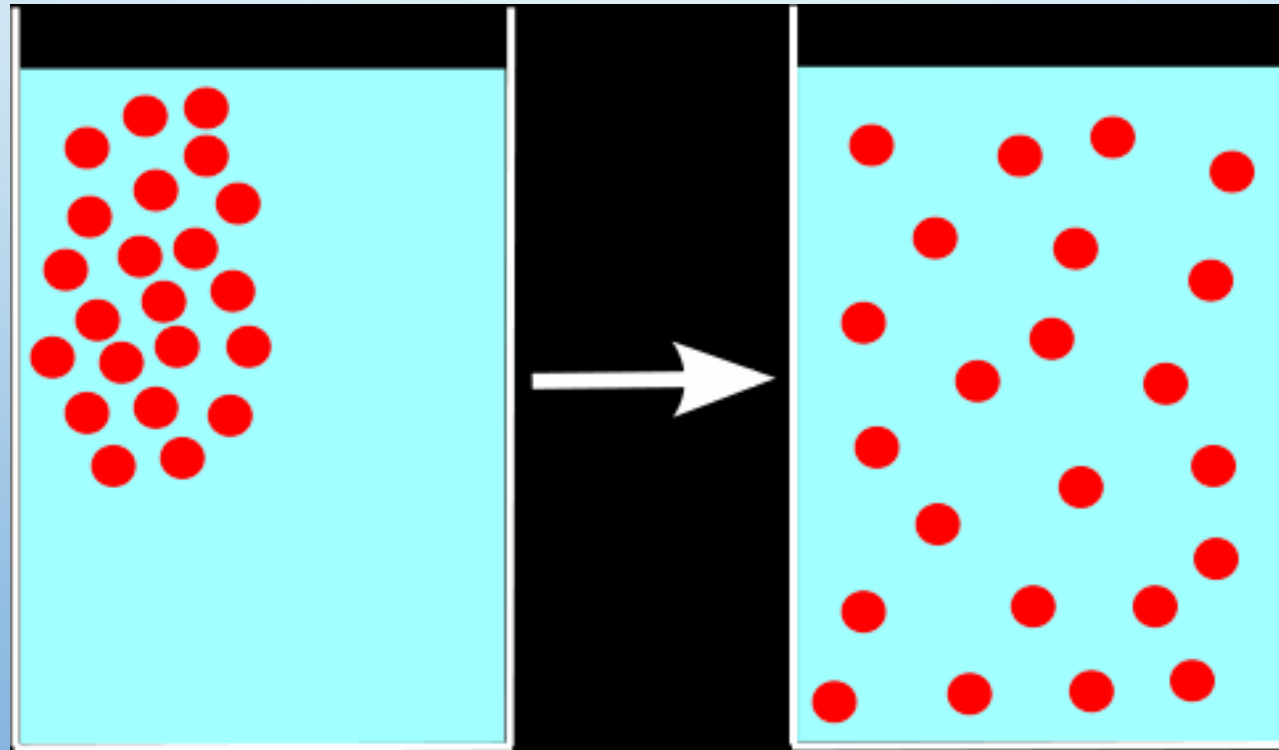
- MOVEMENT OF WATER THROUGH A SEMIPERMEABLE MEMBRANE FROM AREAS OF HIGHER TO LOWER CONCENTRATION



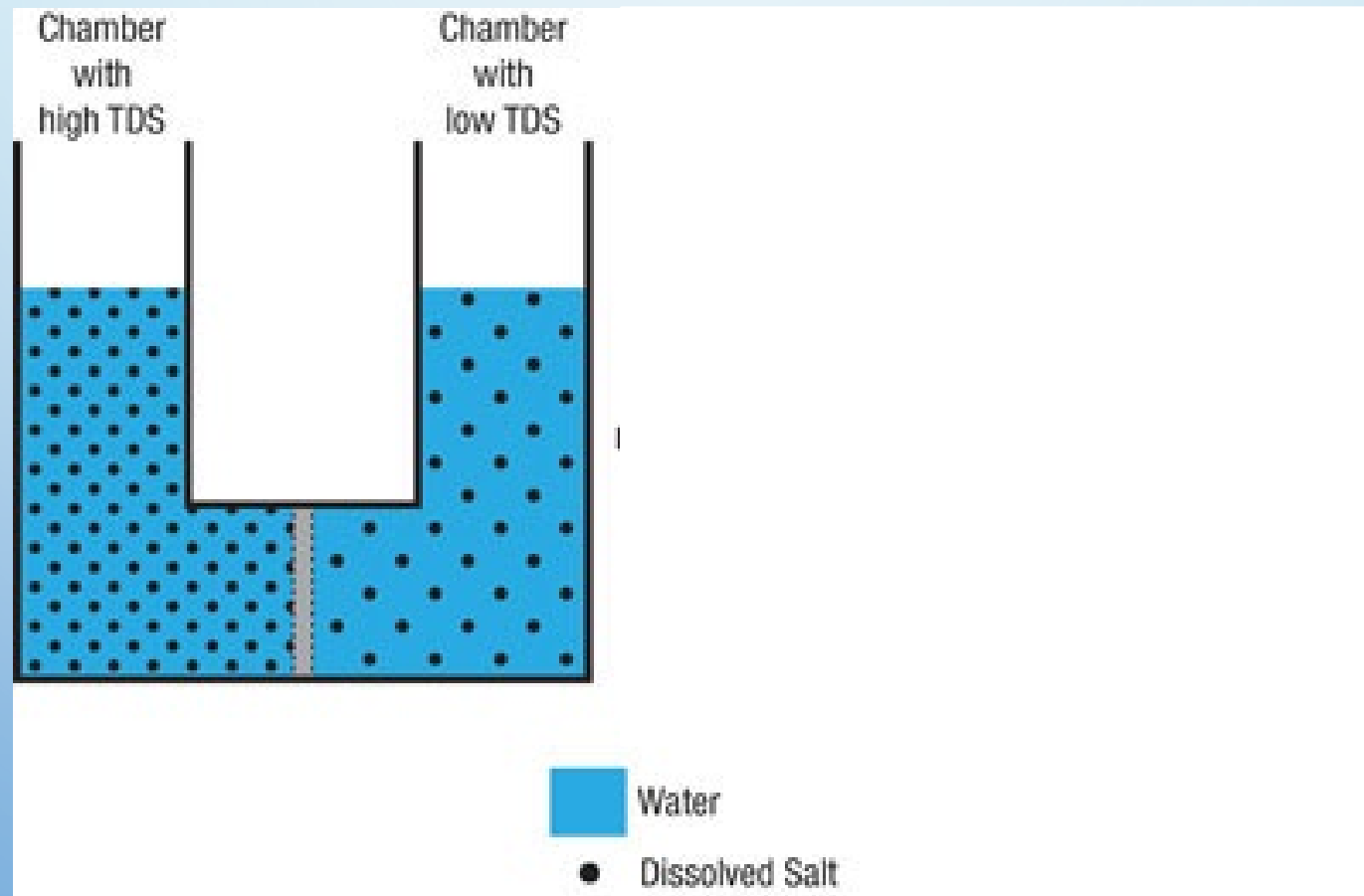
IN WHICH DIRECTION WILL THE PARTICLES  
MOVE OR DIFFUSE?



**ANSWER: THE PARTICLES DIFFUSE FROM  
MORE CONCENTRATED TO LESS  
CONCENTRATED!**

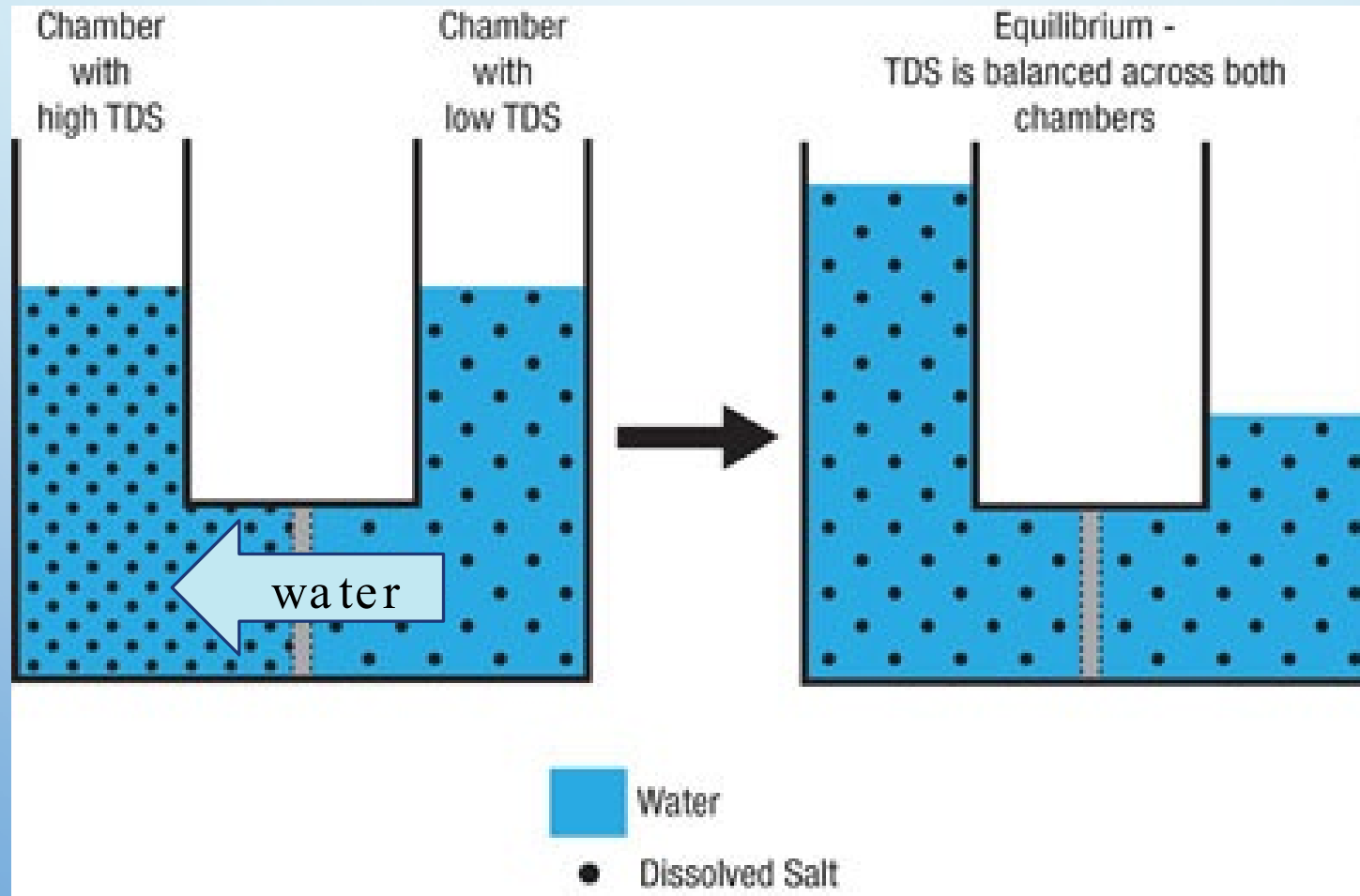


# IN WHICH DIRECTION WILL THE WATER MOVE? (OSMOSIS)





ANSWER: THE WATER MOVES FROM LESS CONCENTRATE TO MORE CONCENTRATE!



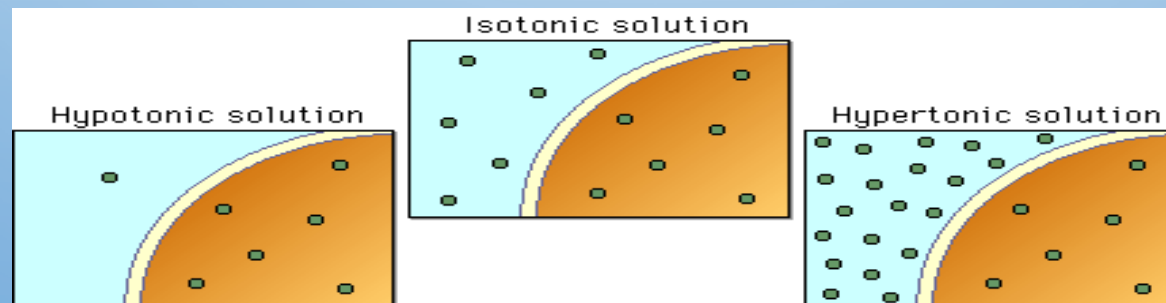
# DIFFUSION AND OSMOSIS

CONCENTRATION GRADIENT: UNEVEN DISTRIBUTION OF A SUBSTANCE ACROSS A BORDER

SOLUTE: PARTICLES DISSOLVED IN WATER

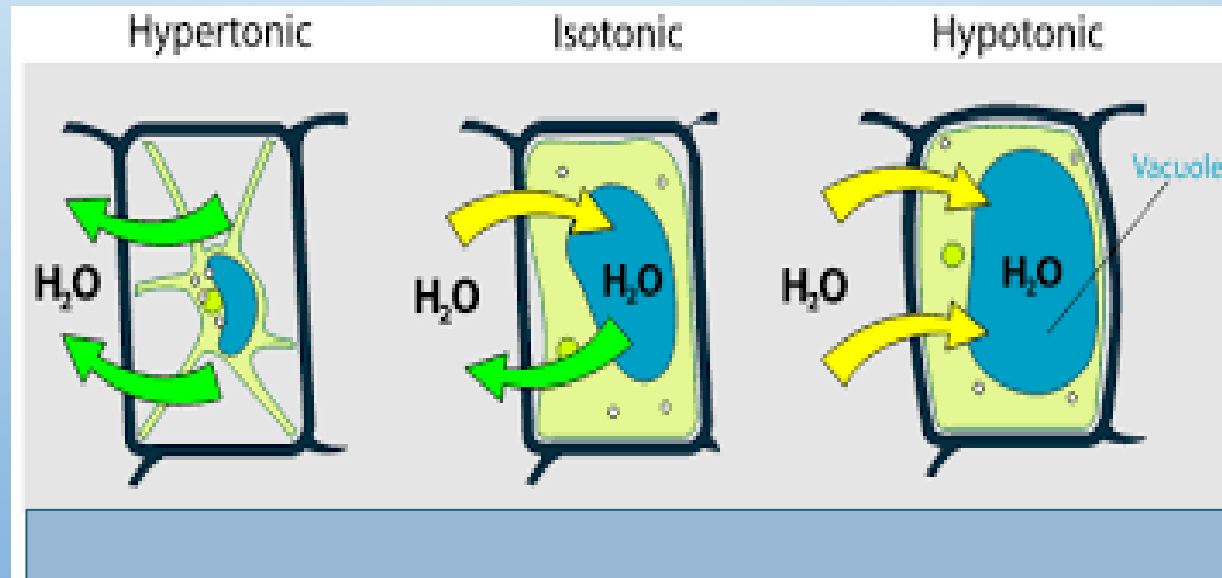
SOLUTION: MIXTURE OF WATER AND SOLUTE

- ISOTONIC: EQUILIBRIUM, SAME CONCENTRATION IN 2 DIFFERENT AREAS
- HYPERTONIC: THE AREA WITH HIGHER CONCENTRATION OF SOLUTE (LESS WATER)
- HYPOTONIC: THE AREA WITH LOWER CONCENTRATION OF SOLUTE (MORE WATER)



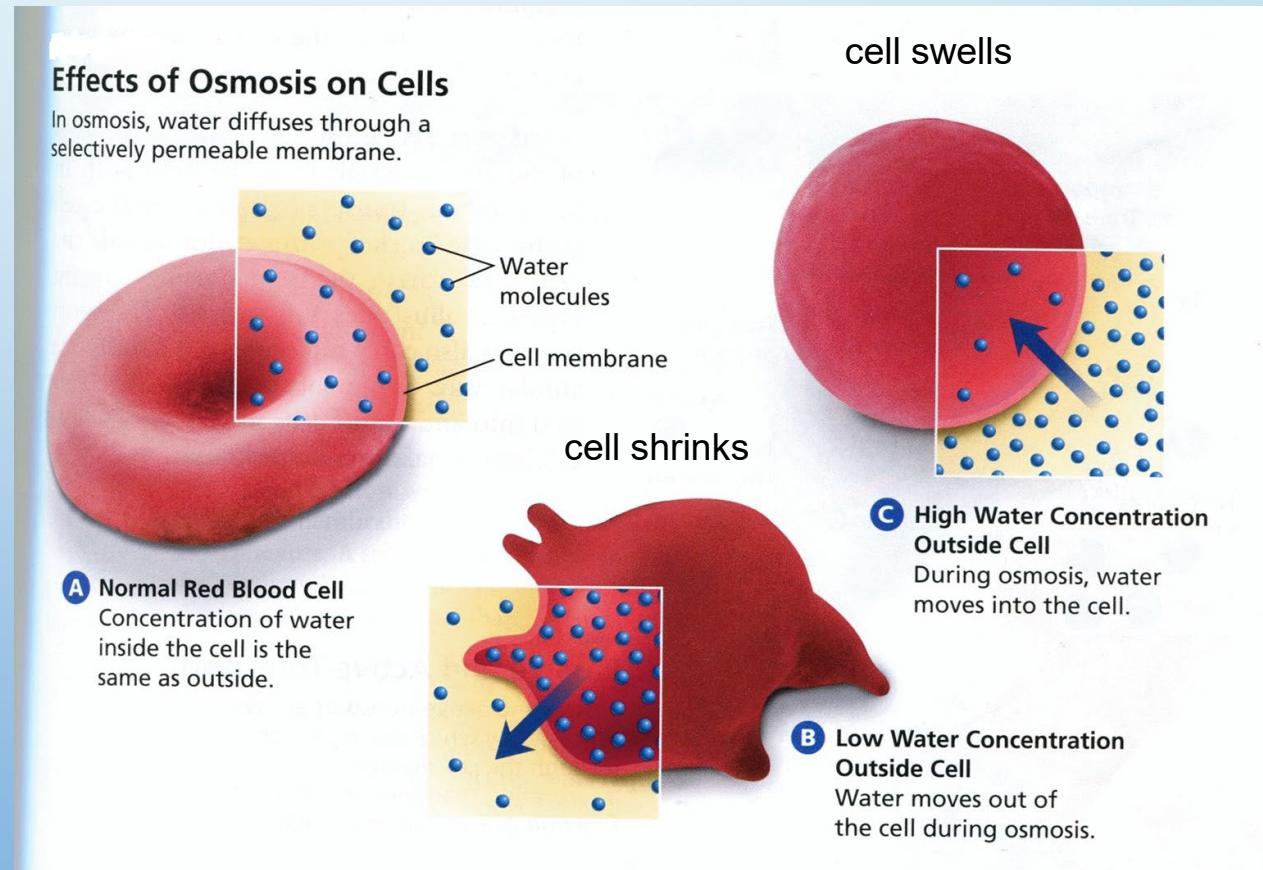
# WATER

- ESSENTIAL FOR CELLS
- WATER MOVES ACROSS THE CELL MEMBRANE BY OSMOSIS
  - ↳ IT DEPENDS ON THE CONCENTRATION OF WATER INSIDE AND OUTSIDE THE CELL



# Follow the Water

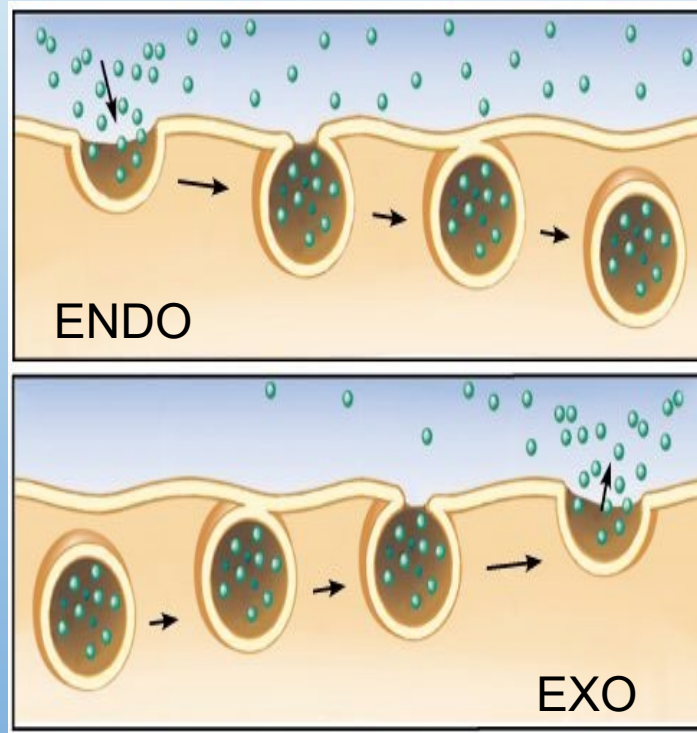
“Salt Sucks”



# VESICLE TRANSPORT

## ENDOCYTOSIS

- PROCESS IN WHICH CELLS SURROUND AND ENCLOSE A PARTICLE IN A VESICLE TO BRING IT INTO THE CELL
- IT REQUIRES ENERGY
- ENDO = IN



## EXOCYTOSIS

- PROCESS IN WHICH PARTICLES ARE ENCLOSED IN A VESICLE IN THE CELL AND THEN RELEASED FROM THE CELL
- OPPOSITE OF ENDOCYTOSIS
- EXO = OUT



Make a Google Doc to answer these questions. Turn in on this assignment.

1. Define diffusion.
  2. What is moving during osmosis?
  3. Which type of cellular transport requires energy---passive transport or active transport?
  4. What are two types of passive transport?
  5. Which way does the concentration gradient move?
  6. What is Brownian movement?
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