

**CELL MEMBRANES**  
**LESSON 1**  
**"STRUCTURE & FUNCTION**  
**OF CELL MEM."**

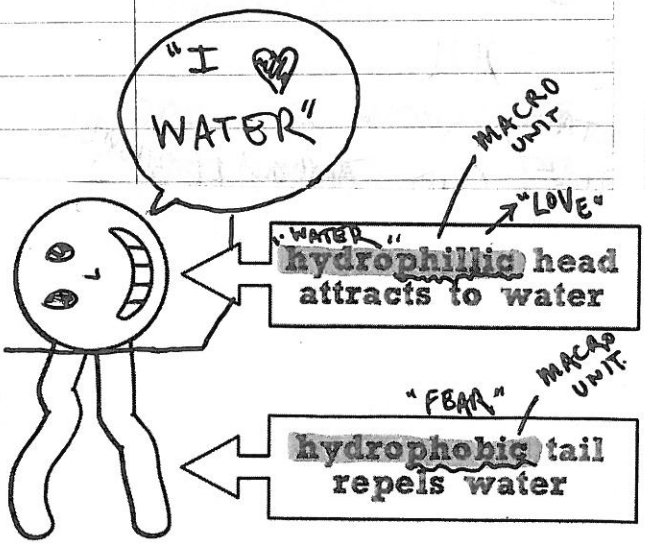
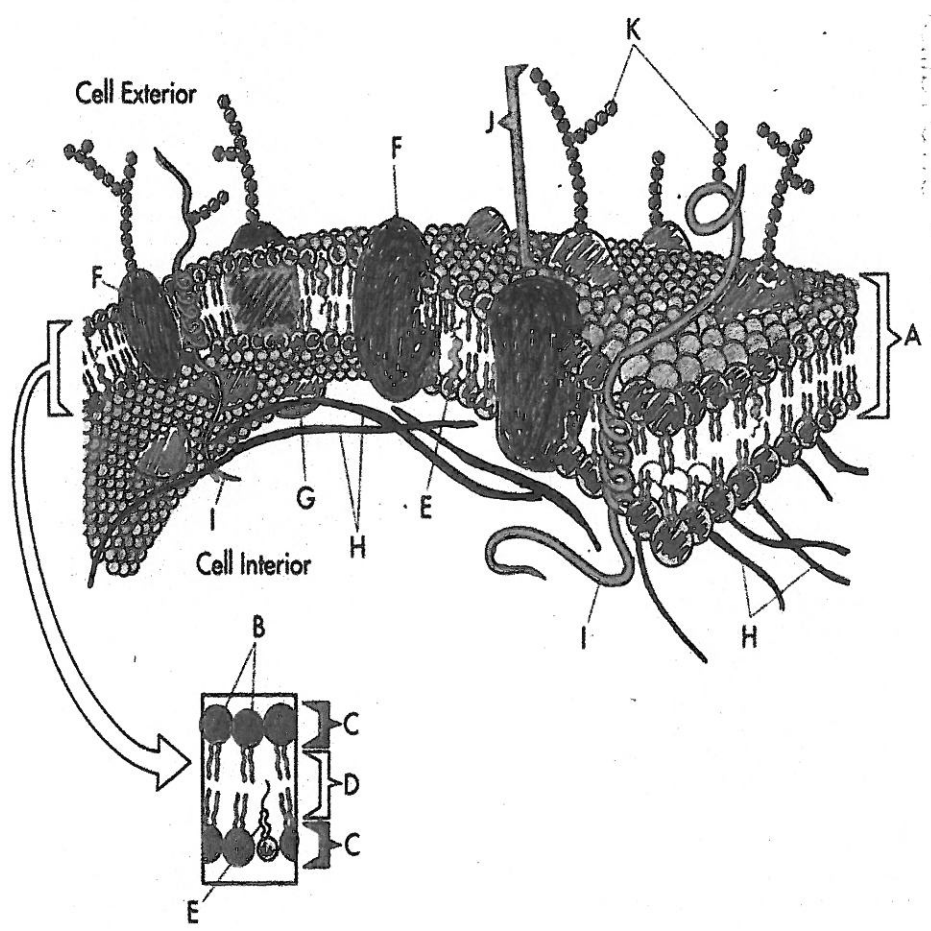
**TODAY'S LEARNING GOALS:**

- BE ABLE TO EXPLAIN WHAT CELL MEMBRANES ARE MADE OF. (STRUCTURE)
- BE ABLE TO DESCRIBE WHAT CELL MEMBRANES DO. (FUNCTION)

**WARM-UP:**

NO.: GRAB A CELL MEMBR. COLORING SHEET FROM THE BACK TABLE. USE THE COLORED PENCILS TO COLOR THE LABELED STRUCTURES ACCORDING TO THE INSTRUCT. FROM THE SCREEN

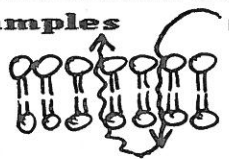

GRAB ONE OF THE SMALL PHOSPHOLIPID CUT-OUTS AND ATTACH INTO YOUR NOTEBOOK



**A Phospholipid**

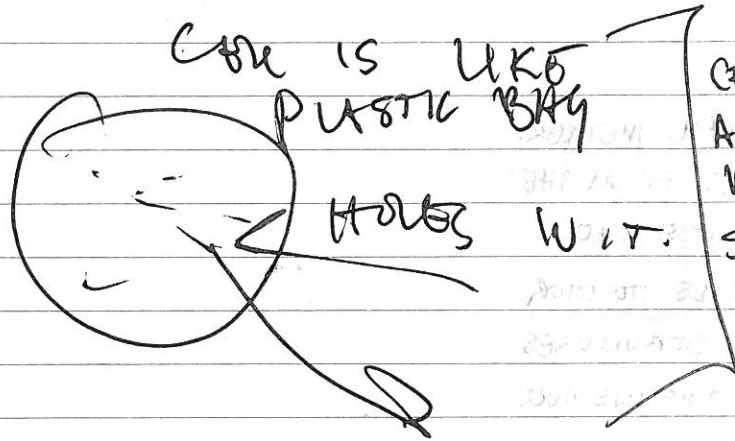
The Cell Membrane		
○ Lipid Bilayer .....A	○ Cholesterol Molecule ..E	● Alpha Helix Protein ...I
● Phospholipids.....B	● Integral Protein .....F	● Glycoprotein .....J
● Hydrophilic Polar Head .....C	● Peripheral Protein ...G	● Carbohydrate .....K
○ Hydrophobic Nonpolar Tail .....D	● Cytoskeleton Filaments.....H	

LESSON 1 BRICKS:

<p><b>Definition</b> "PER·ME·A·BULL" ALLOWING GAS OR FLUID TO PASS THROUGH.</p>	<p><b>Facts/Characteristics</b> CHOLESTEROL MAKES CELL MEM. + OR PERM. MEM. IS NOT PERM. TO LARGER MOLECULES</p>
<p><b>PERMEABLE</b></p>	
<p><b>Examples</b></p>  <p>WATER PASSES INTO AND OUT OF THE CELL... IT'S PERMEABLE TO WATER</p>	<p><b>Non-examples</b></p>  <p>WATER DOES NOT PASS THROUGH MY ROOF... IT'S <u>NOT</u> PERMEABLE.</p>

# CELL MEMBRANE VIDEO

MEM. BODY FIBERS INSIDE



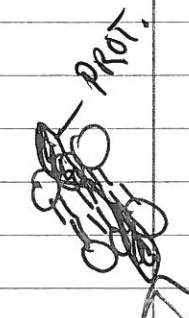
CELL IS LIKE PLASTIC BAG

CELL MEM. LIKE A PLASTIC BAG W/ HOLES IN IT. STUFF GOES IN/OUT

NOT A SOLID PIECE

MADE OF LOTS OF STUFF

PROTEINS / PHOSPHOLIPIDS



FLUID MOSAIC MODEL

BAG MAKE UP



PROTEINS HOLES

Hydrophobic tail (HYDROPHOBIC TAIL)

Hydrophilic head (HYDROPHILIC HEAD)

SOME CAN ATTRACT THE BILAYER

TRANSPORT IONS & SMALL MOLECULES

FUNC. OF MEM. PROT.

# "MEMBRANES" (READING)

## MAIN IDEA:

THE MAIN IDEA OF "MEMBRANES" IS THAT ALL CELLS HAVE A PLASMA MEMBRANE THAT SURROUNDS THE CELL AND SEPARATES THE INSIDE AND OUTSIDE.

## SUPPORTING IDEAS:

- MEM. CONTROLS MOVEMENT IN/OUT OF CELL
- MEM. IS A **BILAYER** OF **PHOSPHOLIPIDS**  
    ↳ MEANS "TWO" OR "DOUBLE"
- TEMP. CONTROLS HOW FLEXIBLE THE MEM. IS.
- CHOLESTEROL MAKES THE MEM.  $>$  OR  $<$  **PERMEABLE**
- PROTEINS ARE IN/ON MEM.



## VOCAB: [IN ORANGE]

## QUESTIONS:

- WHAT IS AN EXAMPLE OF ANIMAL MEMBRANE FLUIDITY ADAPTATIONS TO ENVIRONMENT?
- WHY WOULD MEMBRANE PROTEINS MOVE?

## CONCLUSION:

THE CELL MEMBRANE FORMS A BARRIER THAT SEPARATES THE INSIDE FROM THE OUTSIDE OF THE CELL. MOST LARGE ITEMS THAT CROSS THE CELL MEM. DO SO THROUGH MEM. PROTEINS.

THE MEM. ITSELF GETS ITS SHAPE FROM THE PHOSPHOLIPID BILAYER, CREATED WHEN THE HYDROPHOBIC TAILS OF PHOSPHOLIPIDS ORIENT THEMSELVES TOWARD EACH OTHER. →  THIS ALIGNMENT GETS MORE RIGID WHEN THE TEMP IS DROPPED, OR  THE MOLECULE CHOLESTEROL IS ADDED.



# CELL MEMBRANES, LESSON 2 "OSMOSIS & DIFFUSION"

## TODAY'S LEARNING GOALS:

- DESCRIBE HOW DIFFUSION OCCURS
- PREDICT THE DIRECTION IN WHICH WATER WILL MOVE ACROSS A CELL MEMBRANE

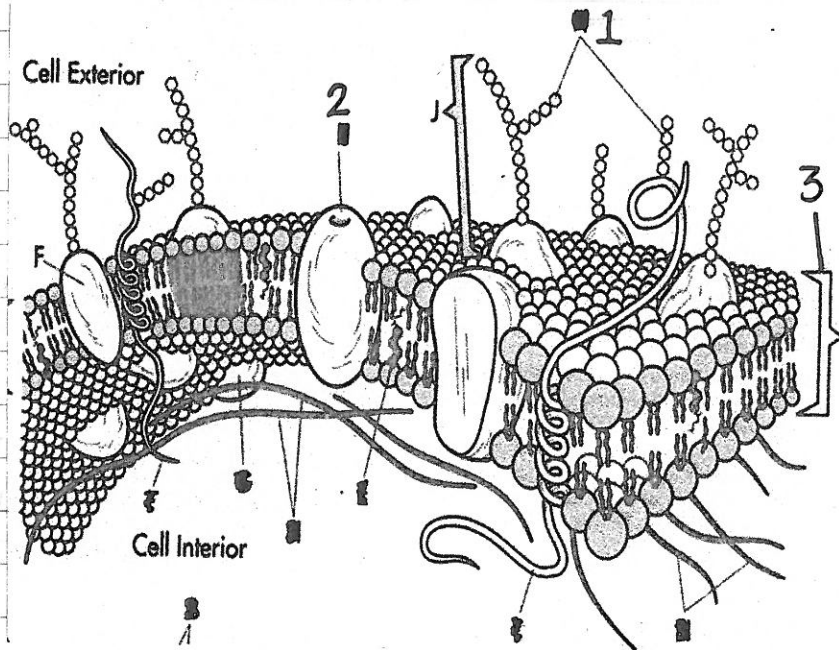
## WARM-UP:

### 1. LABEL THE NUMBERED STRUCTURES ON THE CELL MEMBRANE DIAGRAM ON THE SCREEN



1. CARBOHYDRATE
2. INTEGRAL PROTEIN
3. PHOSPHOLIPID BILAYER

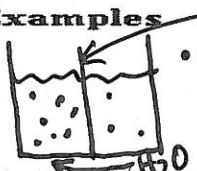
### 2. DISCUSS WITH YOUR TABLE PARTNER AND RECORD IN YOUR NOTEBOOK 3 THINGS THAT YOU HAVE SEEN MOVE FROM HIGH CONCENTRATION TO LOW ("SPREADING OUT")

1. PERFUME FILLS A ROOM
2. PEOPLE MOVING OUT OF A CONCERT
3. WATER SPILLING



<p>Definition "DI-FYOO-SHUN" MOVEMENT OF MOLECULES FROM AREAS OF HIGH CONCENTRATION TO AREAS OF LOW CONCENTRATION</p>	<p>Facts/Characteristics</p>
<p><b>DIFFUSION</b></p>	
<p>Examples</p>  <p>AXE BODY SPRAY SPREADS OUT TO MAKE THE WHOLE LOCKER ROOM SMELL BAD.</p>	<p>Non-examples</p>  <p>CONVICTION ARE CONCENTRATED IN A JAIL AND CANNOT DIFFUSE</p>

<p>Definition "SALL-YOOT" SOMETHING THAT DISSOLVES INTO A SOLUTION</p>	<p>Facts/Characteristics</p>
<p><b>SOLUTE</b></p>	
<p>Examples</p>  <p>SUGAR DISSOLVES IN H<sub>2</sub>O. IT IS A SOLUTE.</p>	<p>Non-examples</p>  <p>ROCK DOES NOT DISSOLVE IN H<sub>2</sub>O, IT IS NOT A SOLUTE</p>

<p>Definition "OZ-MOE-SIS" DIFFUSION OF WATER ACROSS THE CELL MEMBRANE</p>	<p>Facts/Characteristics</p>
<p><b>OSMOSIS</b></p>	
<p>Examples</p>  <p>MEM. :: SOLUTE H<sub>2</sub>O MOVES LEFT BECAUSE THERE IS MORE WATER ON THE RIGHT. (H<sub>2</sub>O MOVES FROM ↑ TO ↓)</p>	<p>Non-examples</p>

<p>Definition "HI-PO-TAWN-IC" A SOLUTION THAT DOES <u>NOT</u> HAVE A LOT OF SOLUTE COMPARED TO ANOTHER SOLUTION. :</p>	<p>Facts/Characteristics</p>
<p><b>HYPOTONIC</b></p>	
<p>Examples</p> <p>"BELOW" "SOLUTE"</p>	<p>Non-examples</p>

<p>Definition "HY-PER-TAWN-IC" A SOLUTION HAS LOTS OF SOLUTE... MORE THAN WHAT IT IS COMPARED TO.</p>	<p>Facts/Characteristics</p>
<p><b>HYPERTONIC</b></p>	
<p>Examples</p> <p>"ABOVE" "SOLUTE"</p>	<p>Non-examples</p>

# DIFFUSION & OSMOSIS NOTES

**DIFFUSION** DOES NOT TAKE ENERGY TO MAKE HAPPEN  
"PASSIVE"  
OCCURS SLOWLY

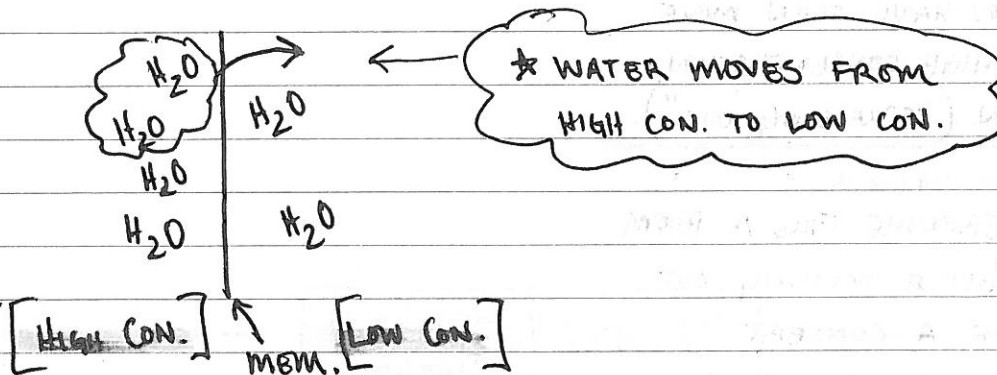
PASSIVE PROCESSES HAPPEN ON THEIR OWN

## EXAMPLES OF PASSIVE PROCESSES:

- YOUR ROOM GETTING MESSY
  - COLD AIR HEATING UP ON A HOT DAY
  - BALL ROLLING DOWN A HILL
- ALL THESE THINGS HAPPEN WITHOUT HELP.

LEARNING GOAL

**OSMOSIS** TELLS US WHICH WAY WATER WILL MOVE ACROSS A CELL MEMBRANE



HOW MUCH WATER CONCENTRATION THERE IS DEPENDS ON HOW MUCH SOLUTE IS IN THE WATER

HYPERTONIC

VS.

HYPOTONIC

LOTS OF STUFF DISSOLVED

NOT MUCH DISSOLVED

"STRONG KOOL-AID"

"WEAK KOOL-AID"

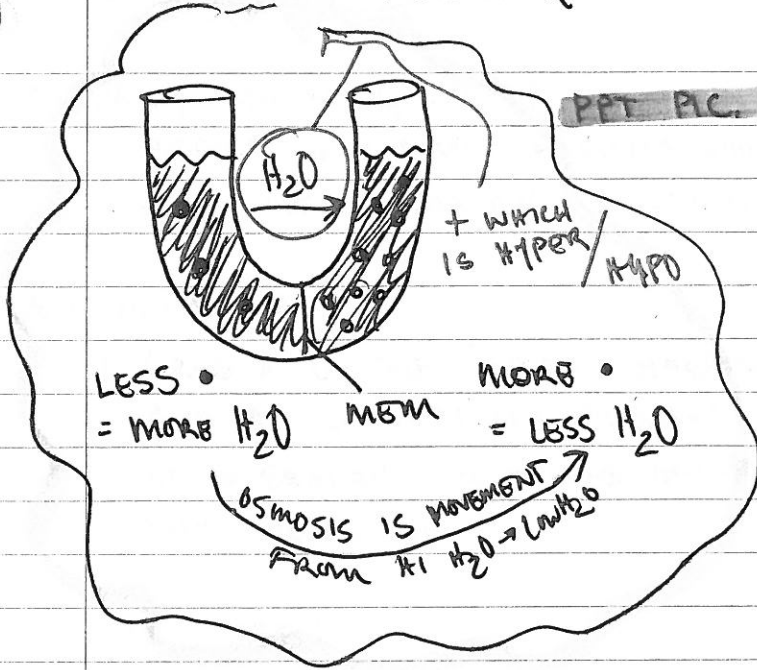
LESS WATER

MORE WATER

H<sub>2</sub>O MOVES FROM HYPO- TO HYPER-

LOTS OF SUGAR (SOLUTE) MAKES ME "HYPER"

# TEST Q

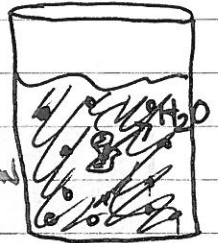


PPT PIC.

## EFFECT OF OSMOSIS ON CELLS



HYPOTONIC TO CELL  
(H<sub>2</sub>O IN)



HYPERTONIC TO CELL  
(H<sub>2</sub>O OUT)

BE ABLE TO GIVE THE CORRECT ARROW DIRECTION

WEBSITE VIDEO + PPT PIC.

TEST Q