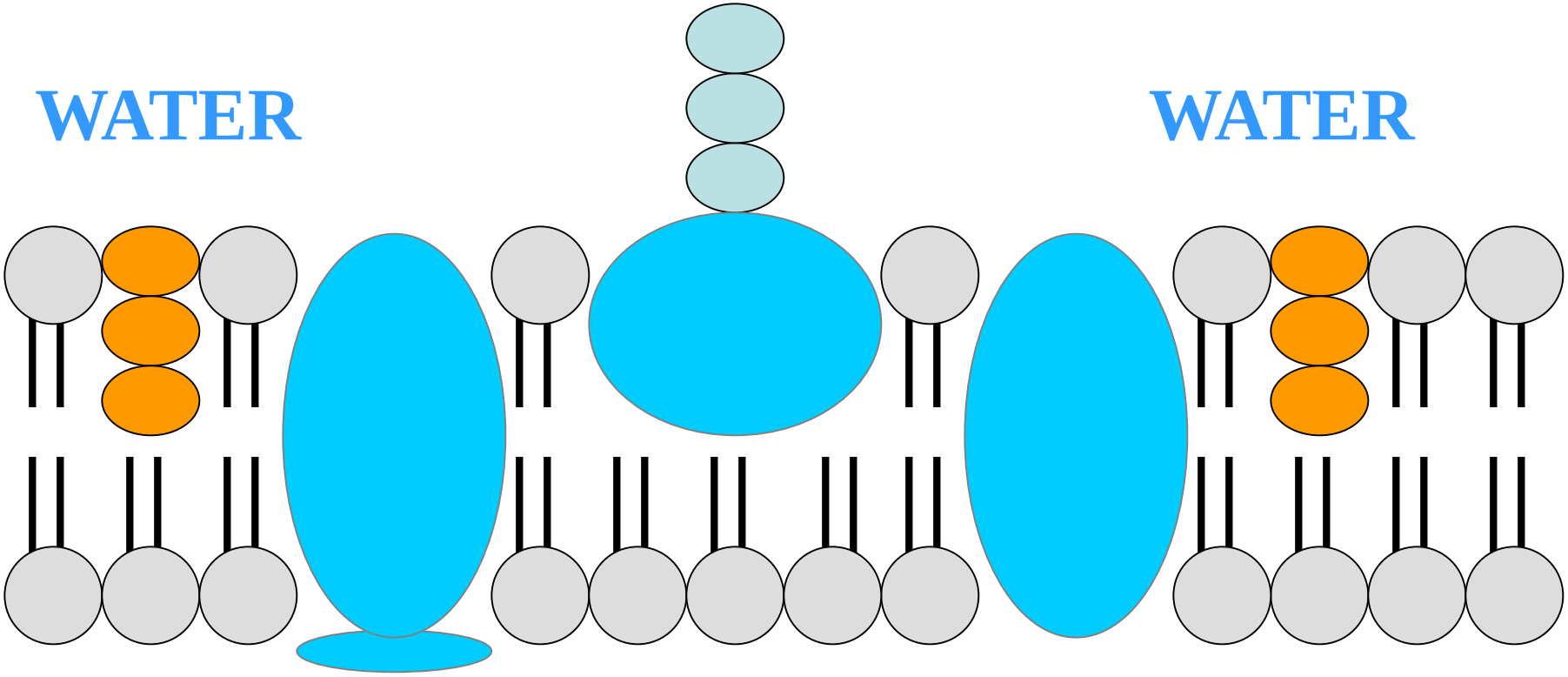
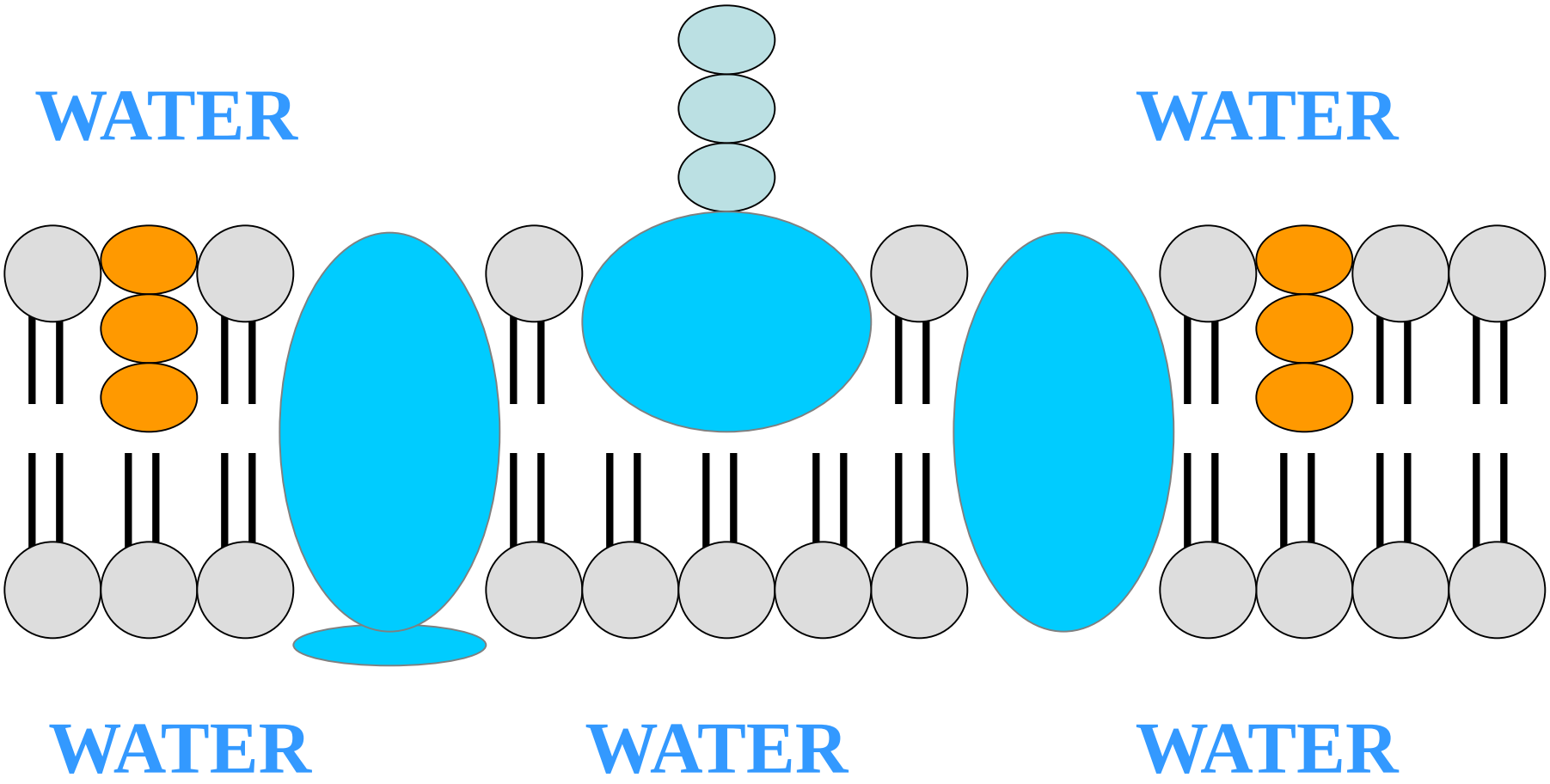
# MEMBRANE STRUCTURE




# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE

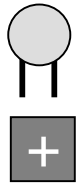



## FLUID MOSAIC MODEL

# GLYCOPROTEINS

# GLYCOPROTEINS

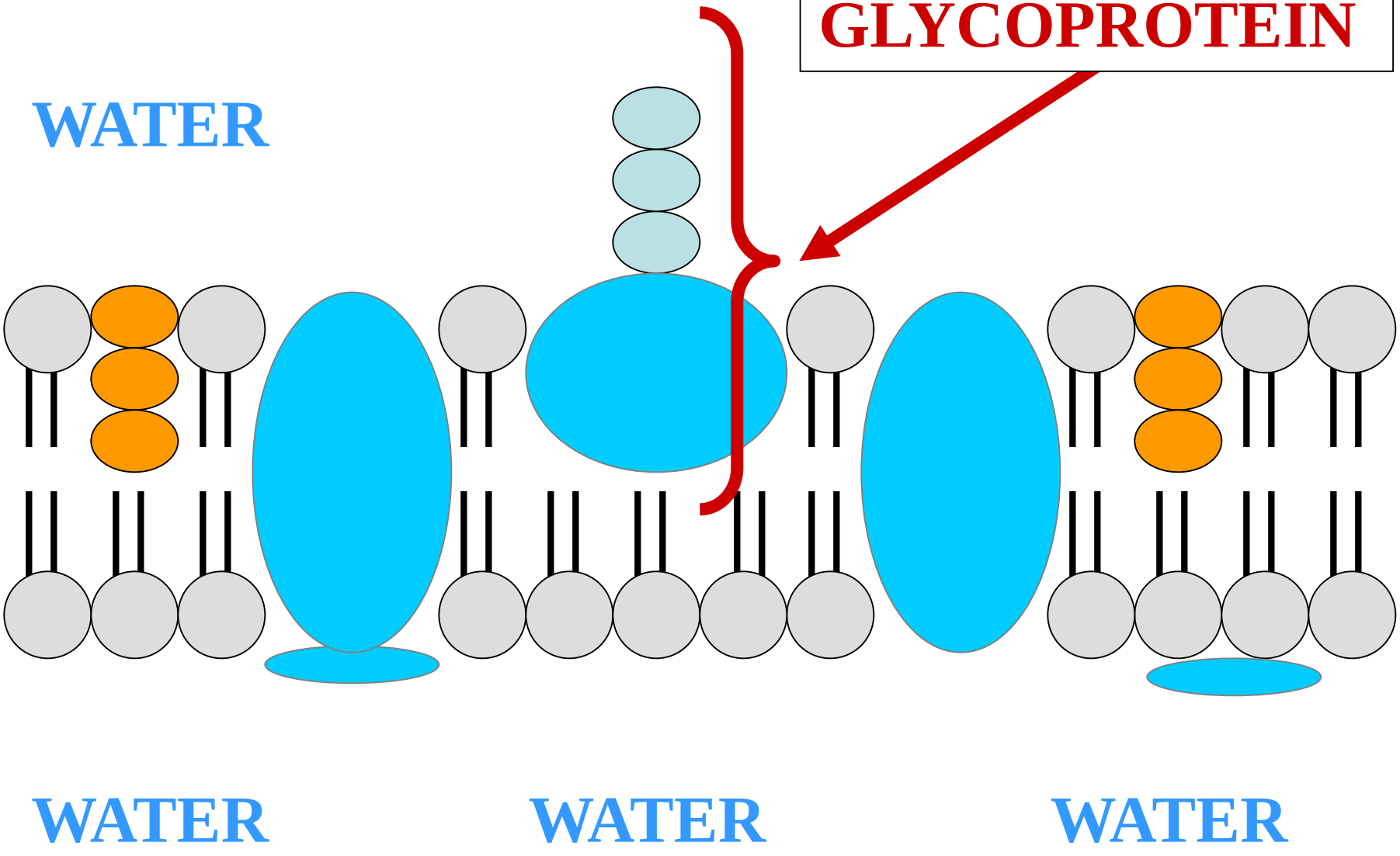
# GLYCOPROTEINS



# SUGAR-PROTEIN COMPLEX

# GLYCOPROTEINS

S



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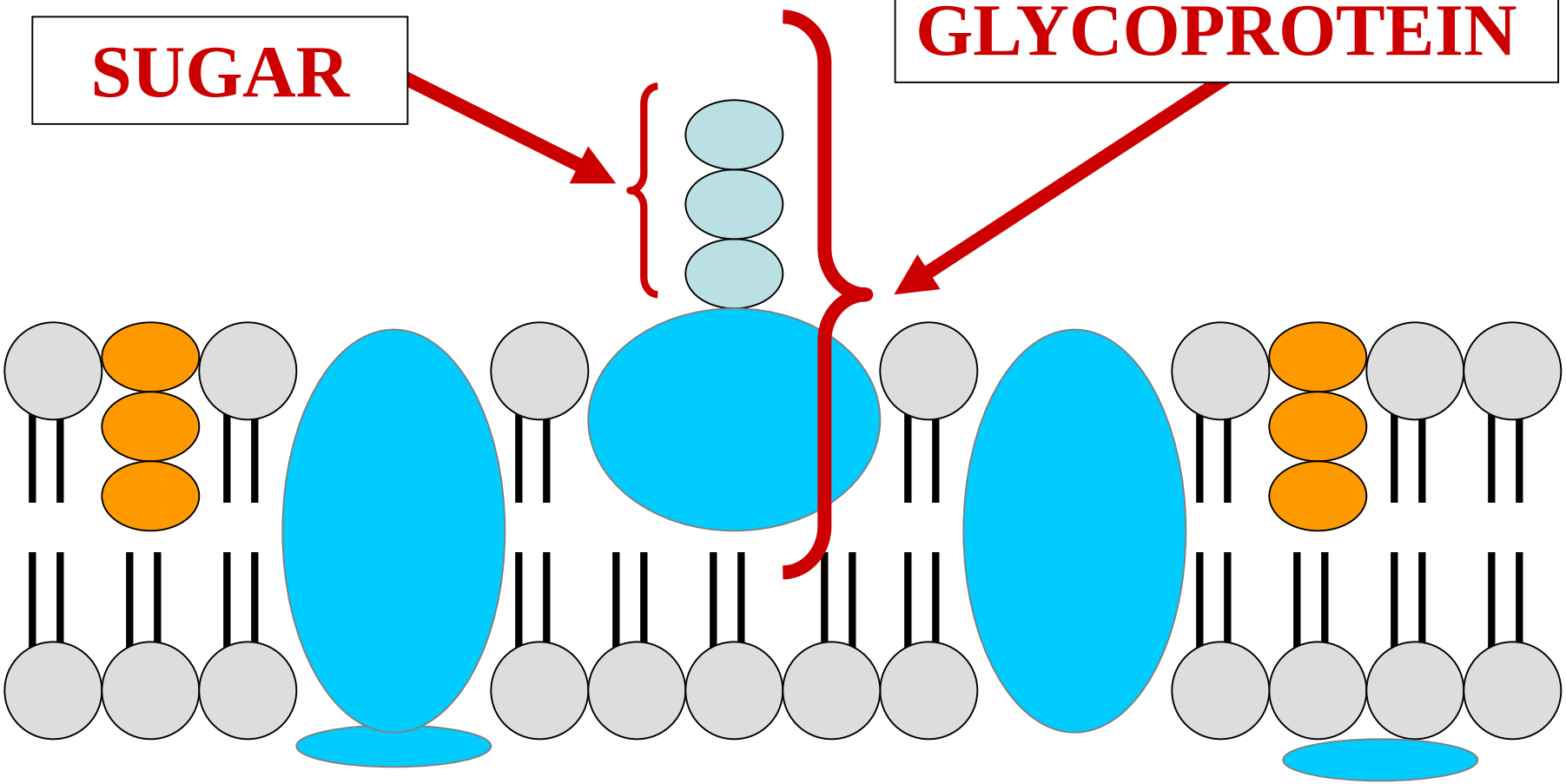
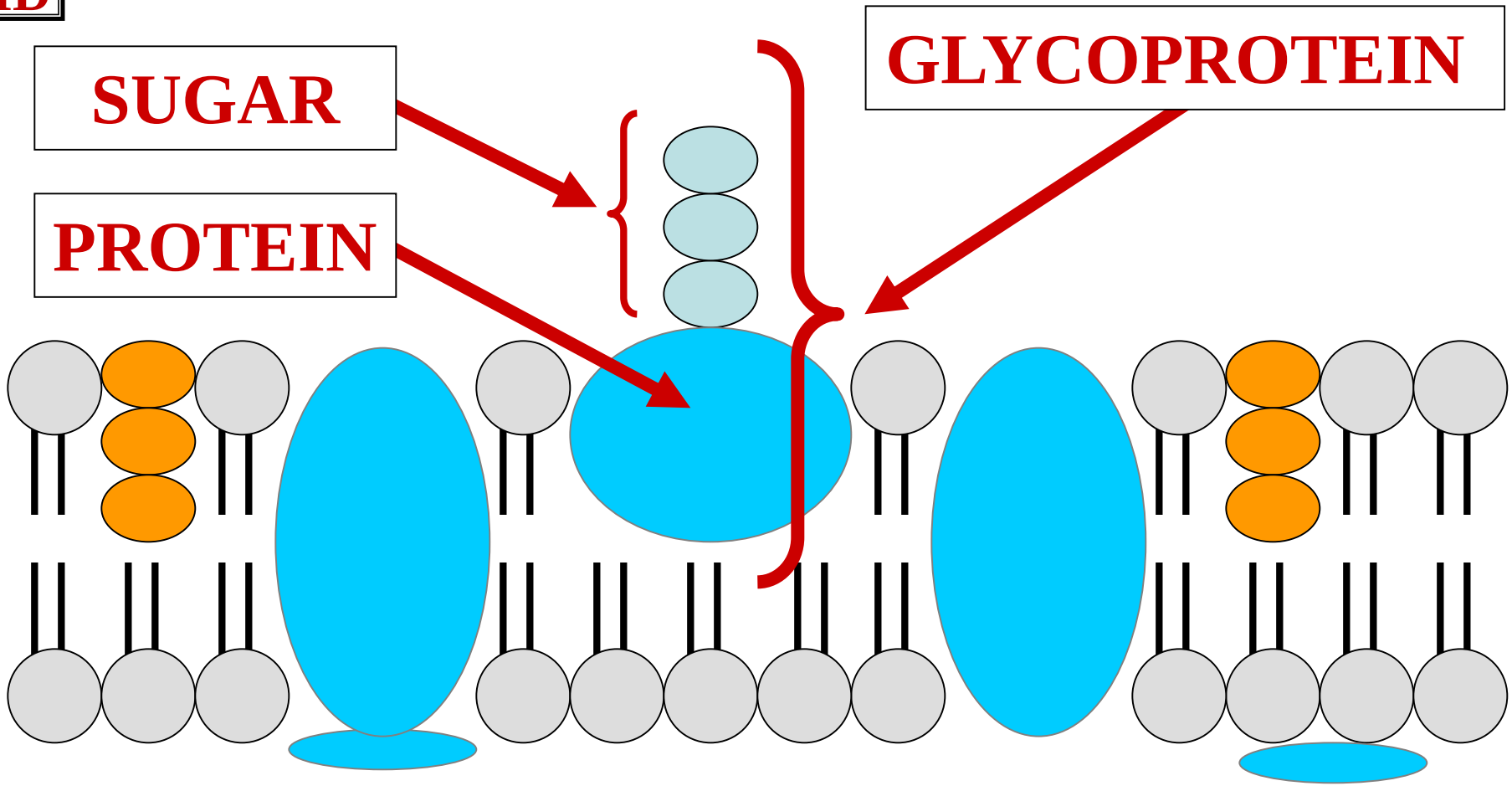


ID



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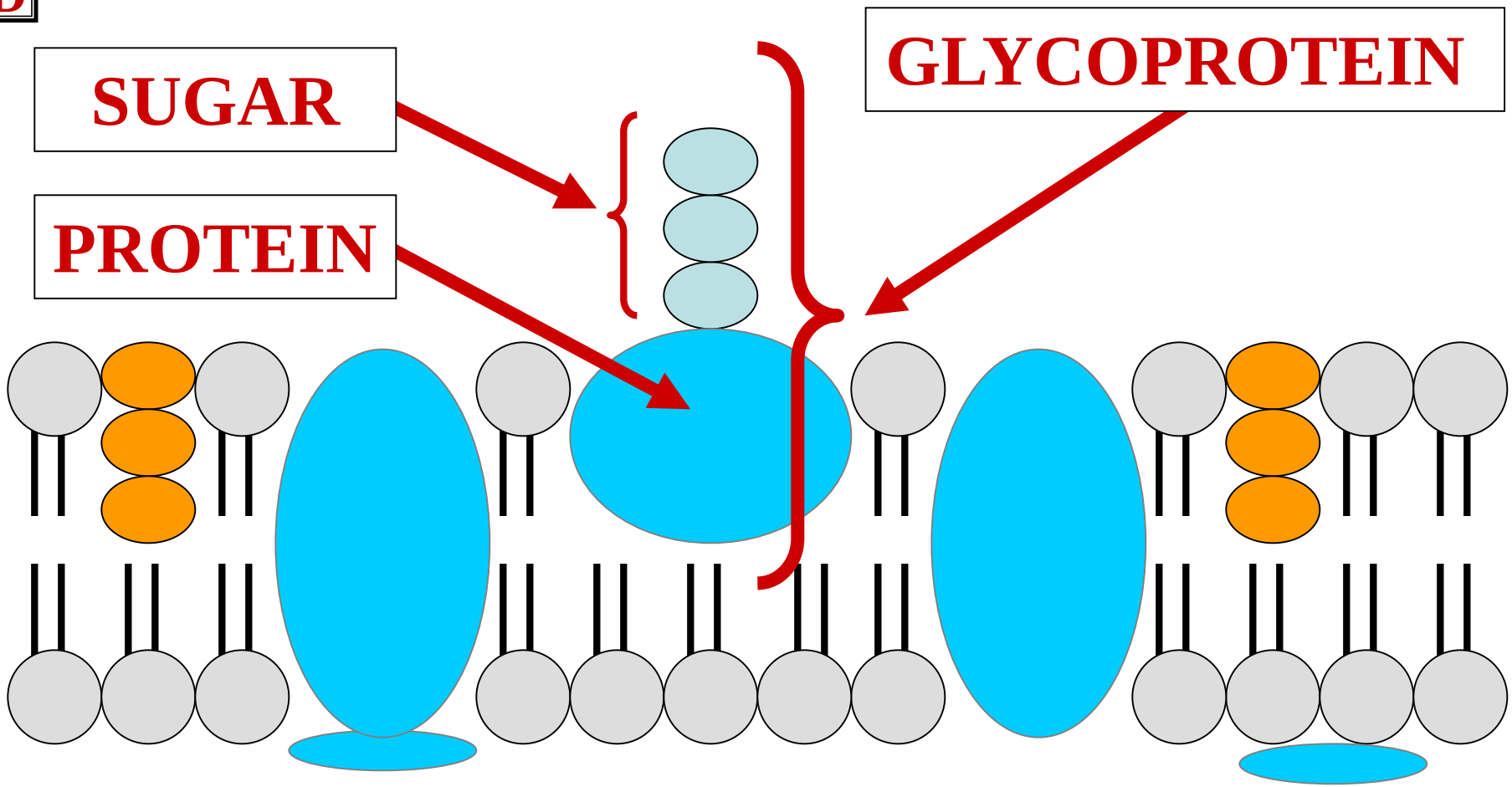
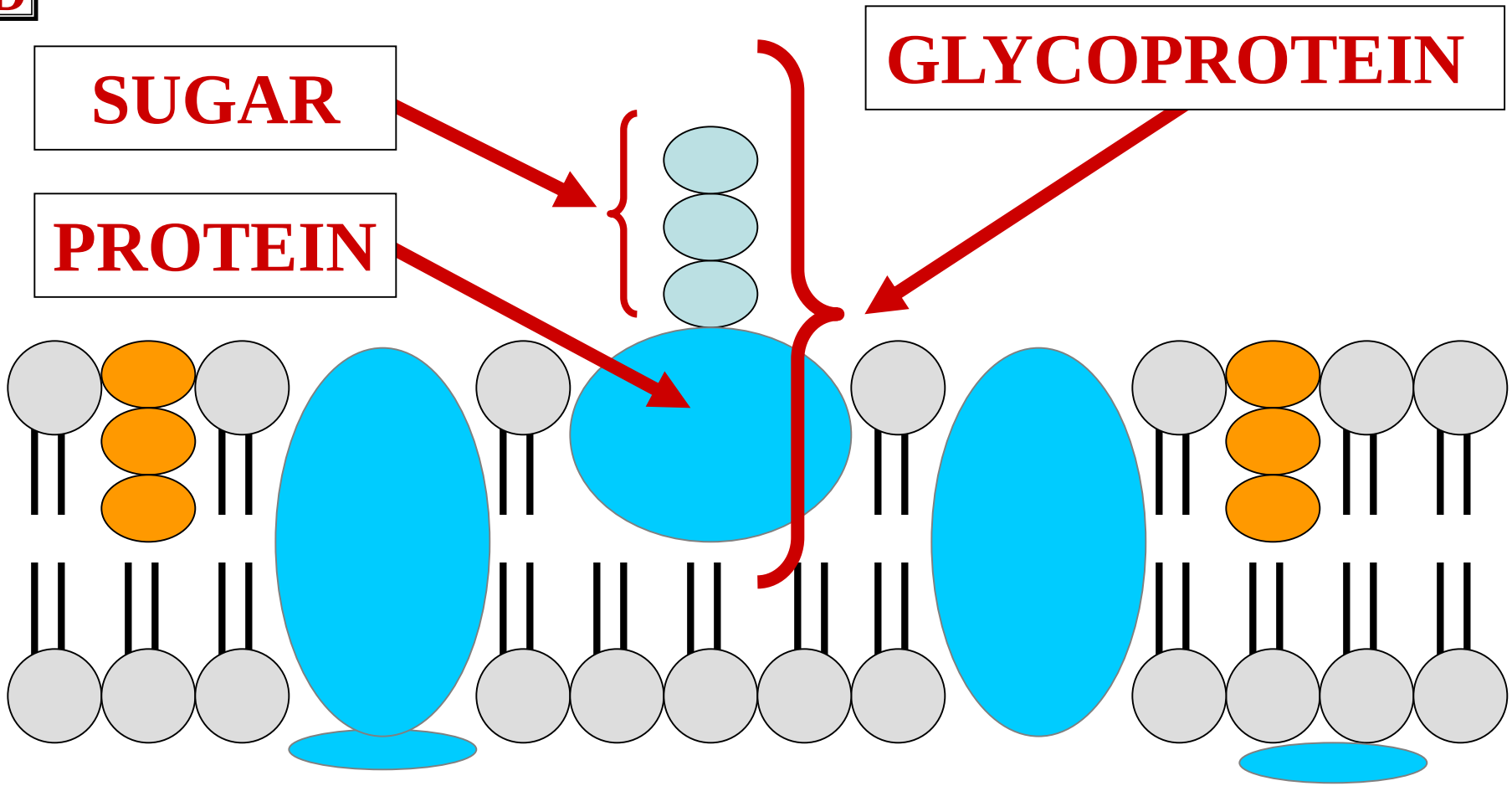


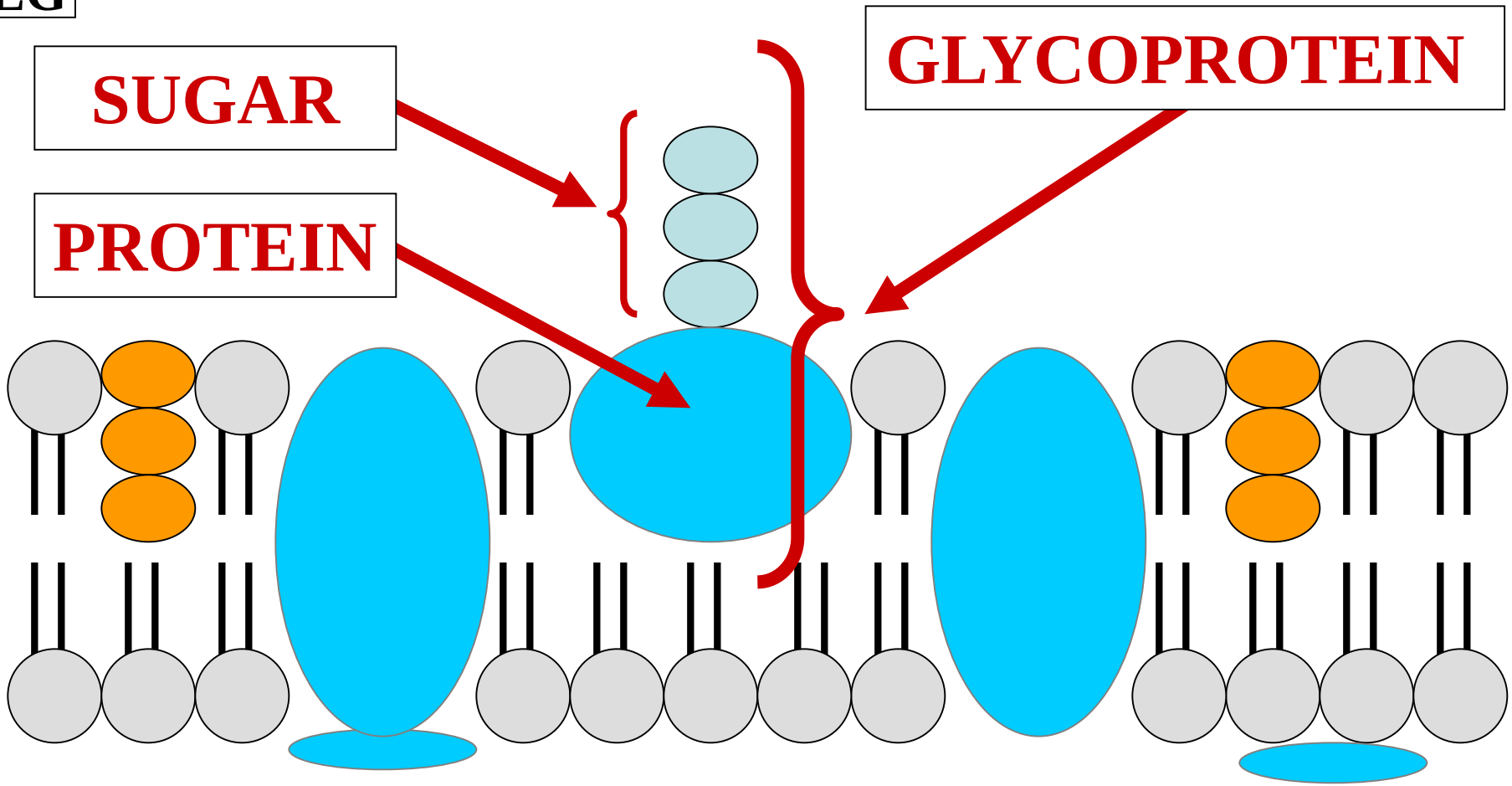

**GLYCOPROTEINS**
**MEMBRANE**
**ID MARKERS**

D



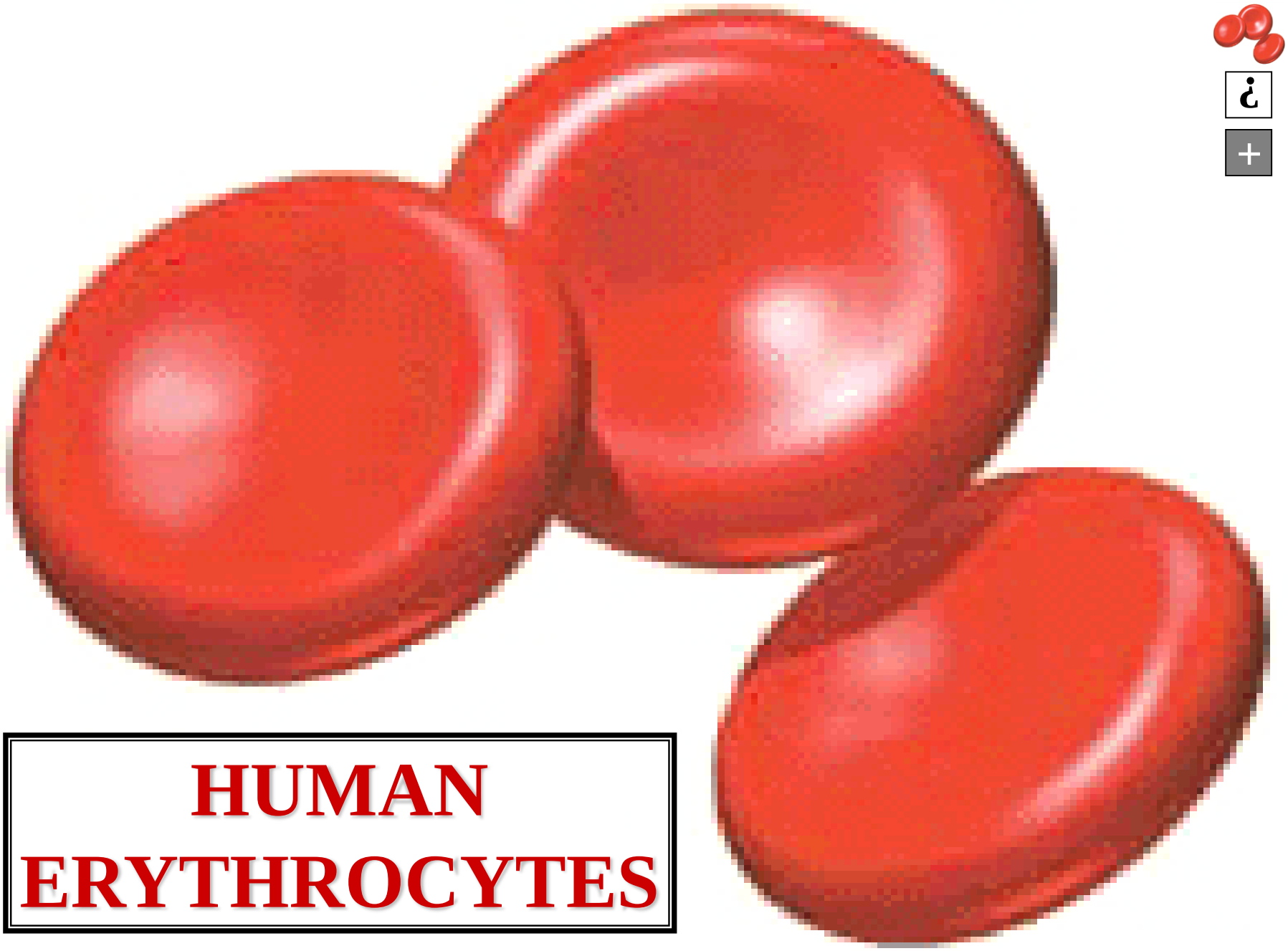

# DIFFERENT MEMBRANES

EG



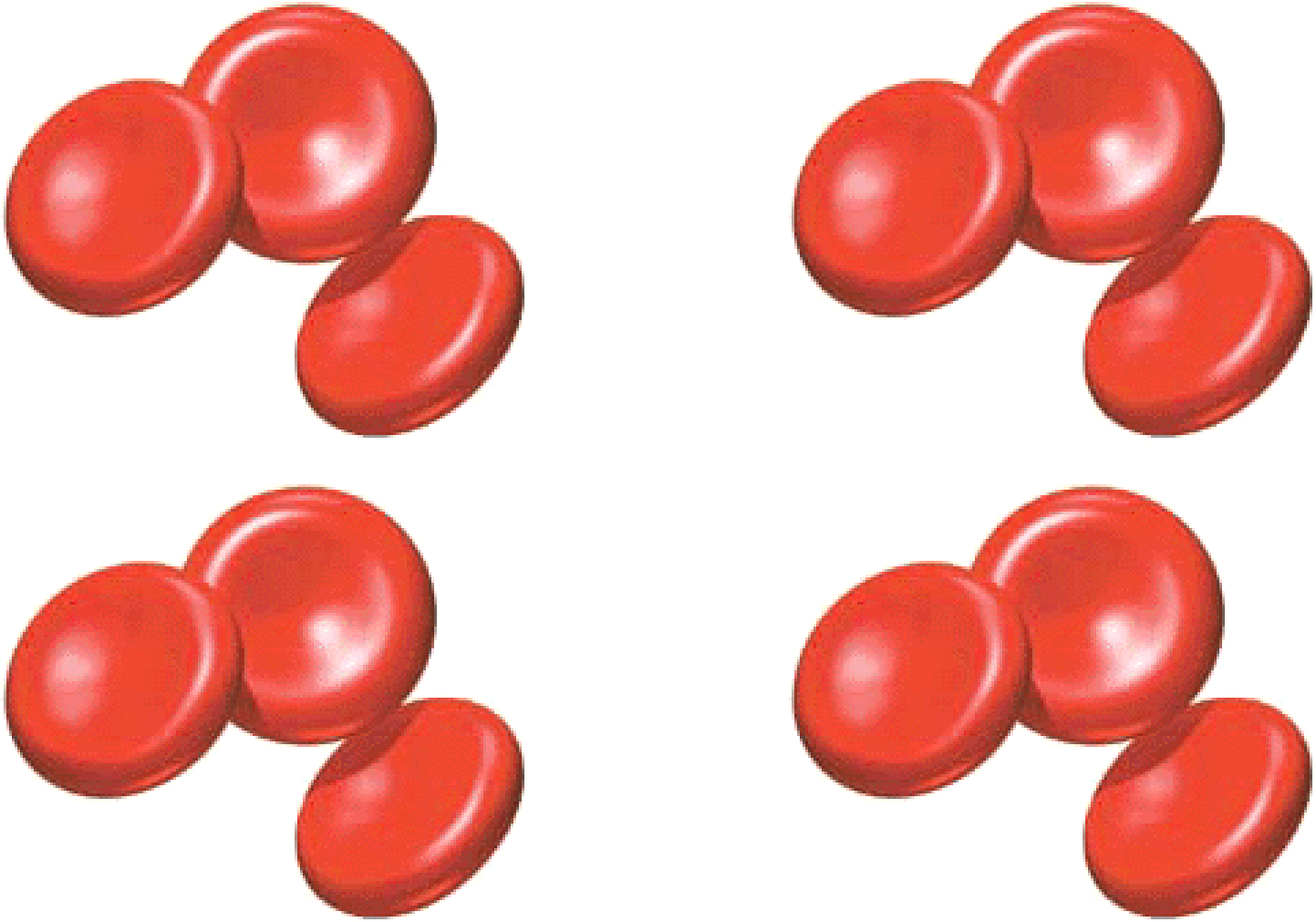

**DIFFERENT MEMBRANES**
**DIFFERENT GLYCOPROTEINS**

# EXAMPLE HUMAN BLOOD TYPES



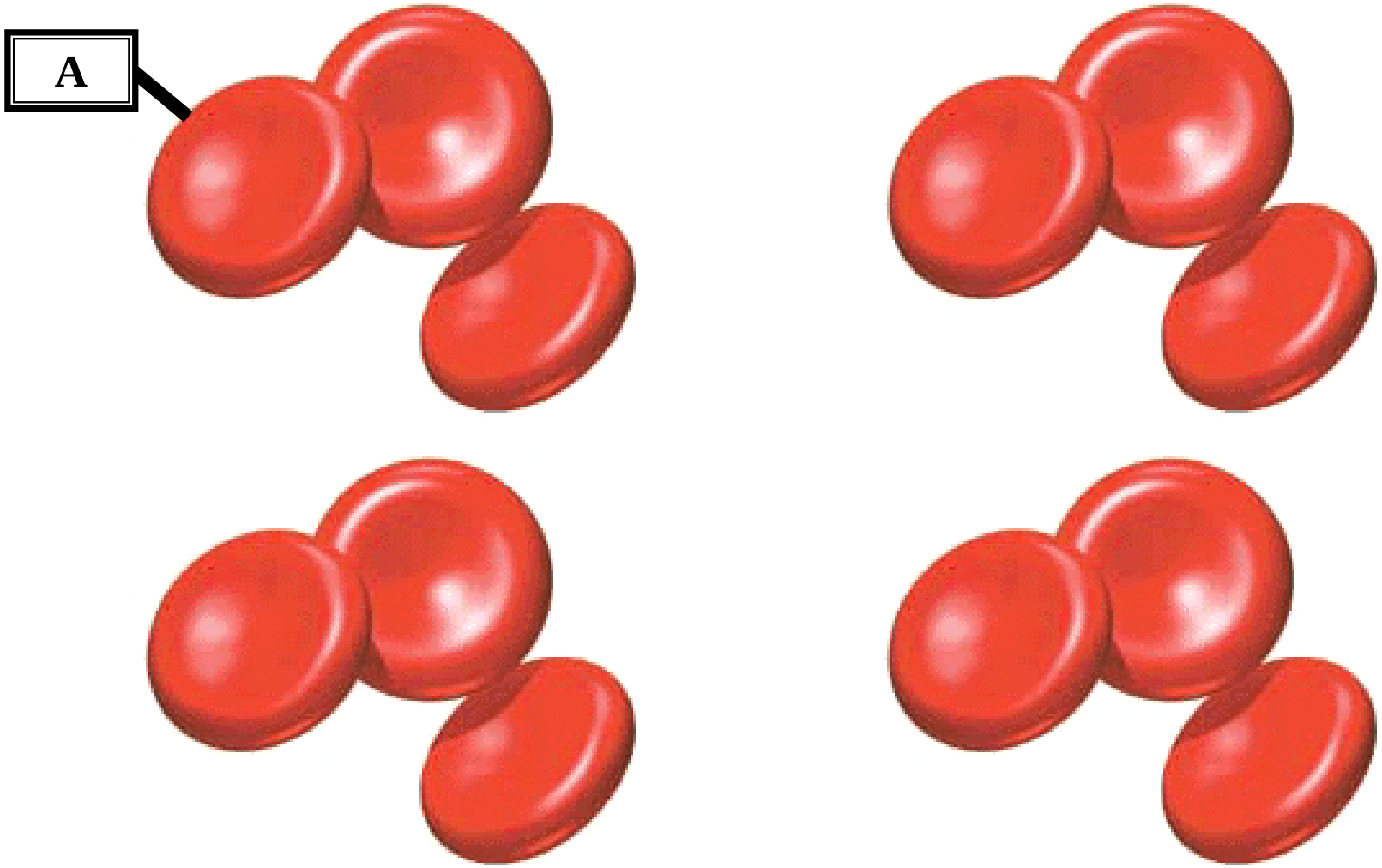
# HUMAN ERYTHROCYTES

# HUMAN BLOOD TYPES



# HUMAN BLOOD TYPES

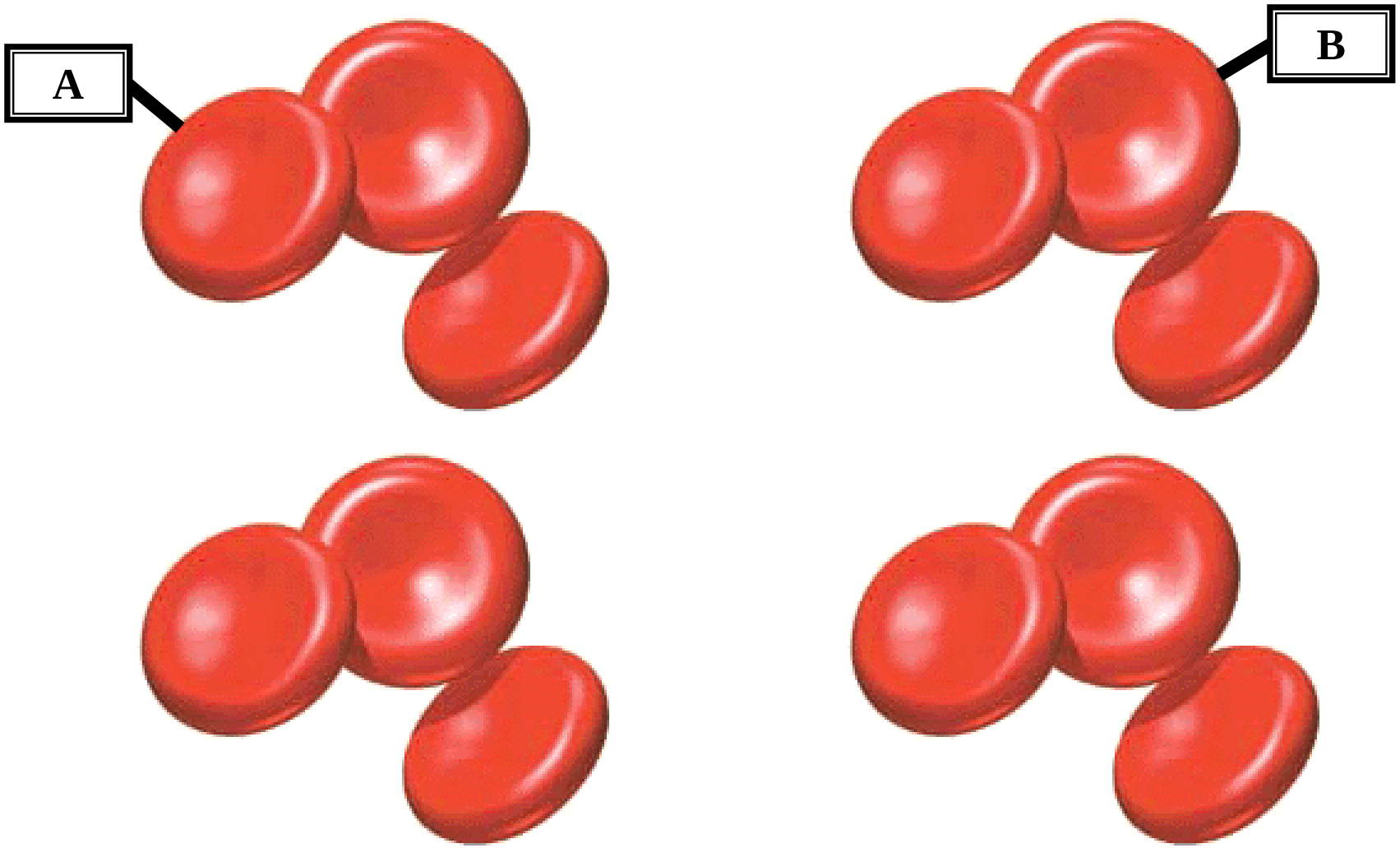
B



# HUMAN BLOOD TYPES

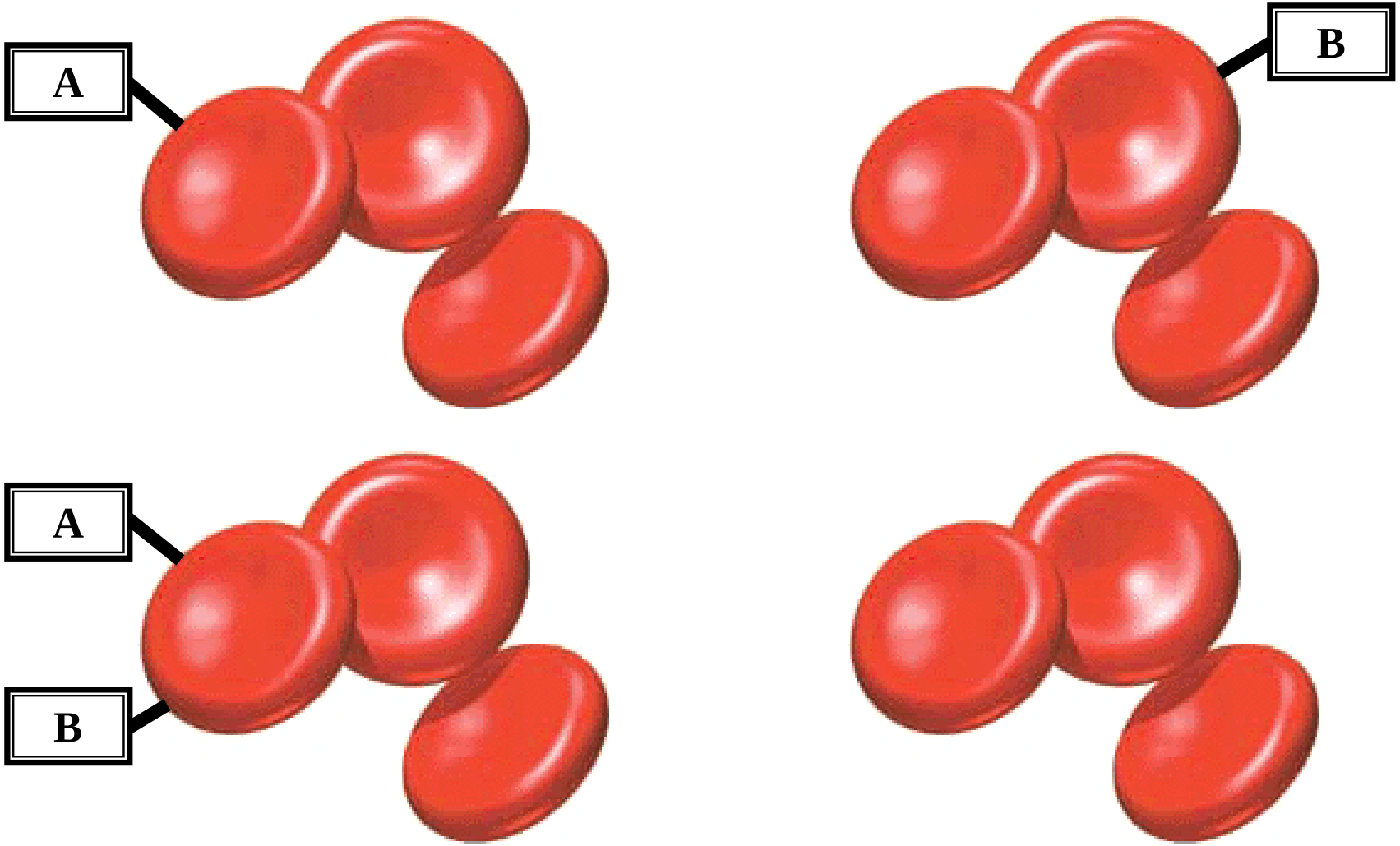
A

B



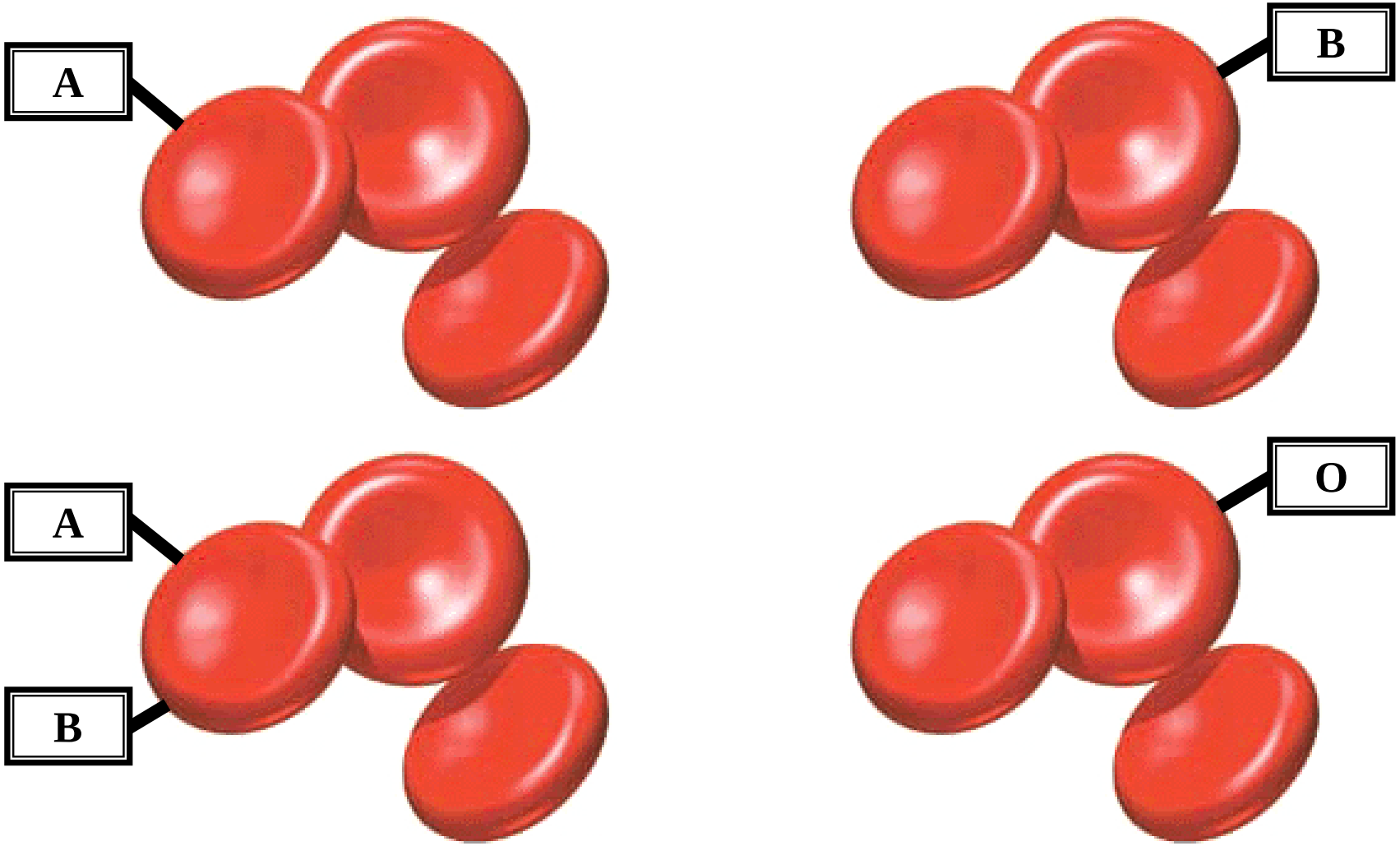
# HUMAN BLOOD TYPES

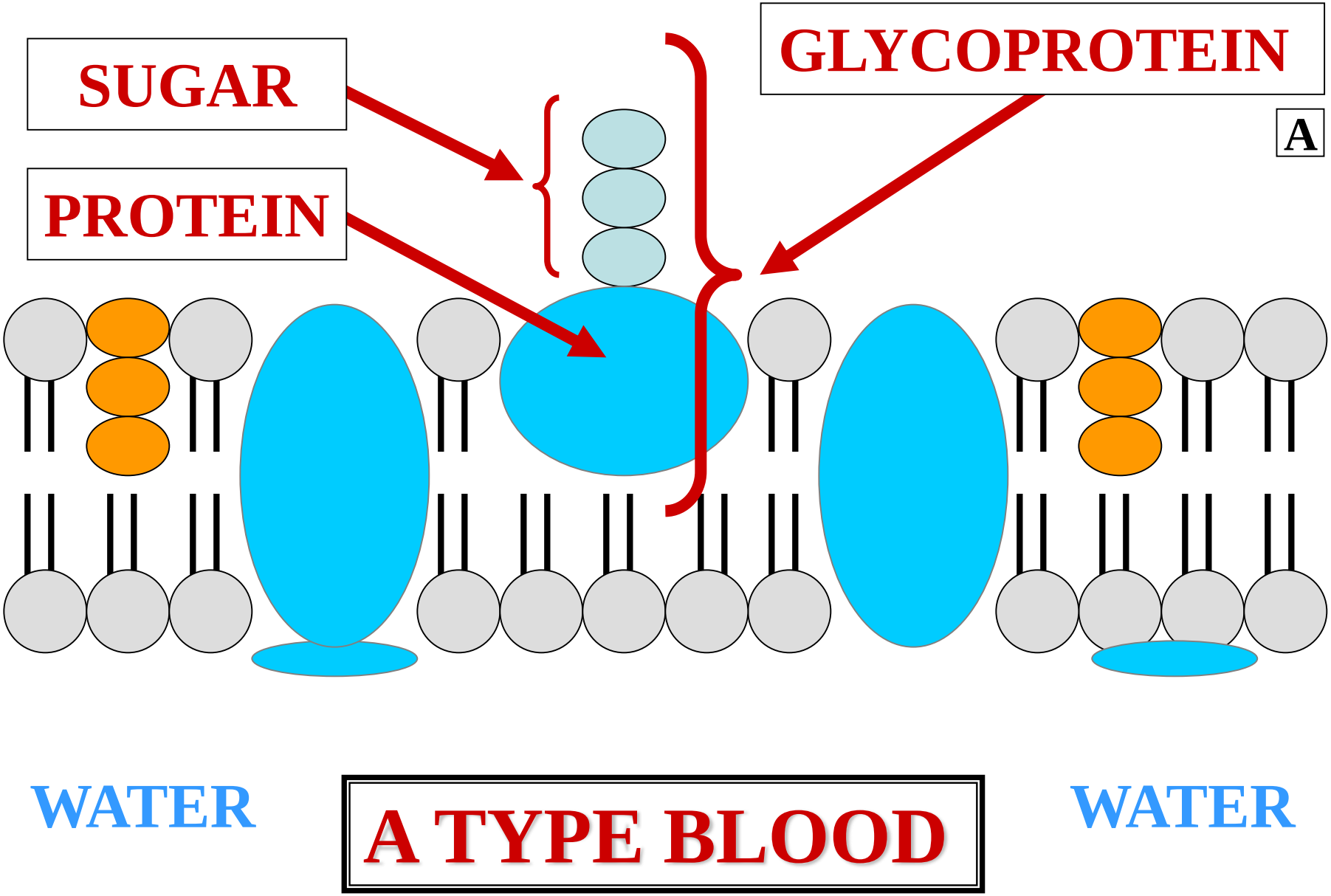
O

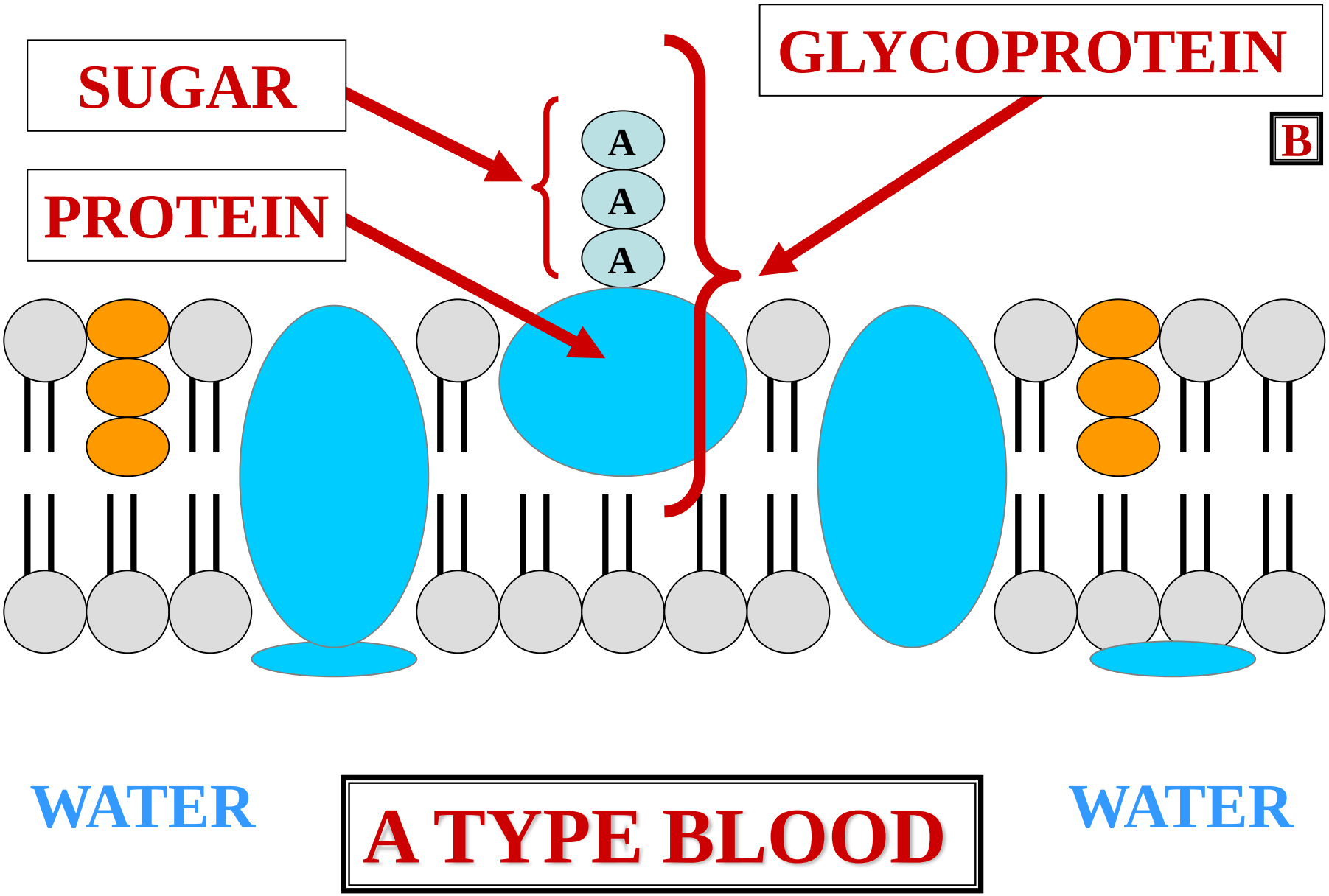


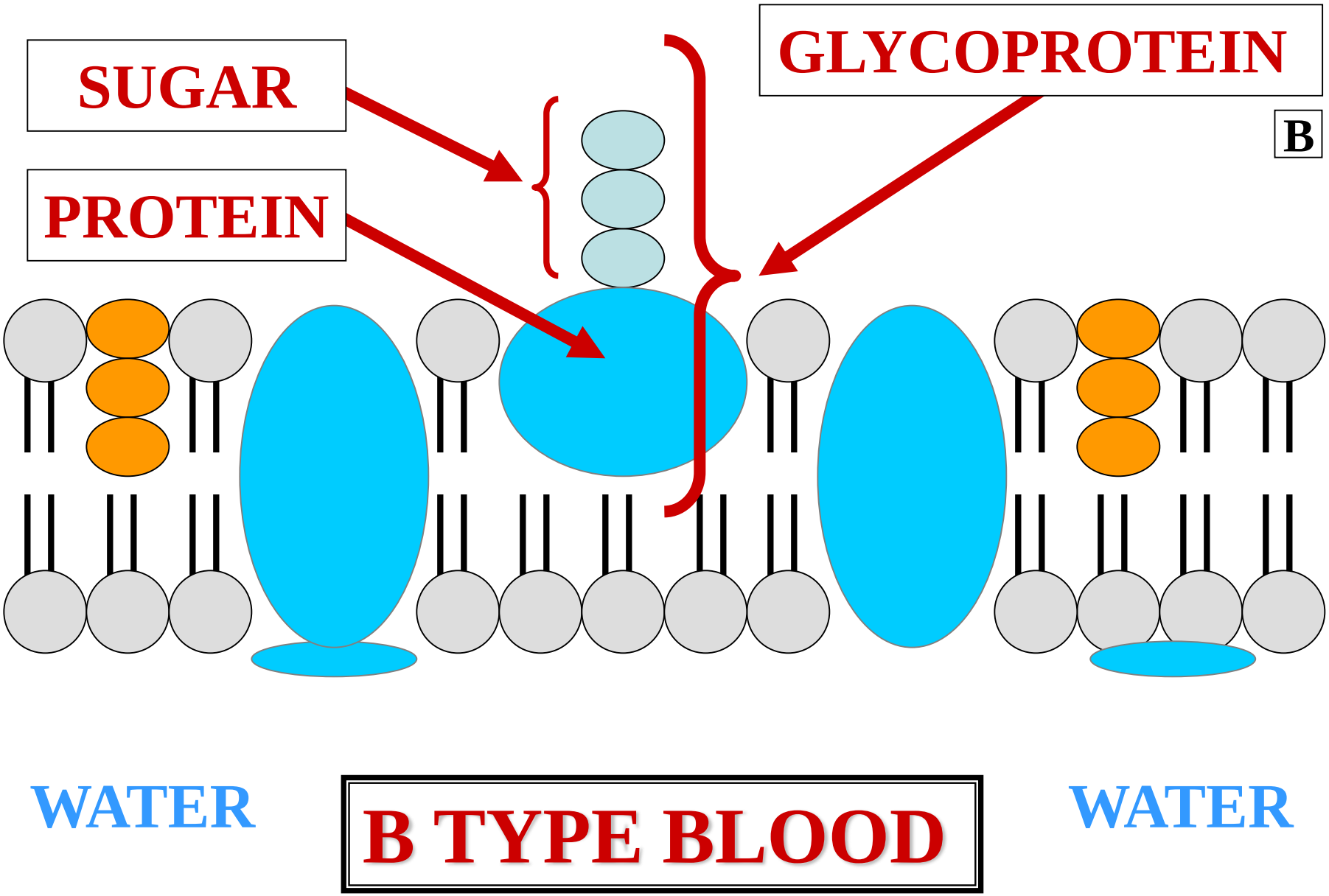
# HUMAN BLOOD TYPES

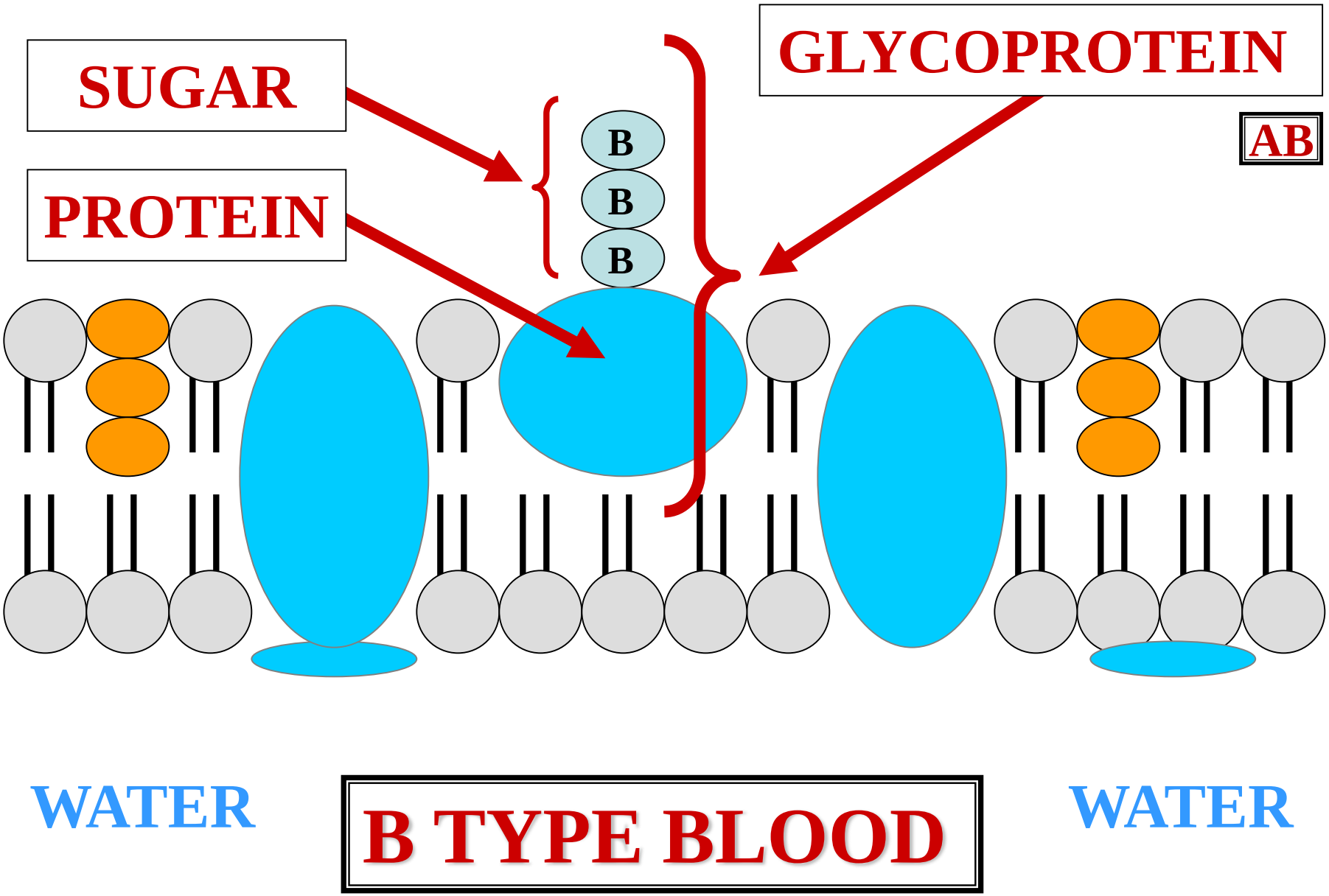
A

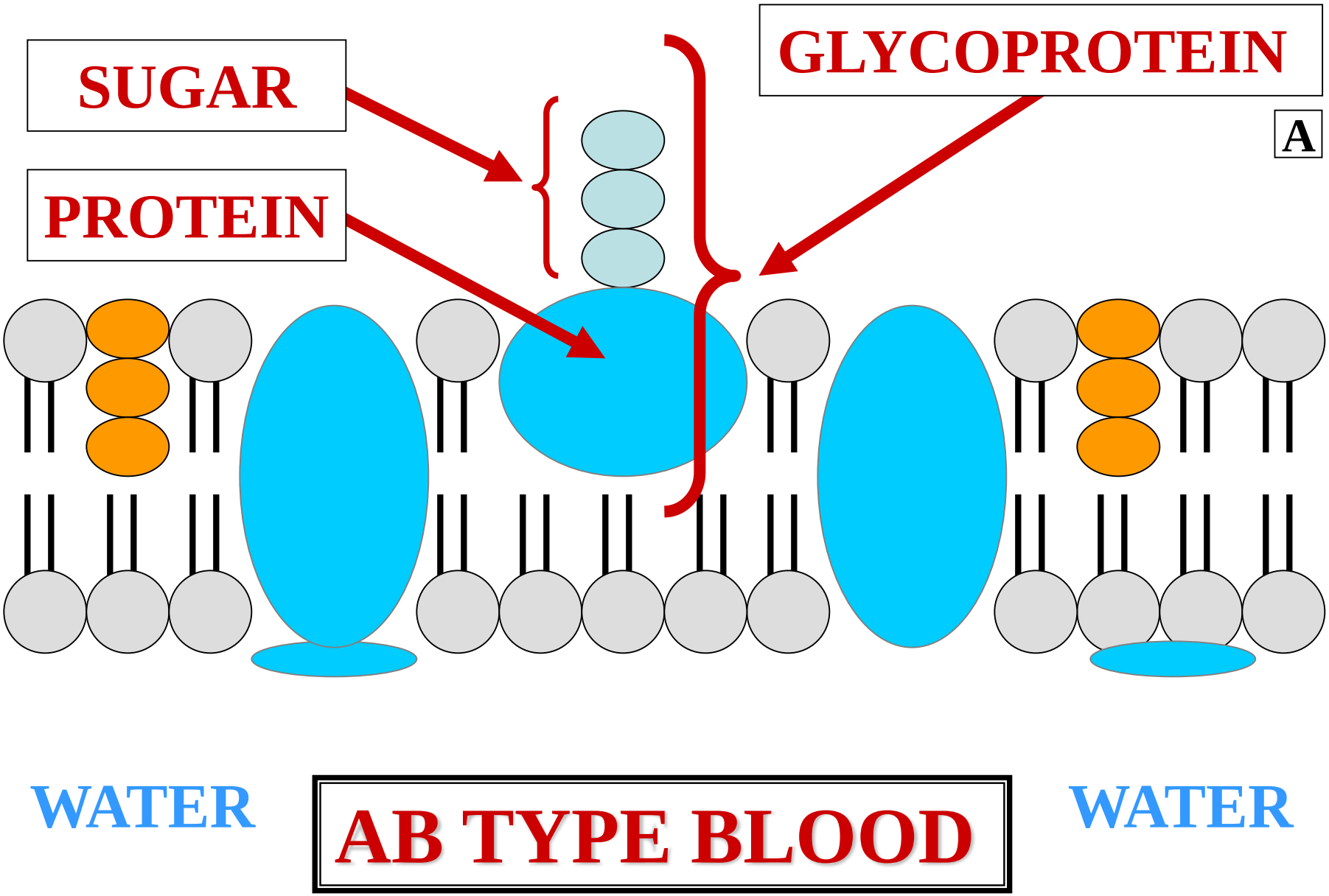


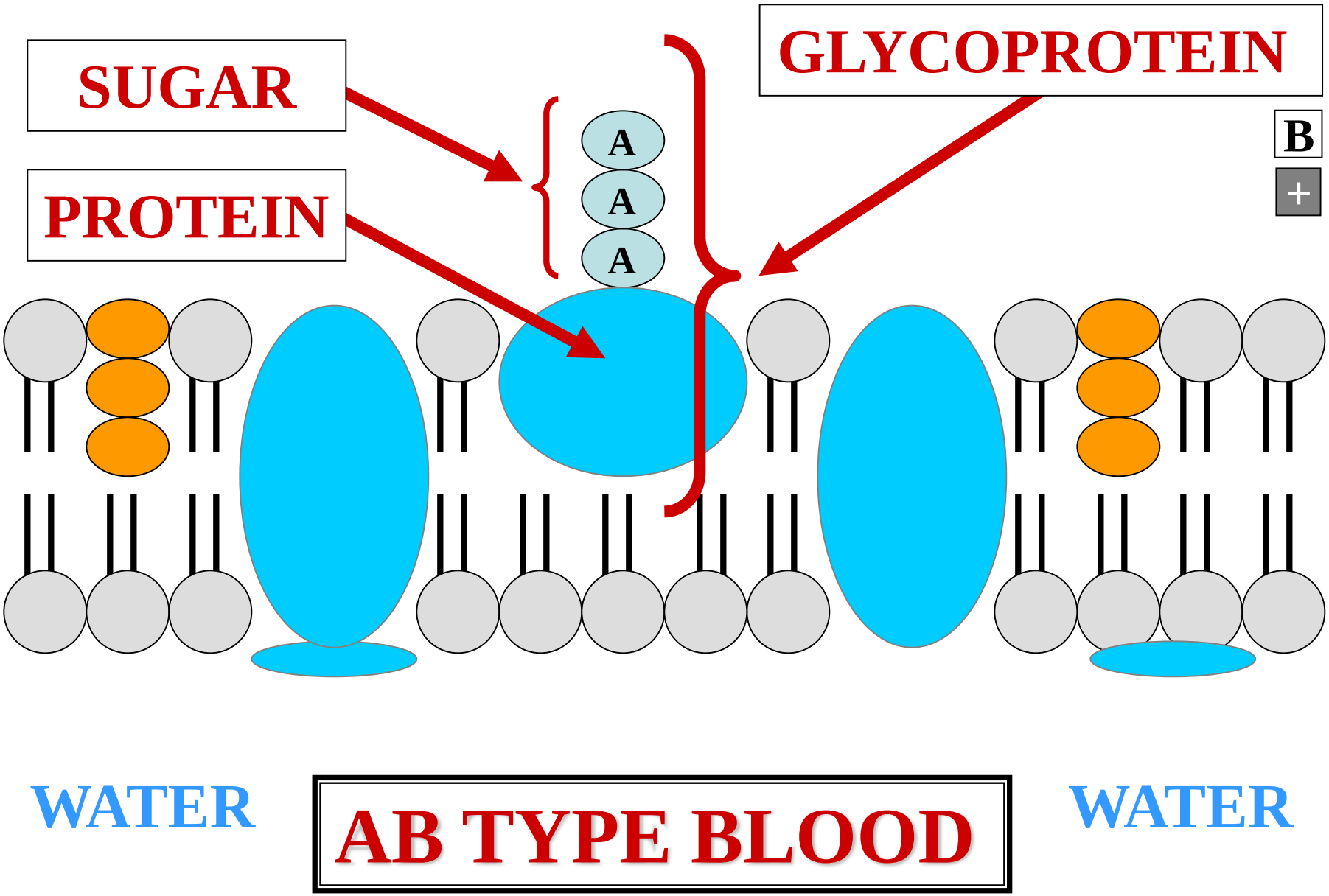

SUGAR
PROTEIN
GLYCOPROTEIN
A
WATER
A TYPE BLOOD
WATER

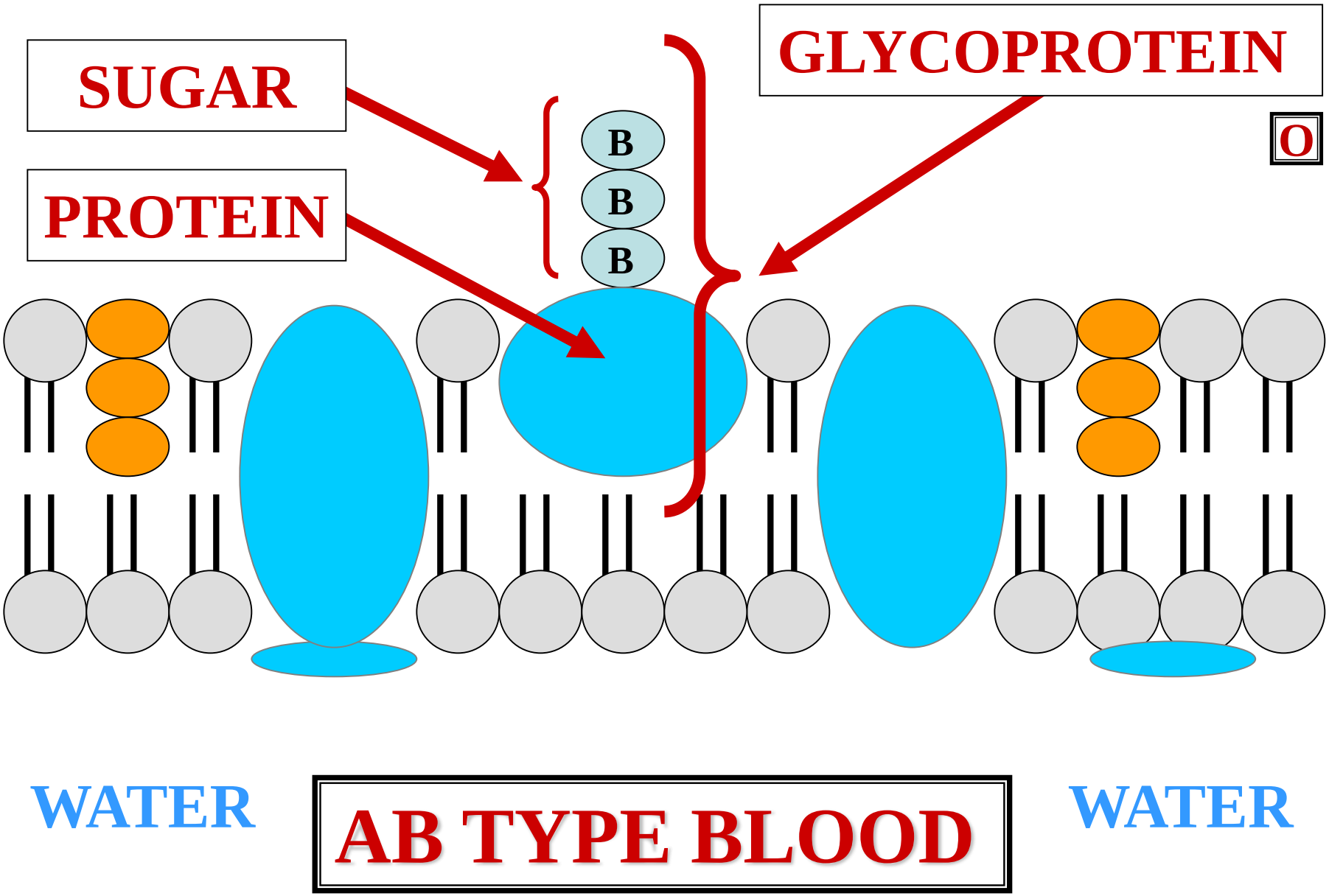

SUGAR
PROTEIN
GLYCOPROTEIN
B
A
A
A
WATER
A TYPE BLOOD
WATER


SUGAR
PROTEIN
GLYCOPROTEIN
B
WATER
B TYPE BLOOD
WATER


SUGAR
PROTEIN
GLYCOPROTEIN
AB
B
B
B
WATER
B TYPE BLOOD
WATER

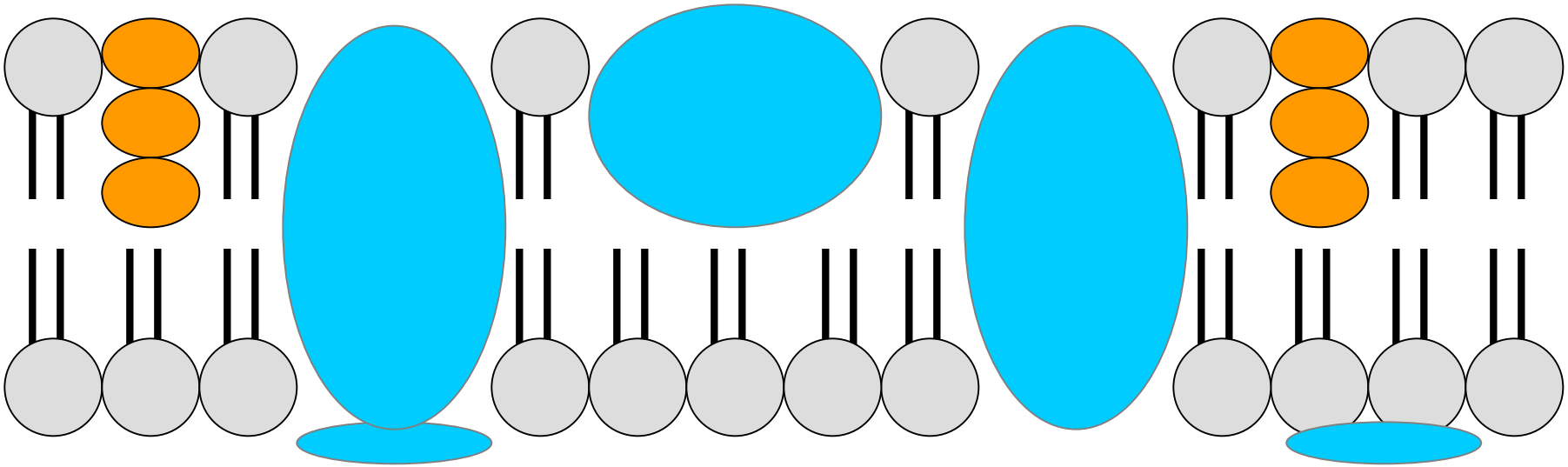

SUGAR
PROTEIN
GLYCOPROTEIN
A
WATER
AB TYPE BLOOD
WATER


SUGAR
PROTEIN
GLYCOPROTEIN
A
A
A
B
+
WATER
AB TYPE BLOOD
WATER


SUGAR
PROTEIN
GLYCOPROTEIN
O
B
B
B
WATER
AB TYPE BLOOD
WATER

AB

WATER WATER WATER



WATER

# O TYPE BLOOD

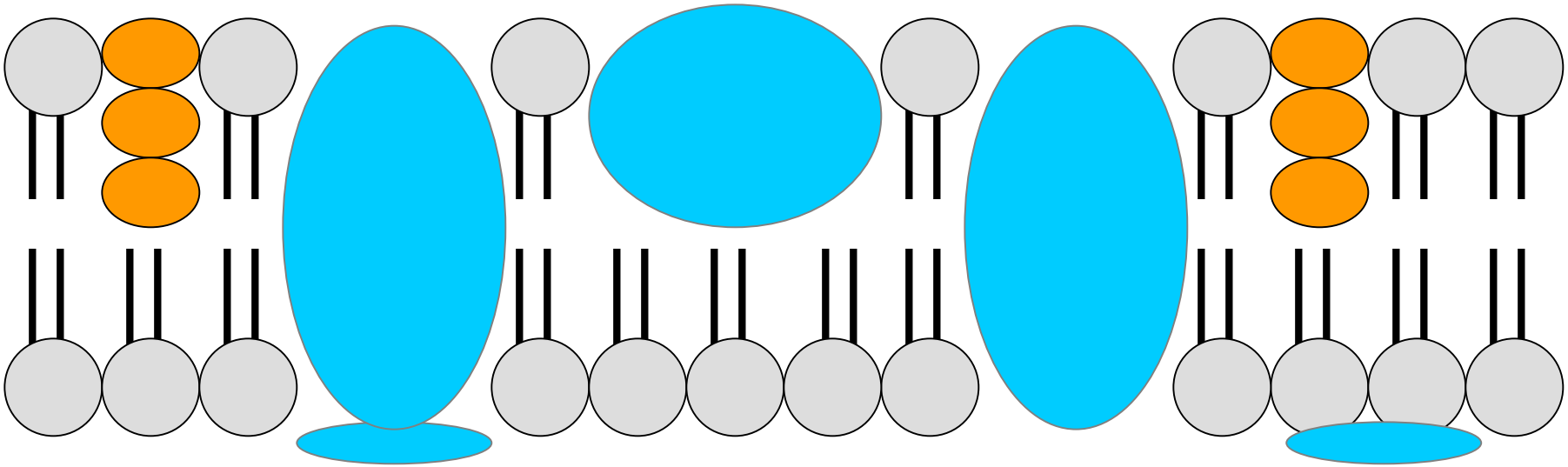
WATER

G

WATER

GLYCOPROTEINS ABSENT

WATER

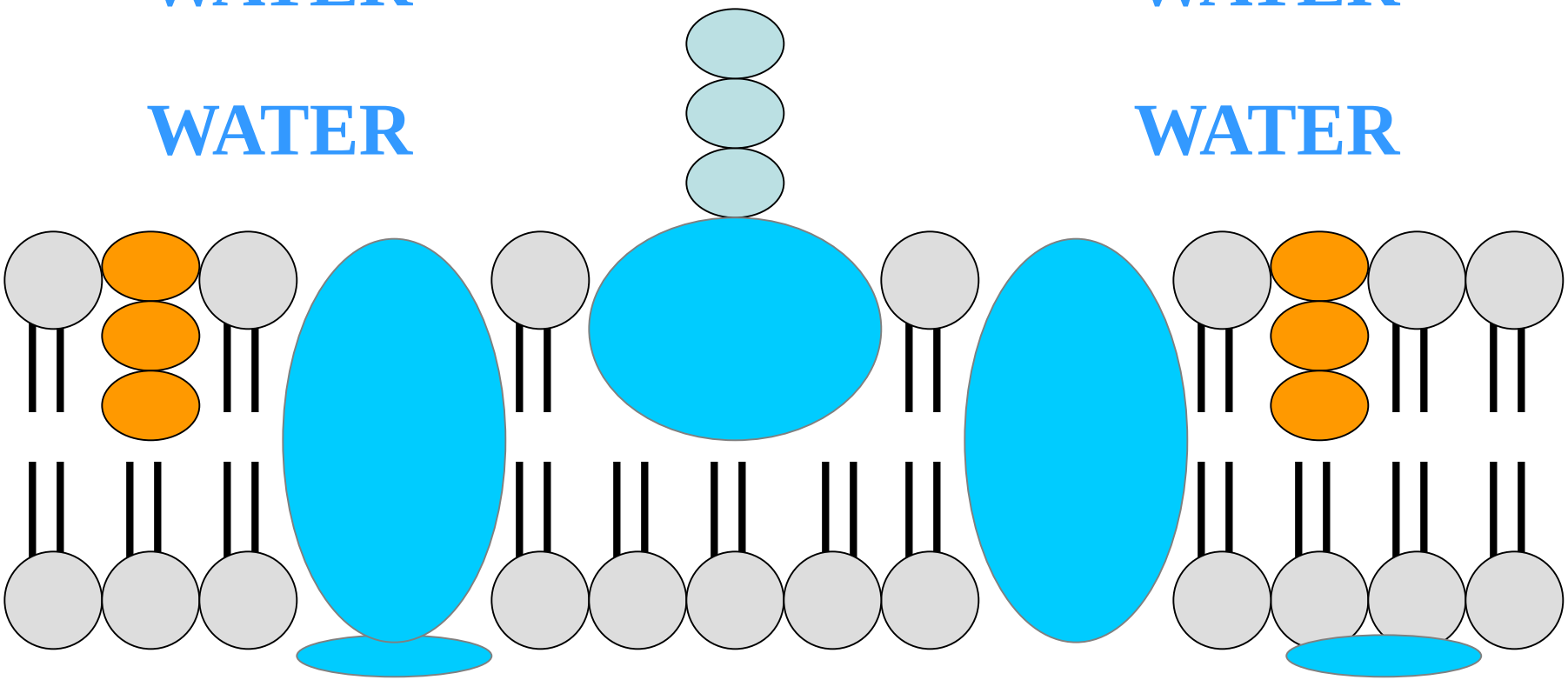


WATER

O TYPE BLOOD

WATER

# GLYCOPROTEINS

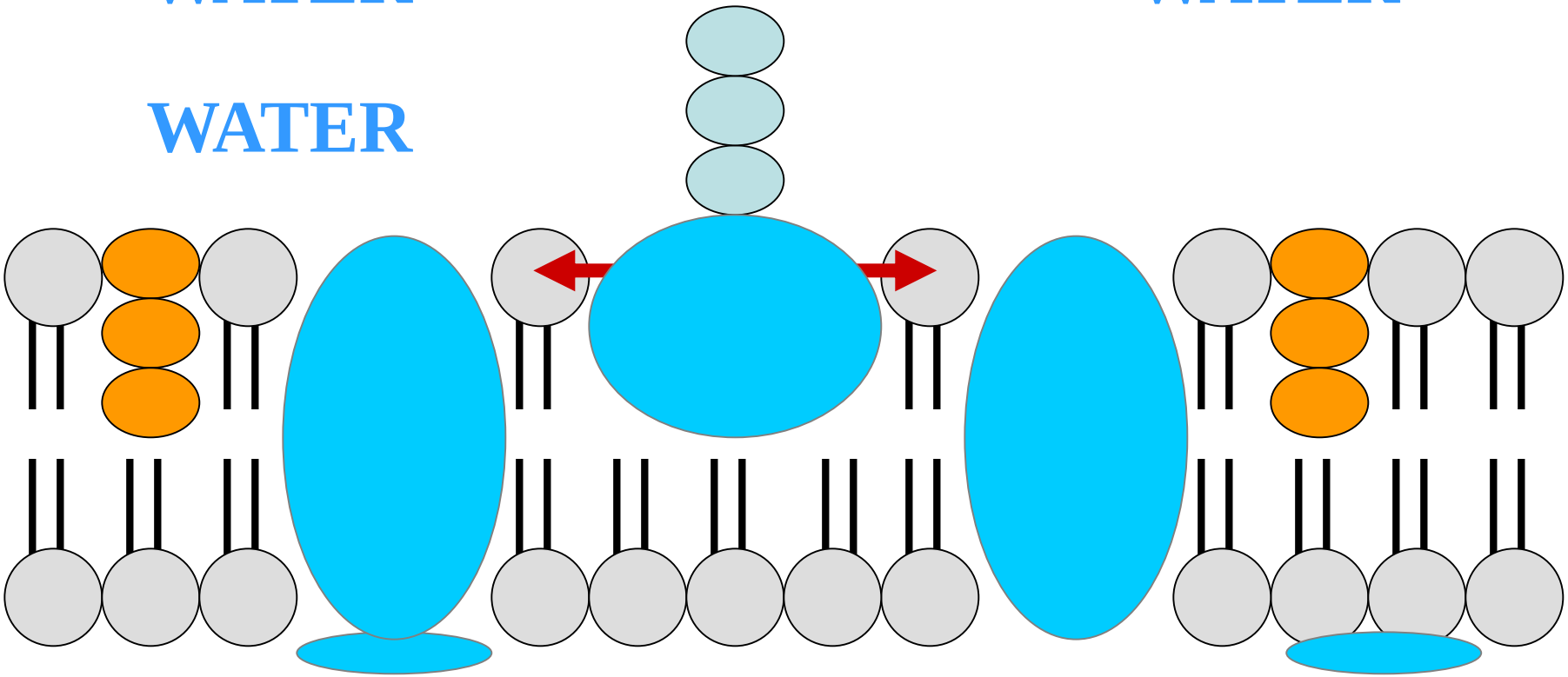



GLYCOPROTEINS

# GLYCOPROTEINS MOVE FREELY

WATER WATER

WATER WATER

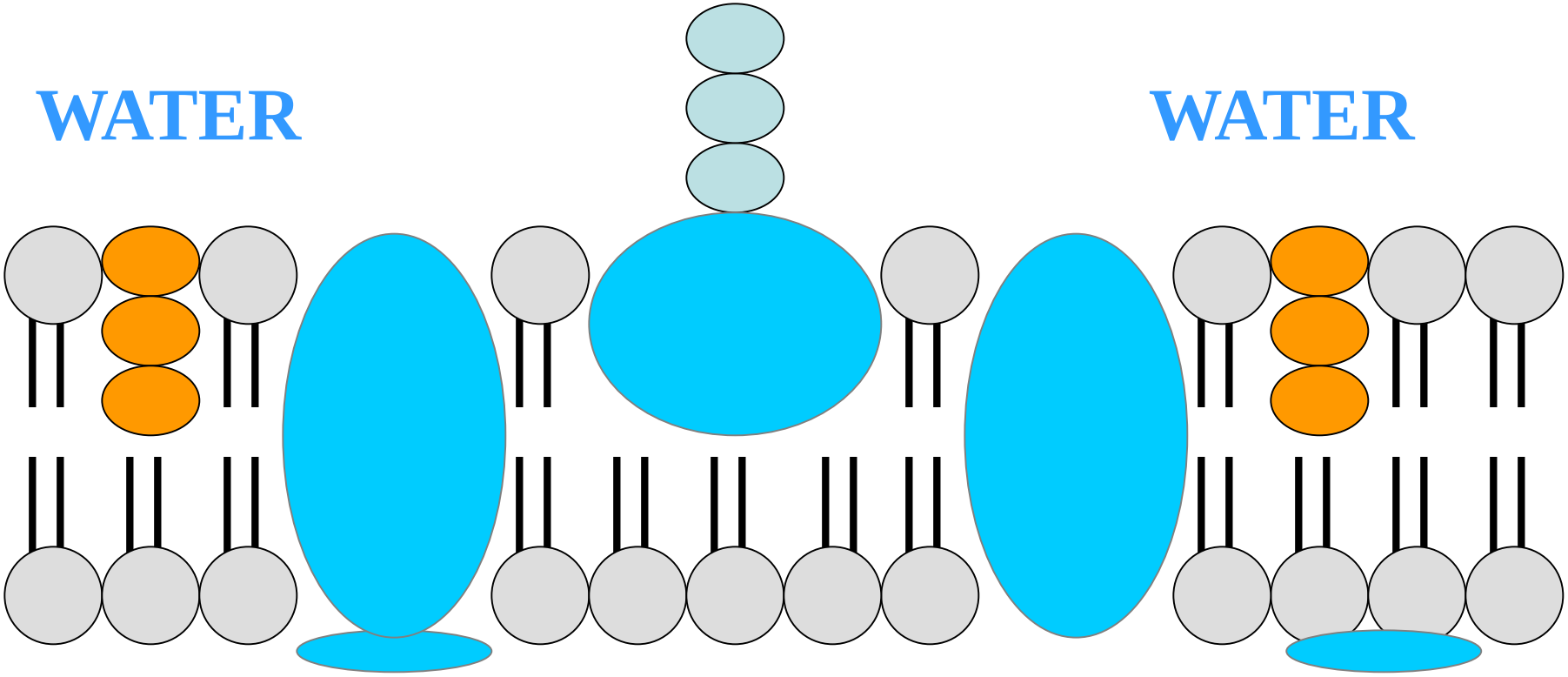


WATER WATER

WATER WATER WATER

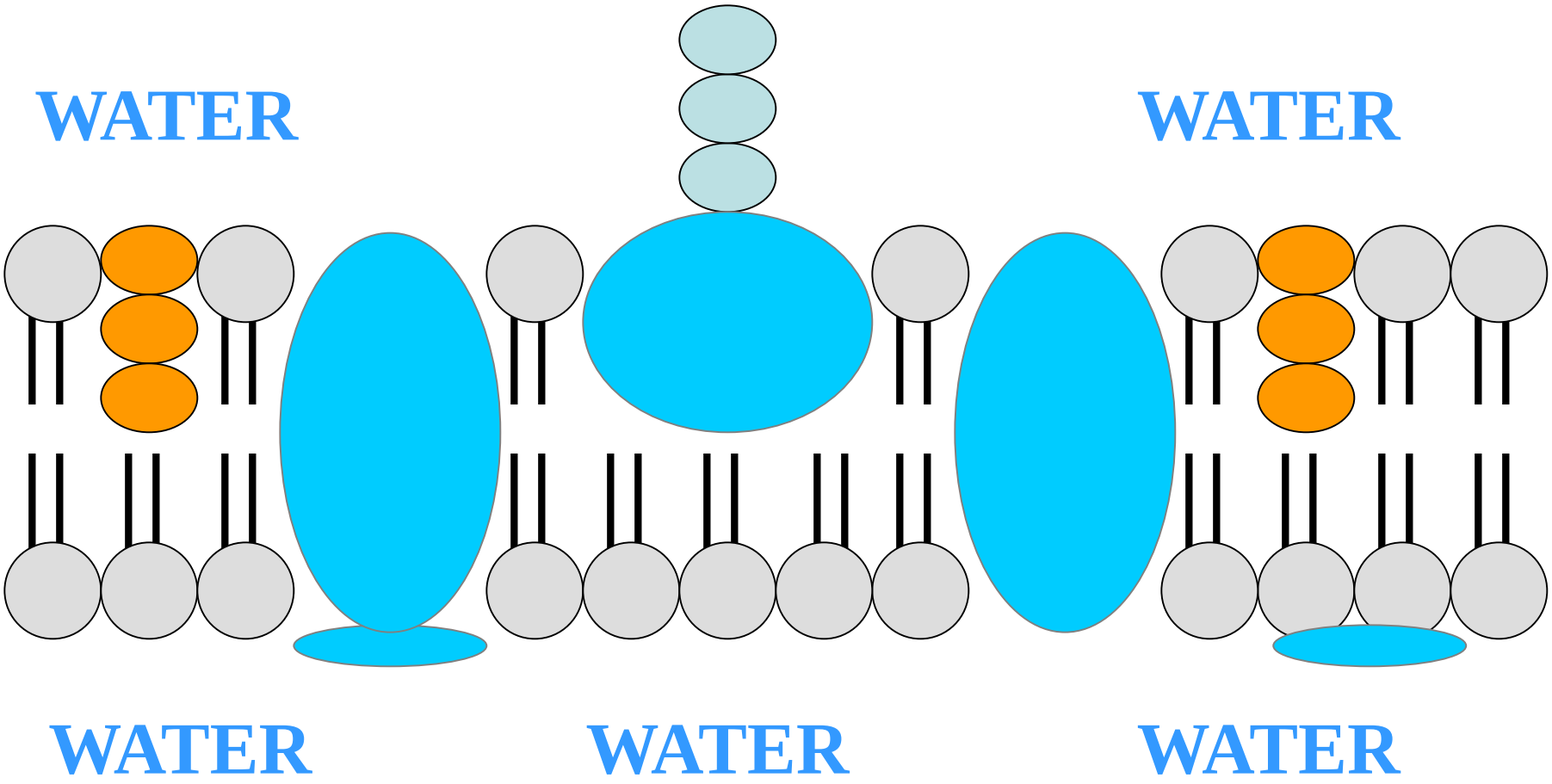
GLYCOPROTEINS MOVE FREELY

# MEMBRANE STRUCTURE




# FLUID MOSAIC MODEL

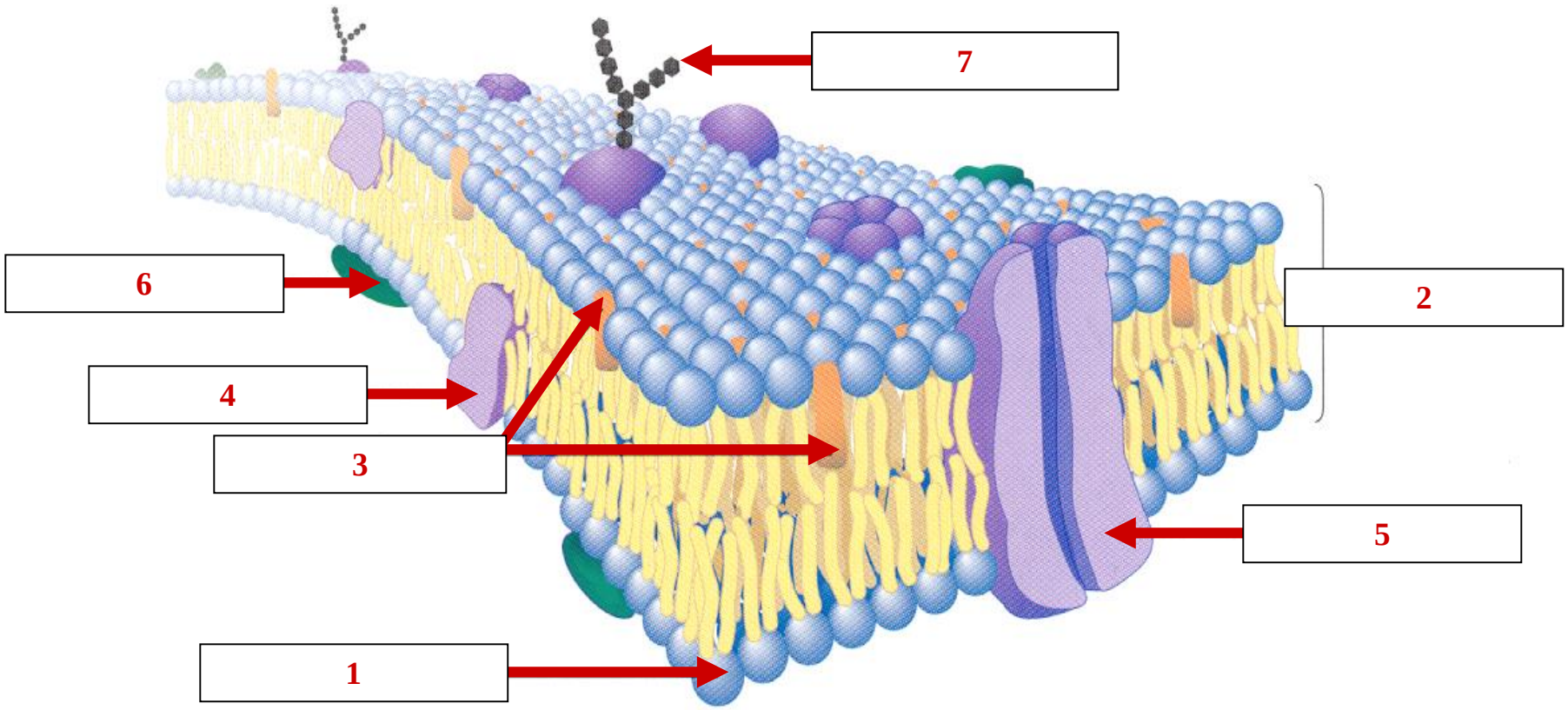
# MEMBRANE STRUCTURE




# FLUID MOSAIC MODEL

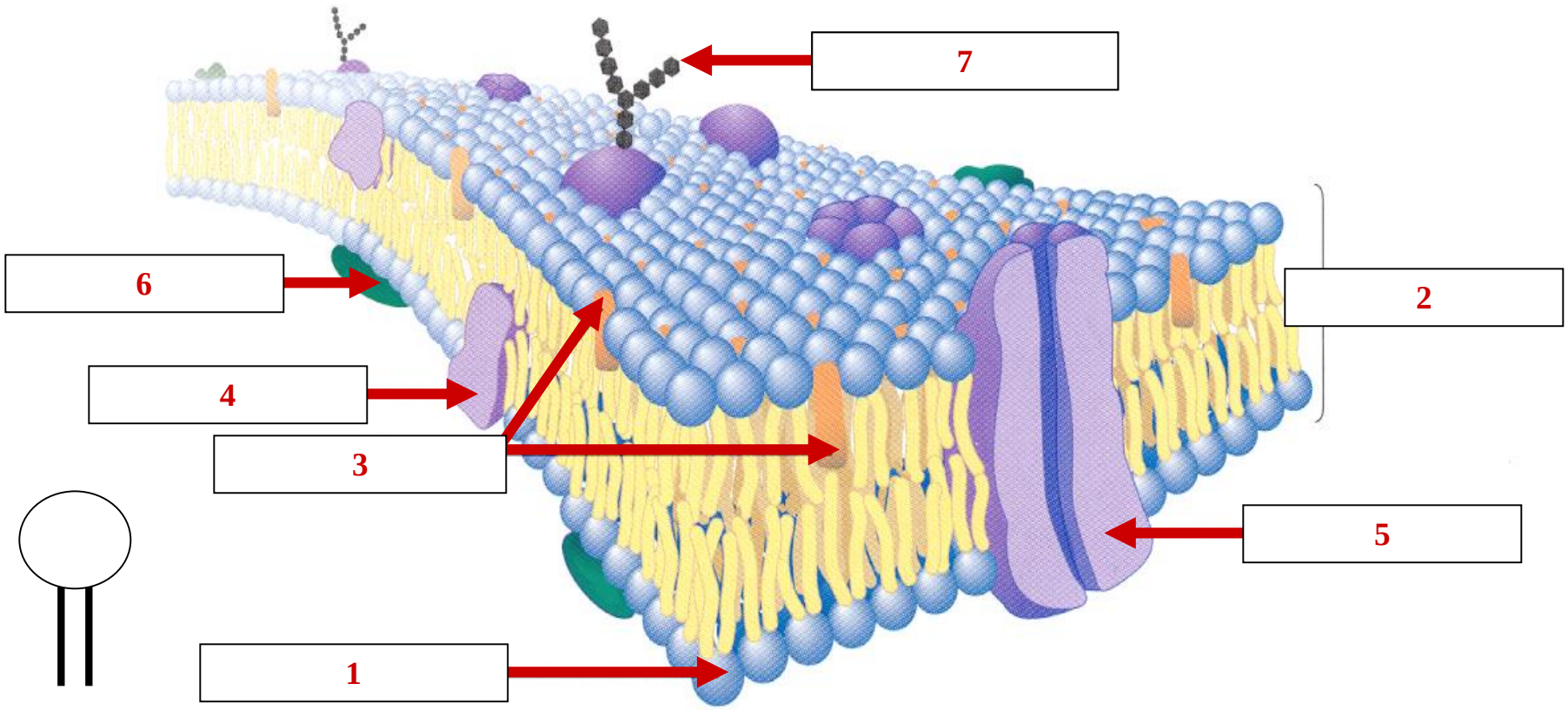
# MEMBRANE STRUCTURE SUMMARY

# MEMBRANE STRUCTURE SUMMARY



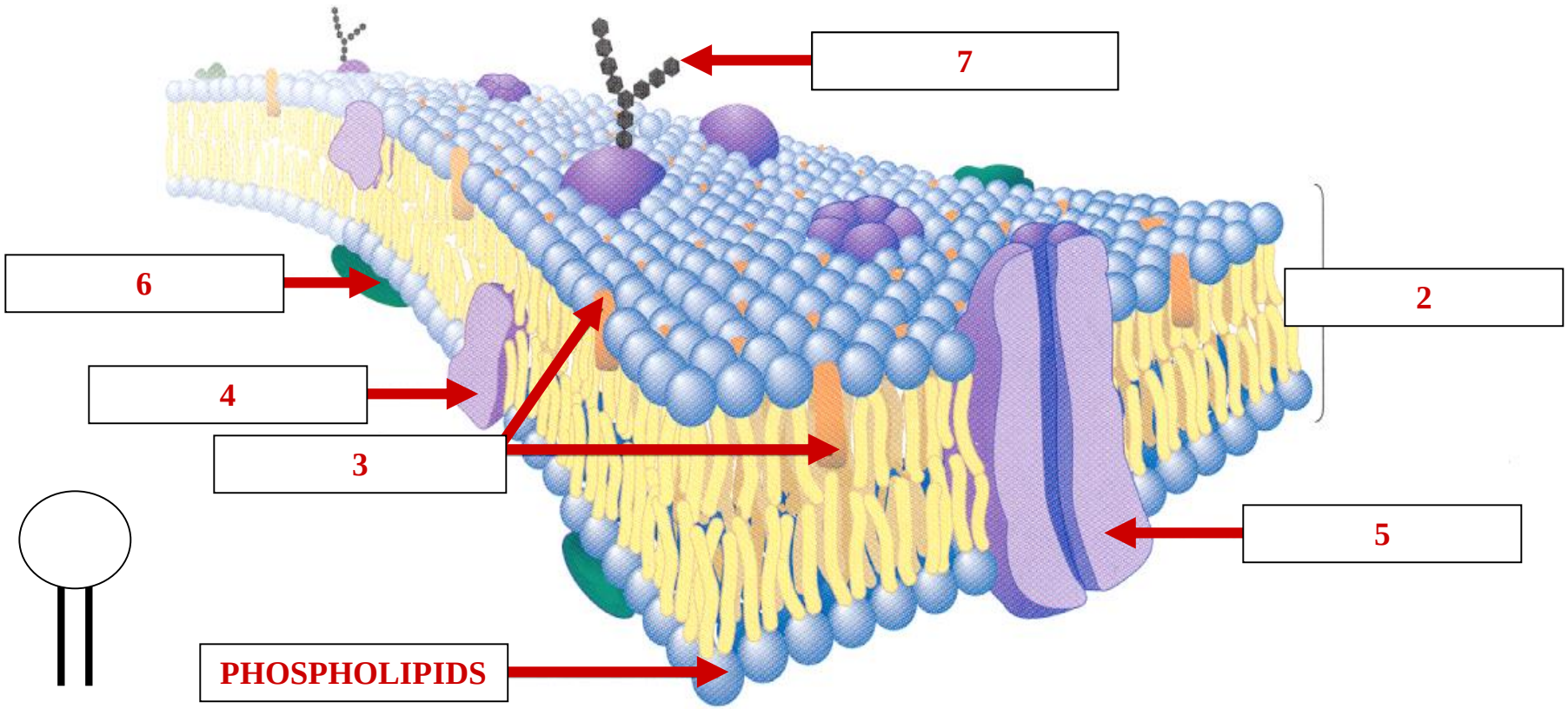

?

# MEMBRANE STRUCTURE SUMMARY



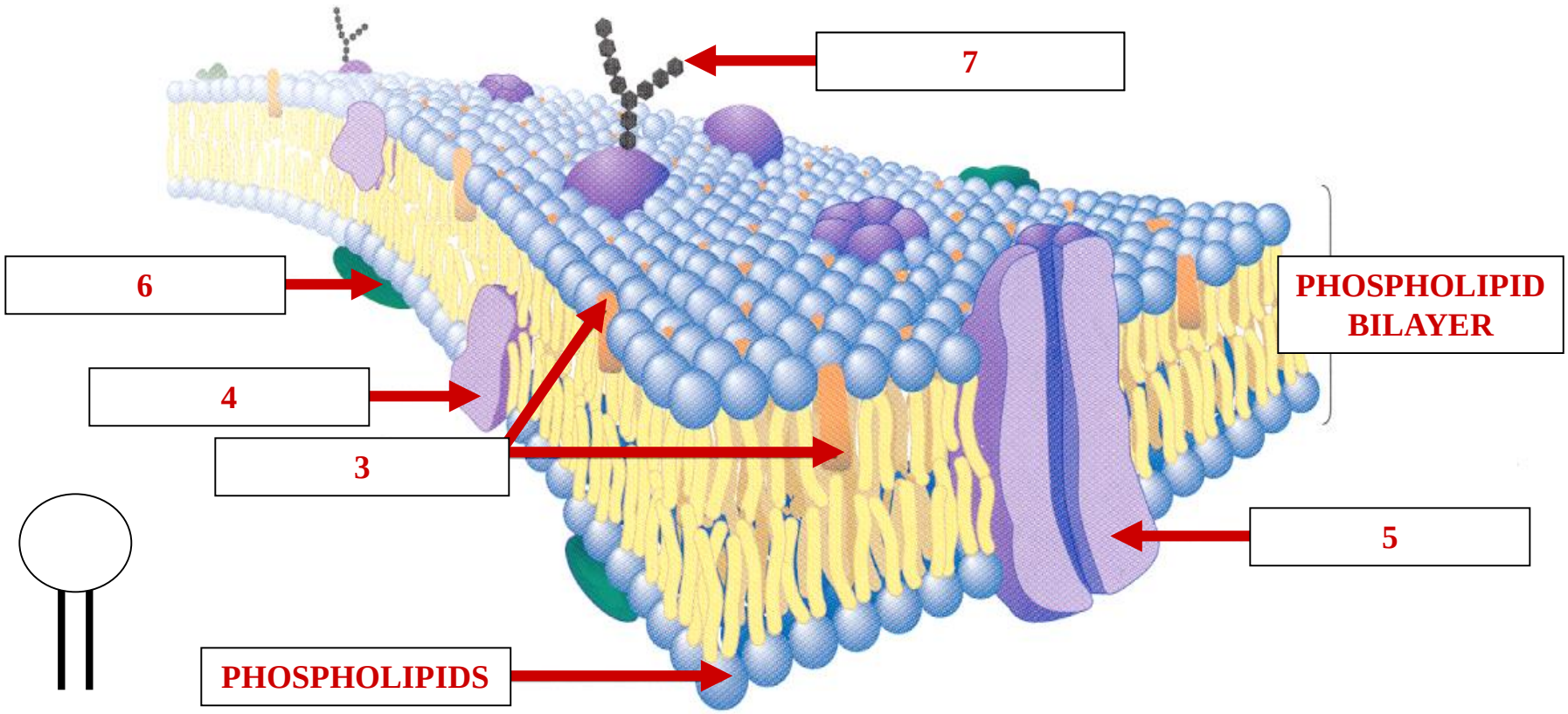

# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE SUMMARY



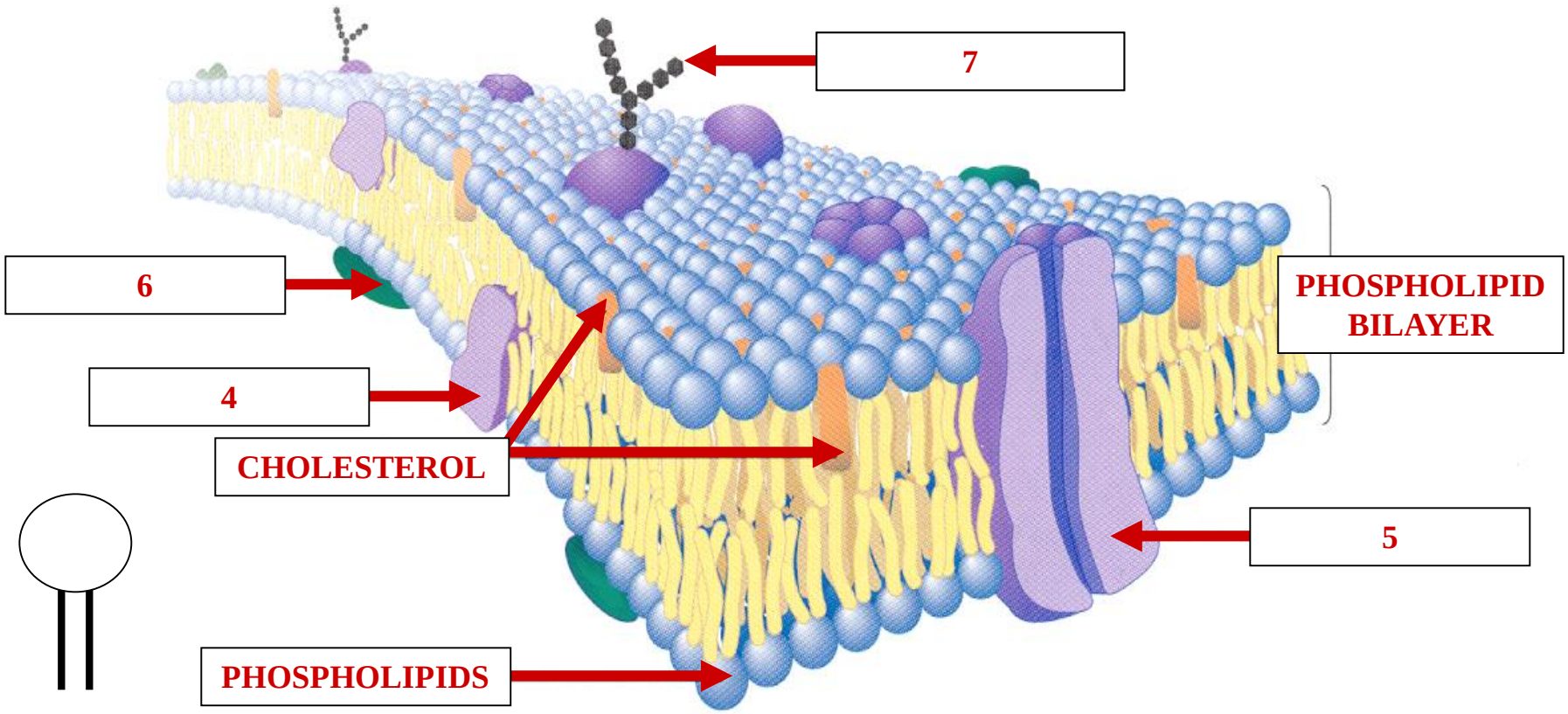

# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE SUMMARY




# FLUID MOSAIC MODEL

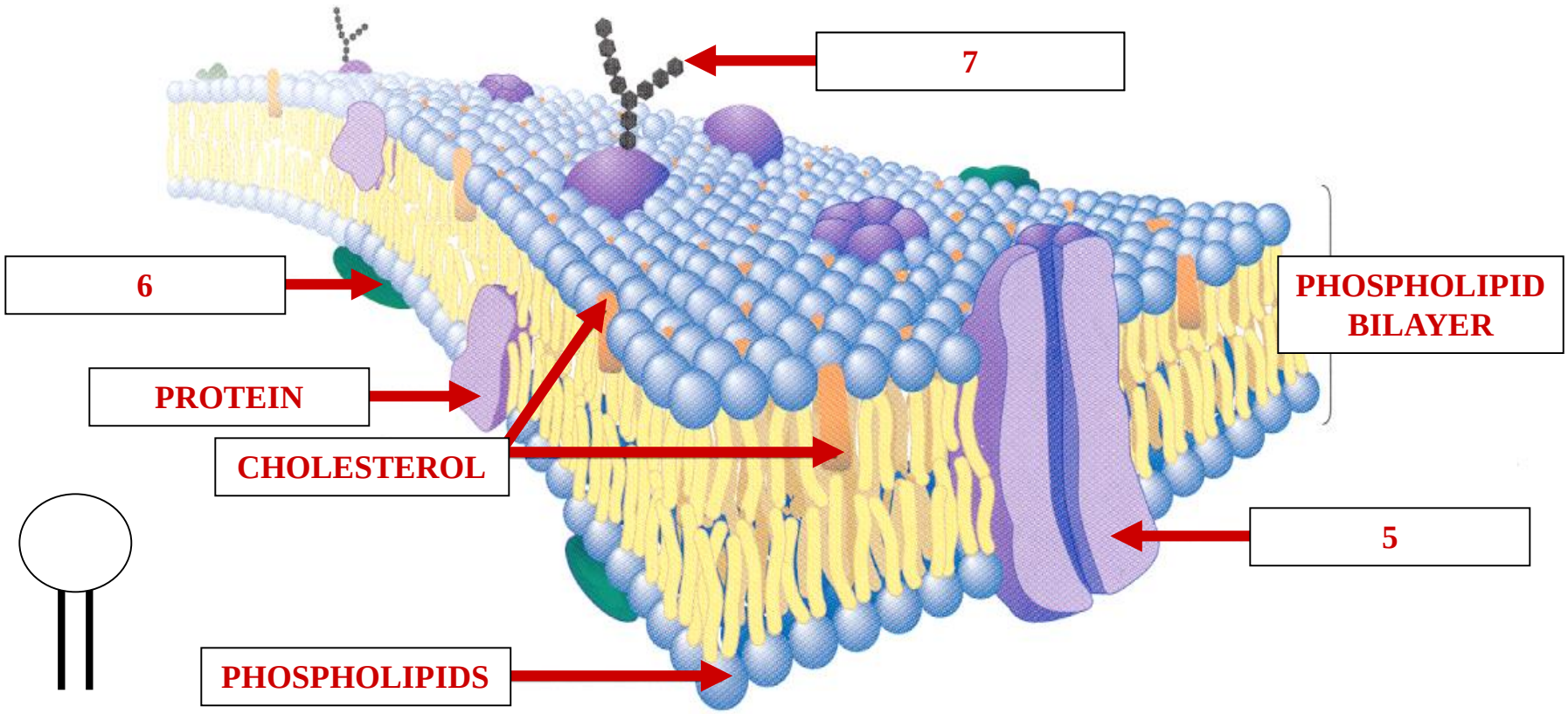
# MEMBRANE STRUCTURE SUMMARY




# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE SUMMARY

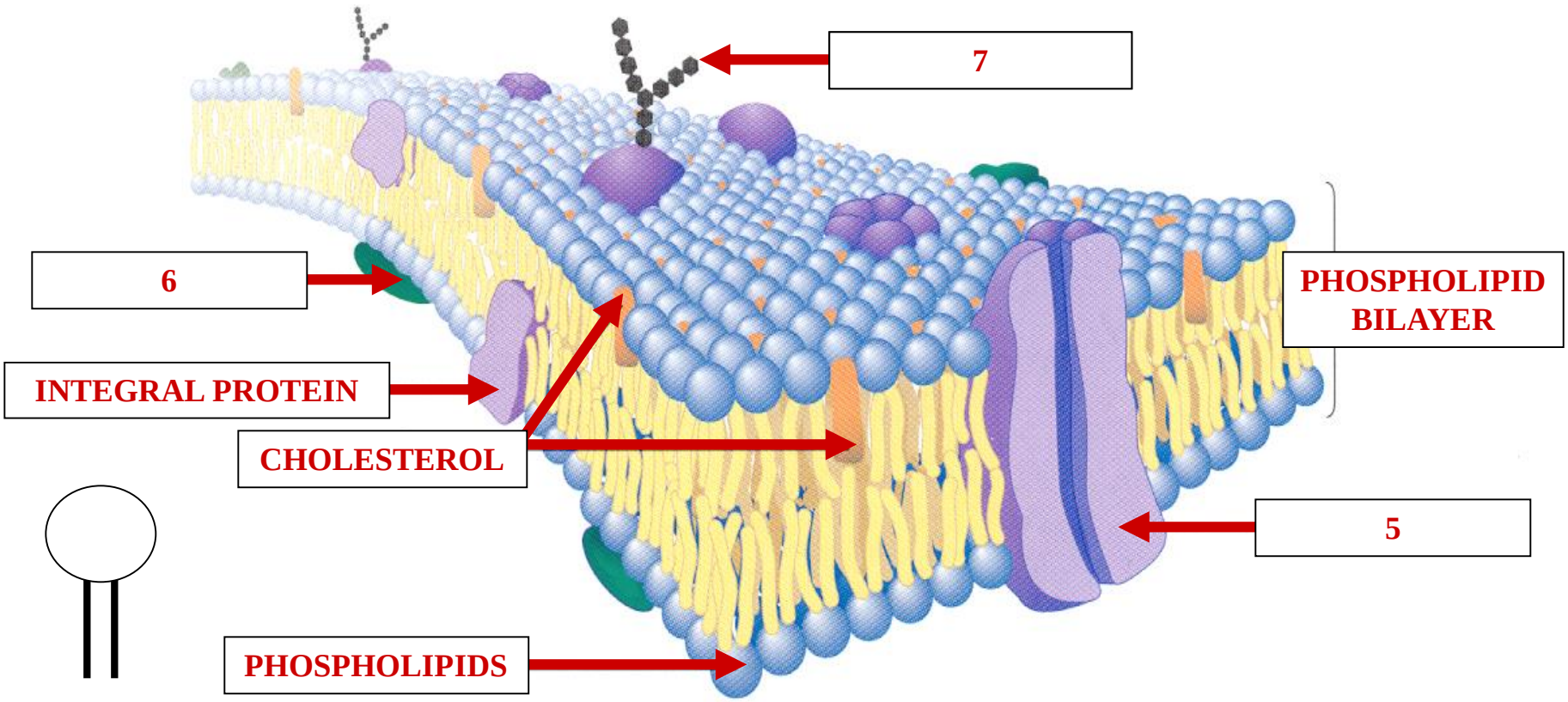
¿ IP




# FLUID MOSAIC MODEL

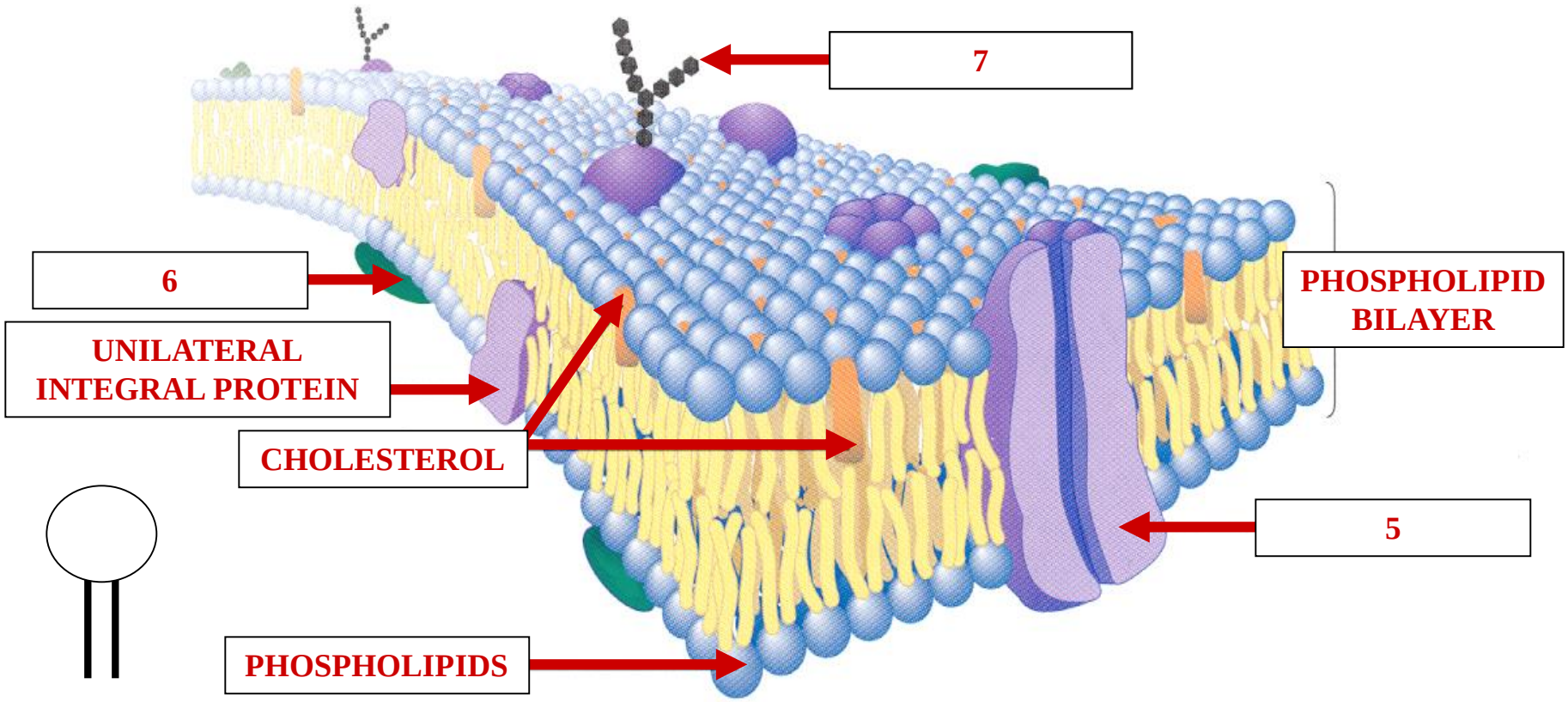
# MEMBRANE STRUCTURE SUMMARY

¿ UL



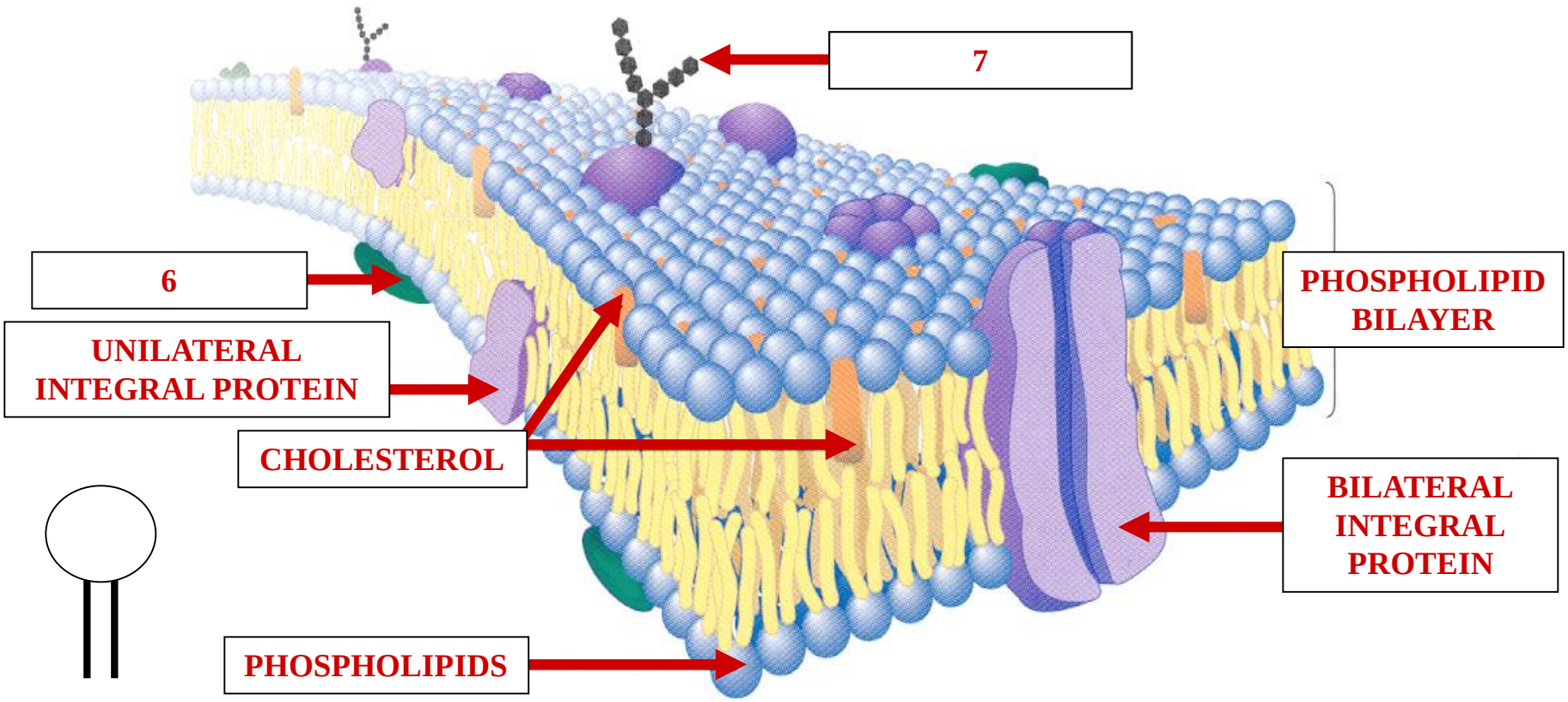

# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE SUMMARY



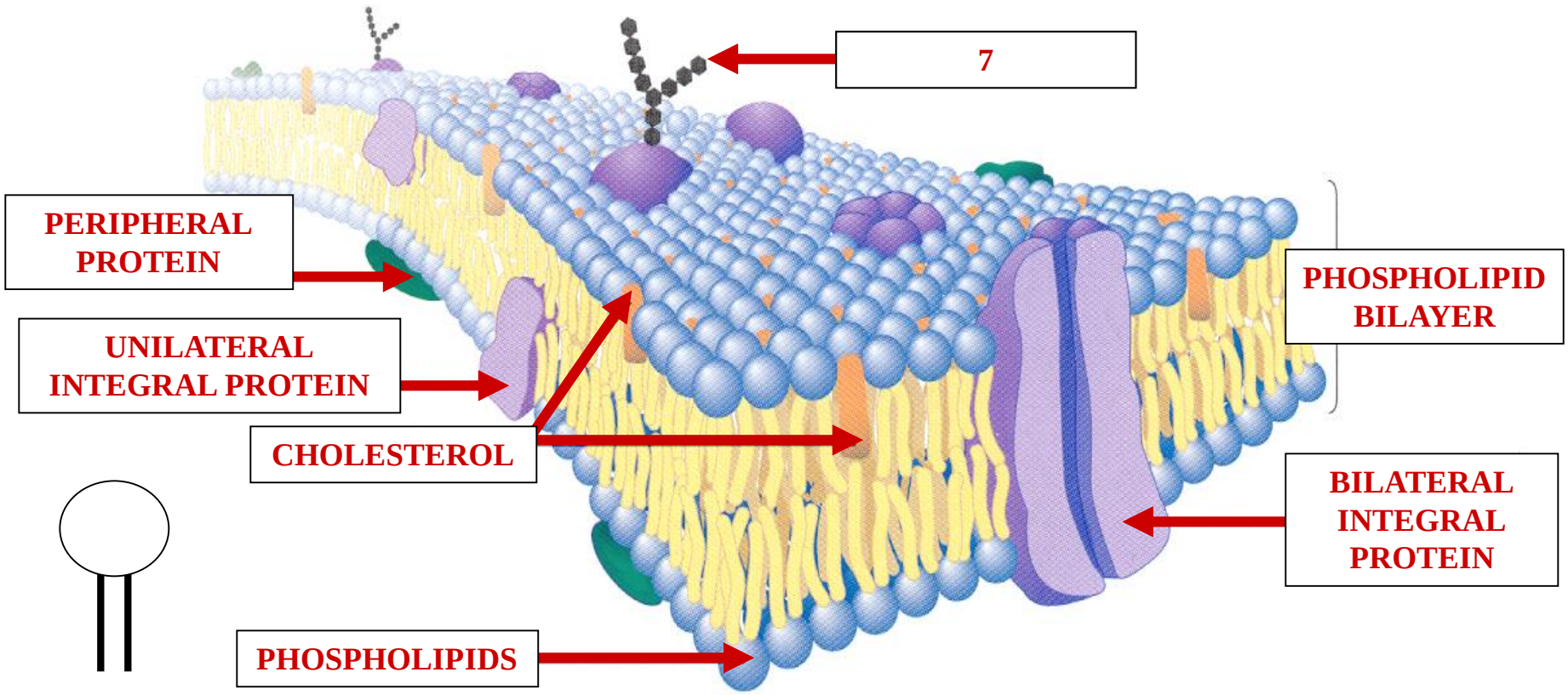

# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE SUMMARY



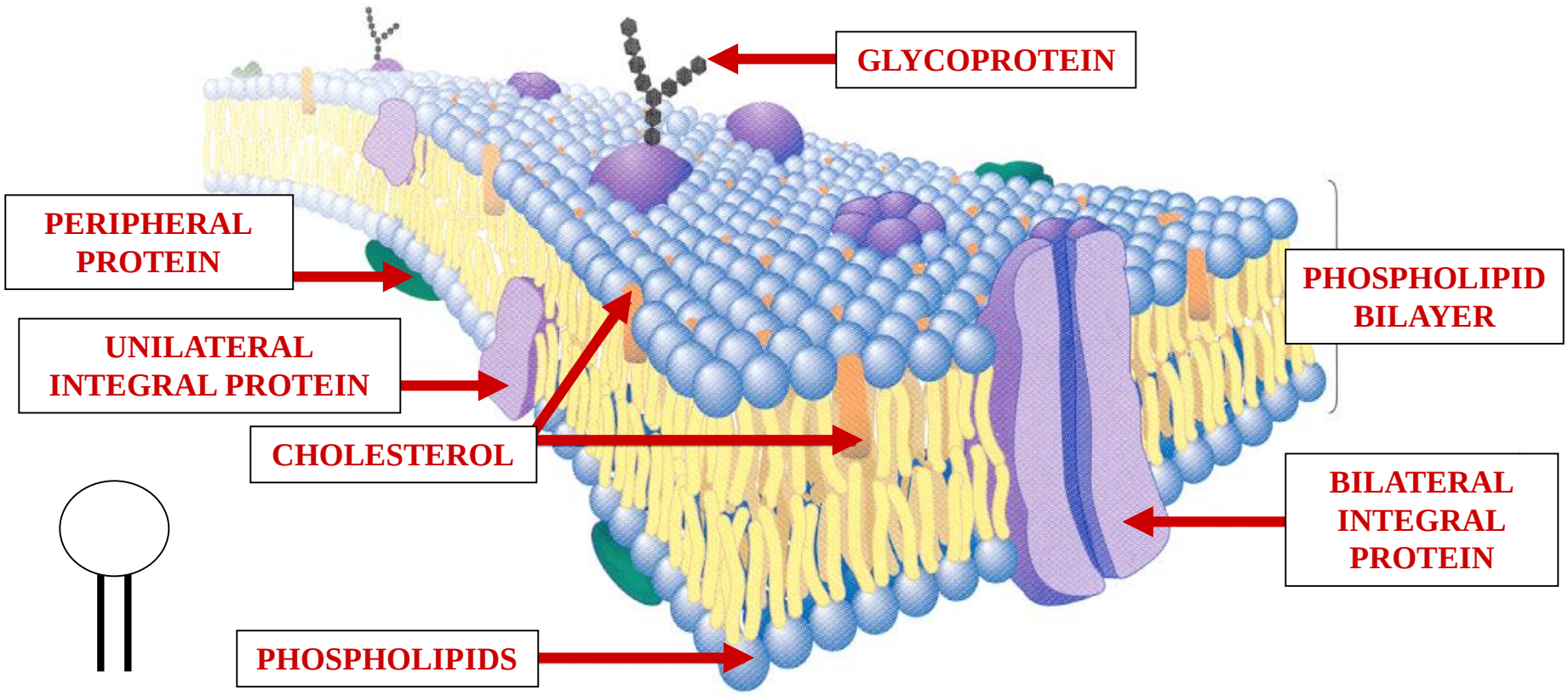

# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE SUMMARY



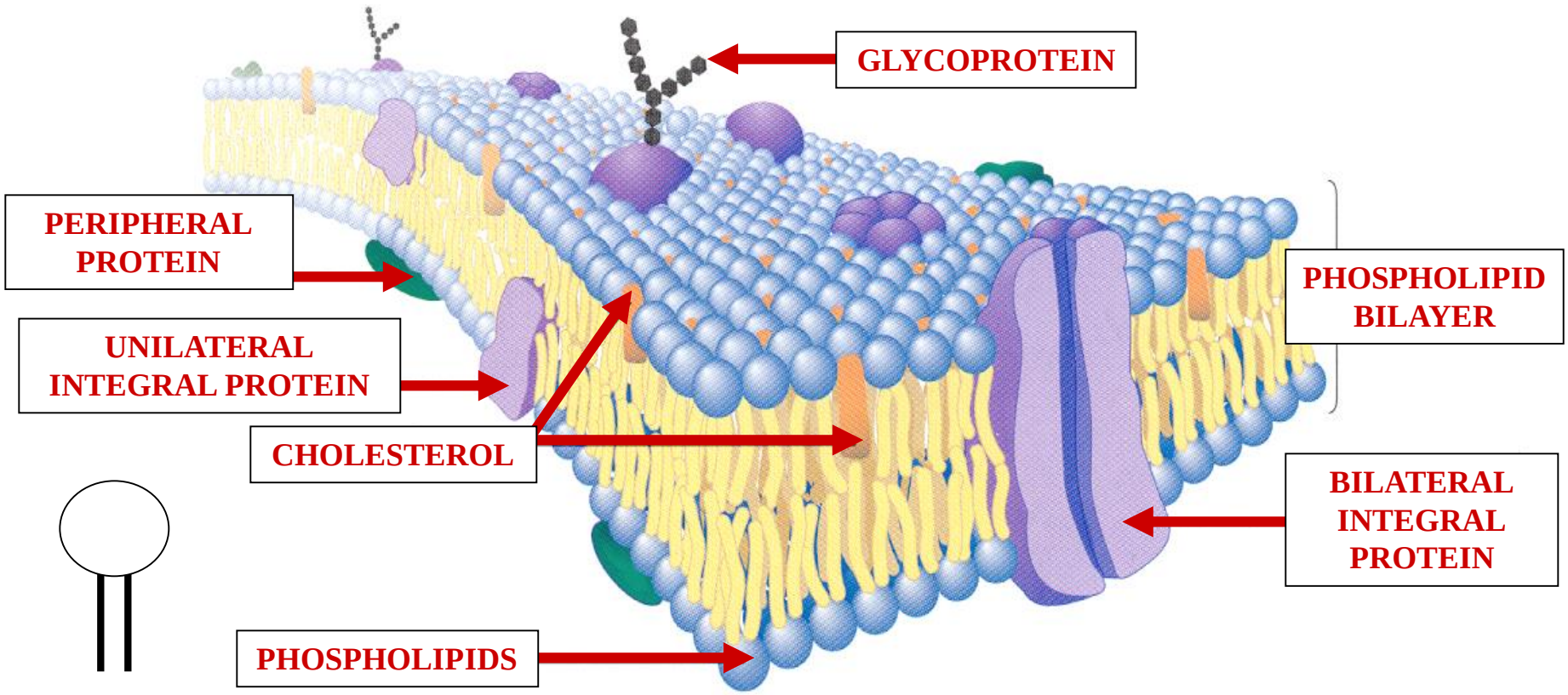

# FLUID MOSAIC MODEL

# MEMBRANE STRUCTURE SUMMARY




# FLUID MOSAIC MODEL

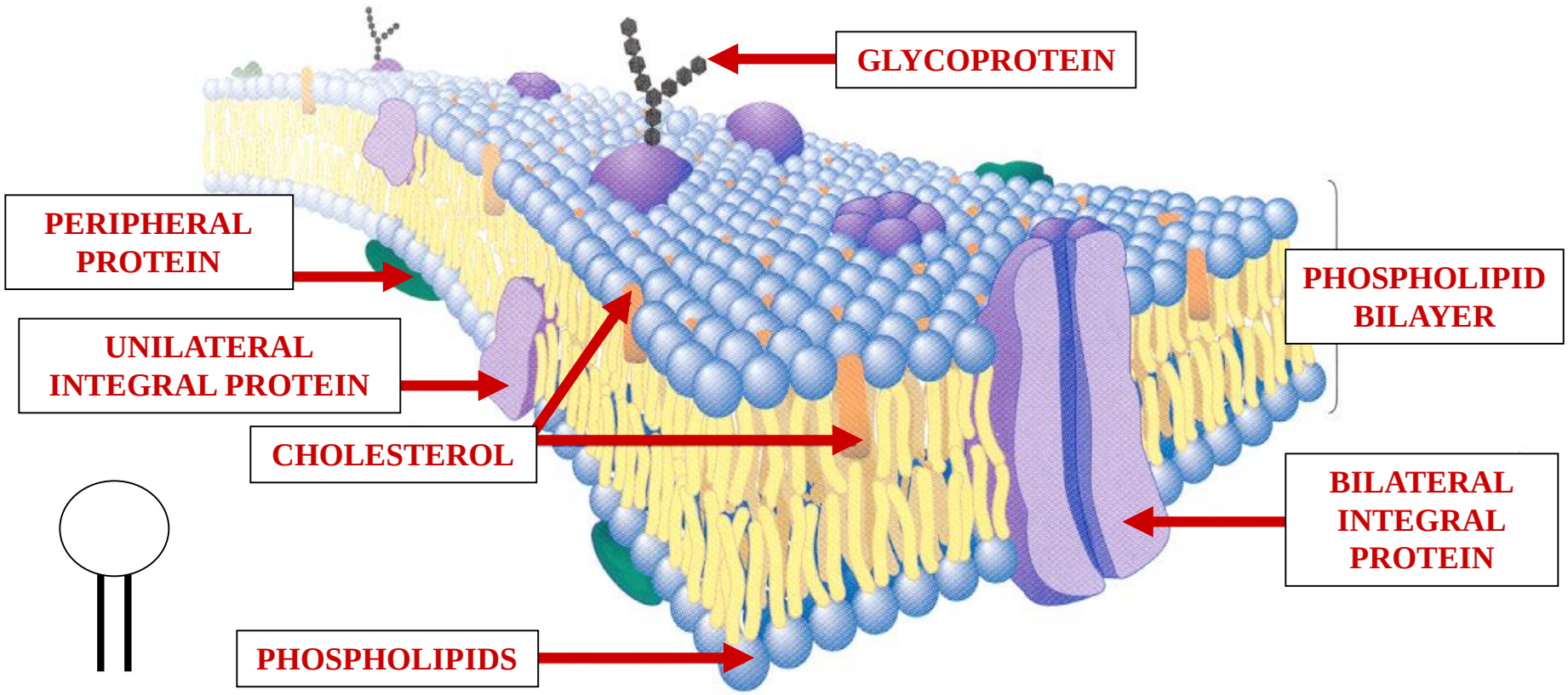
# MEMBRANE STRUCTURE SUMMARY




# FLUID MOSAIC MODEL

**FLUID COMPONENT**

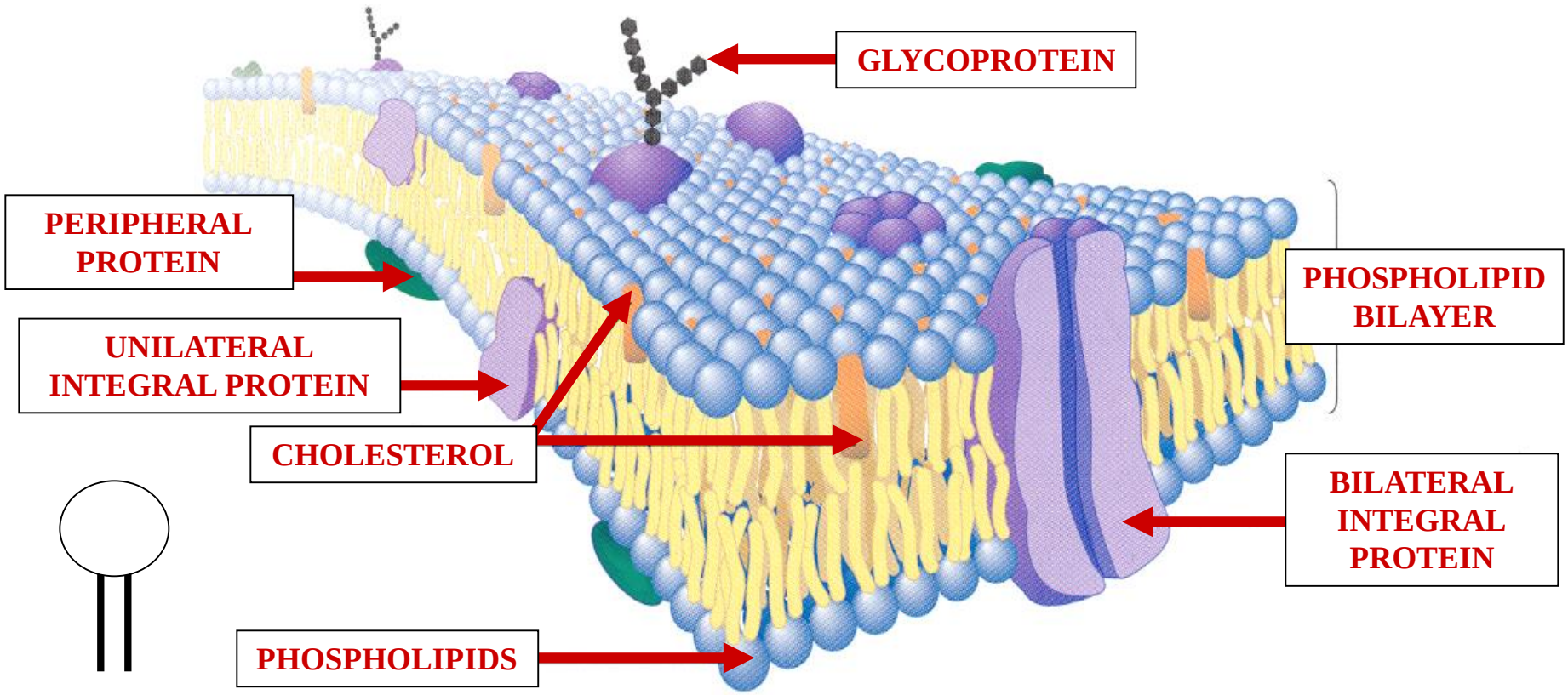
# MEMBRANE STRUCTURE SUMMARY




# FLUID MOSAIC MODEL

**FLUID COMPONENT**: PHOSPHOLIPID BILAYER

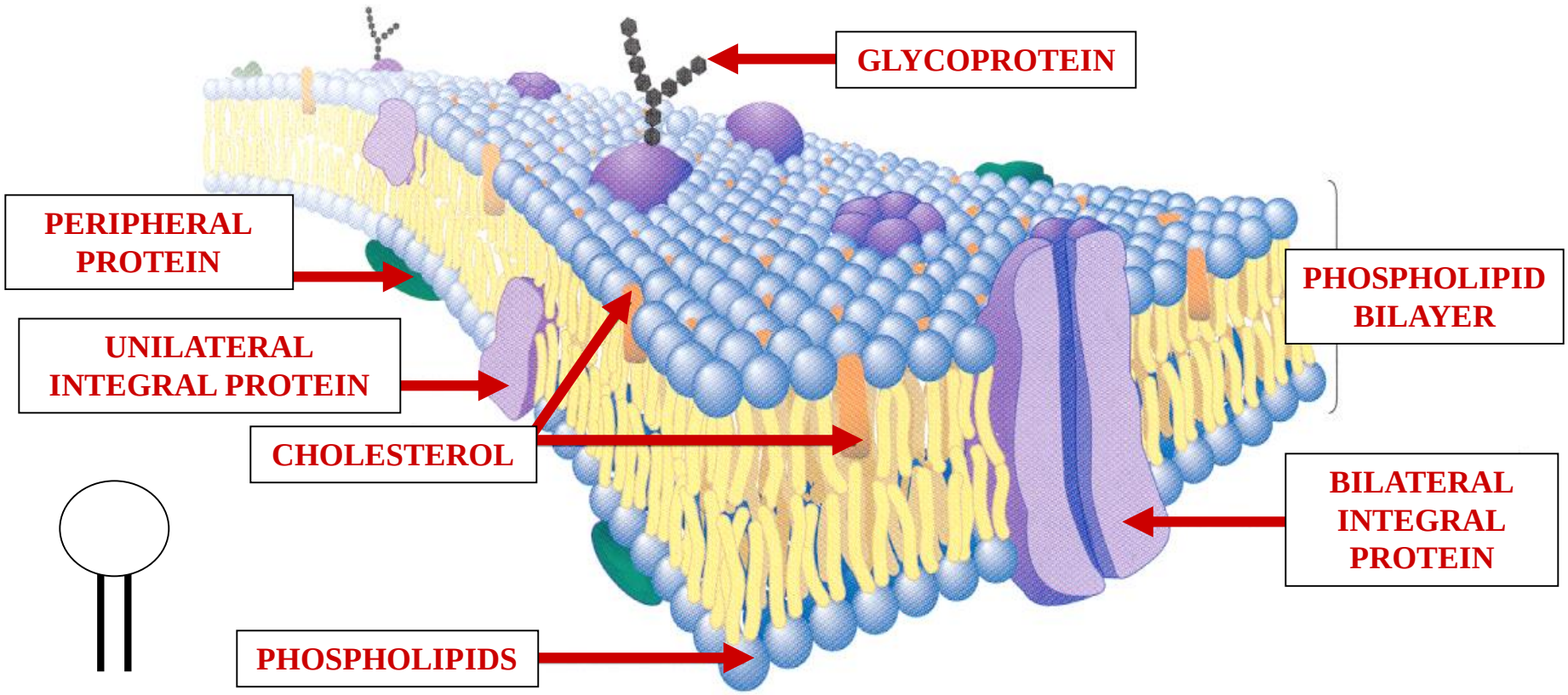
# MEMBRANE STRUCTURE SUMMARY




# FLUID MOSAIC MODEL

**MOSAIC COMPONENT**

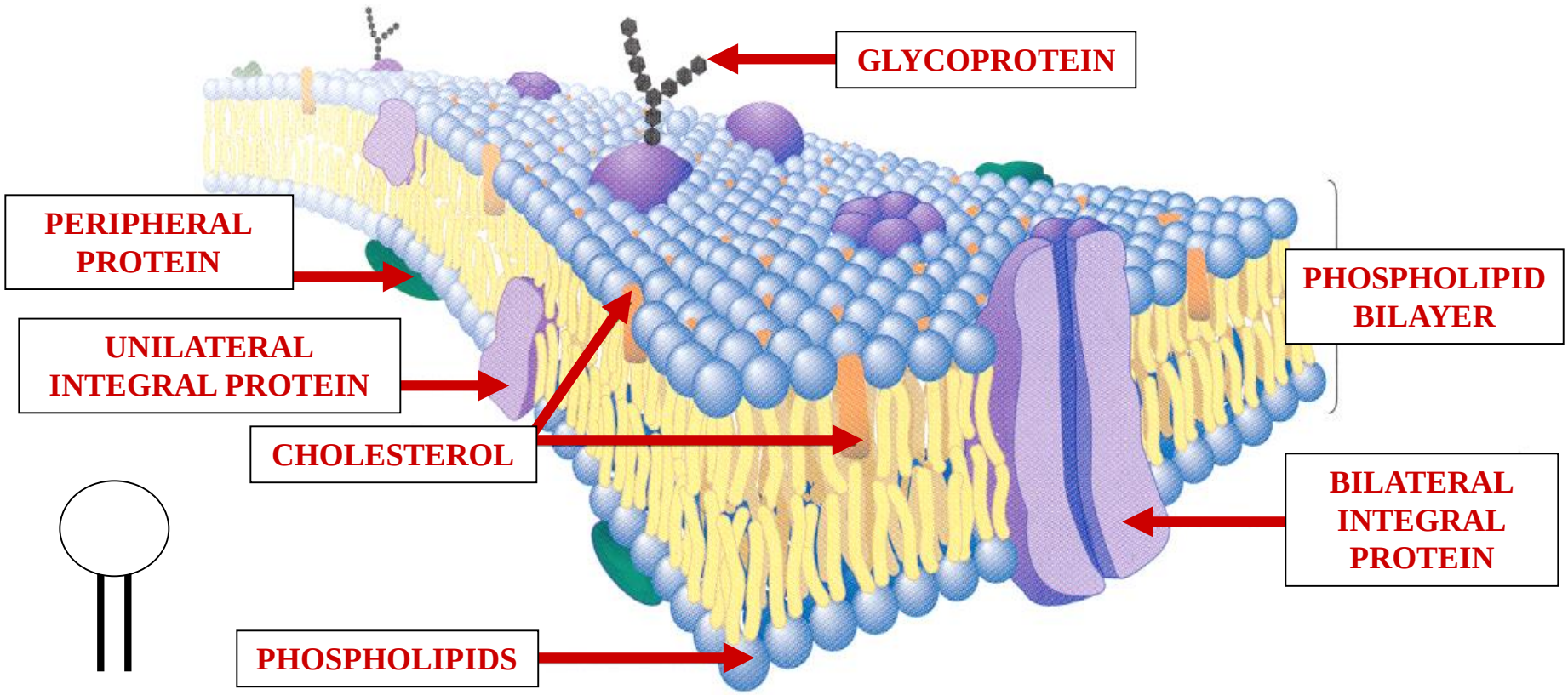
# MEMBRANE STRUCTURE SUMMARY



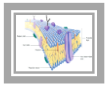

# FLUID MOSAIC MODEL

**MOSAIC COMPONENT**: CHOLESTEROL, PROTEINS, GLYCOPROTEINS

# MEMBRANE STRUCTURE SUMMARY

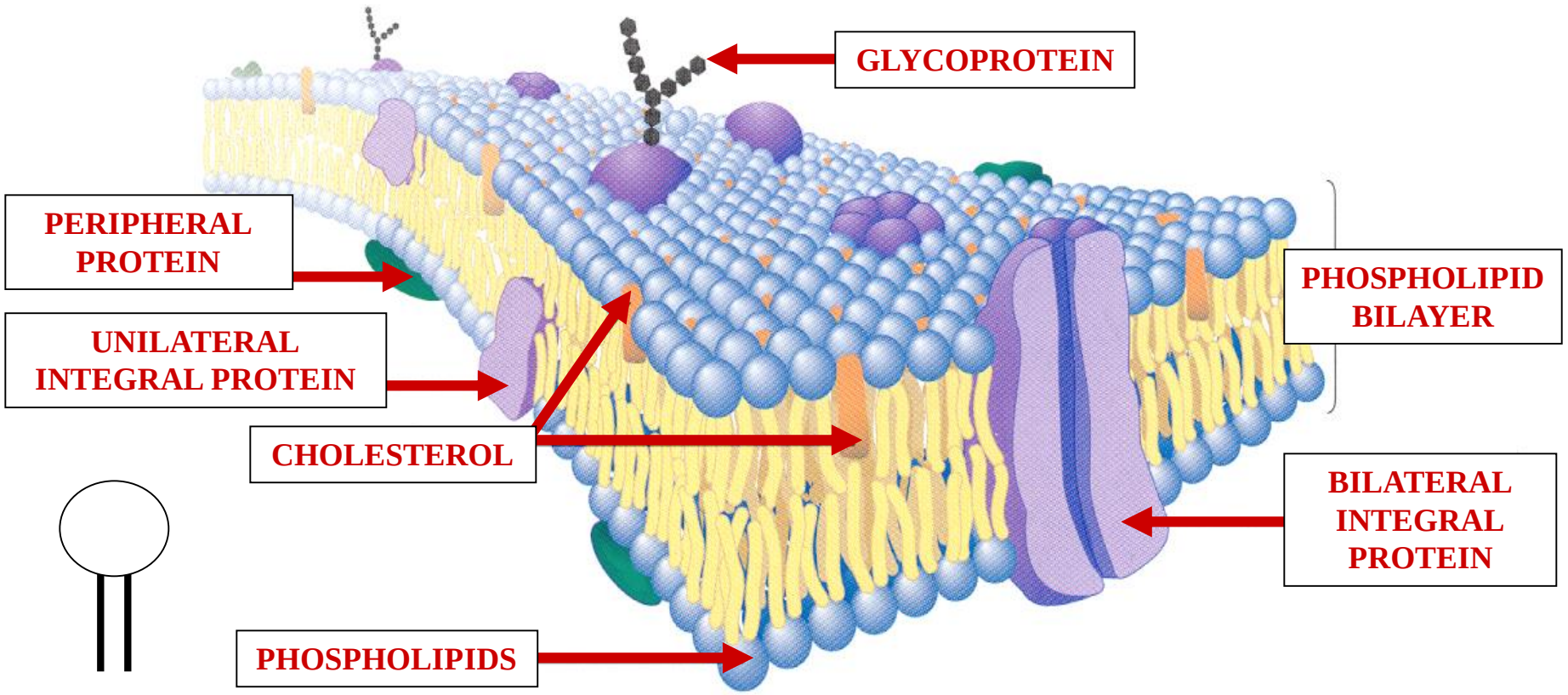



# FLUID MOSAIC MODEL



# MEMBRANE FUNCTION

# MEMBRANE FUNCTION

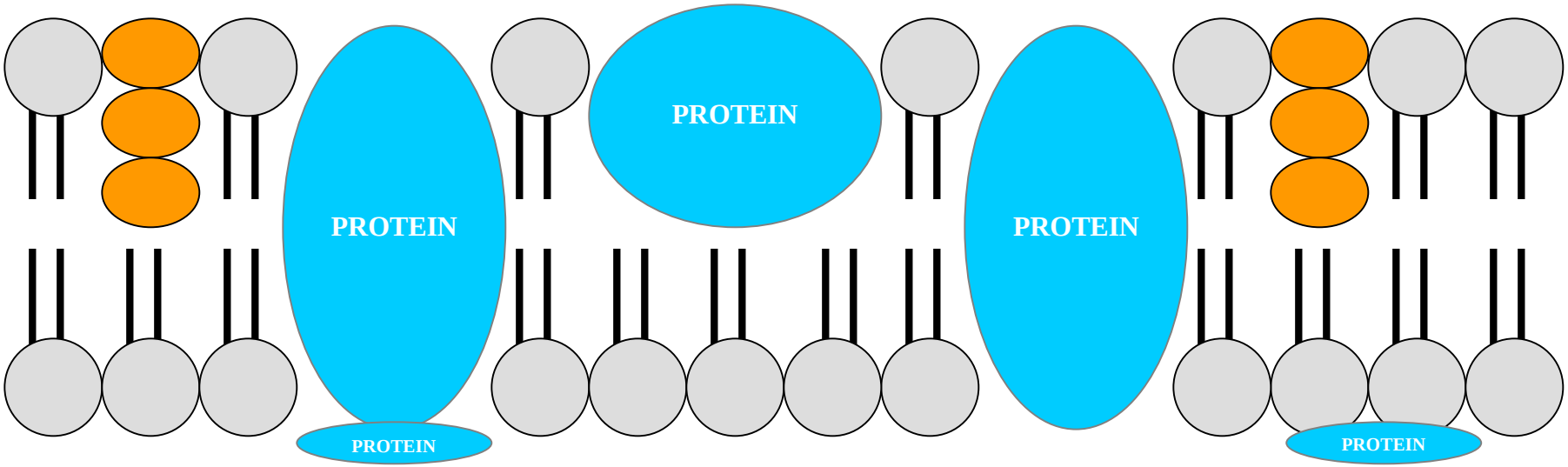



# FLUID MOSAIC MODEL

# MEMBRANE FUNCTION

D

WATER WATER WATER

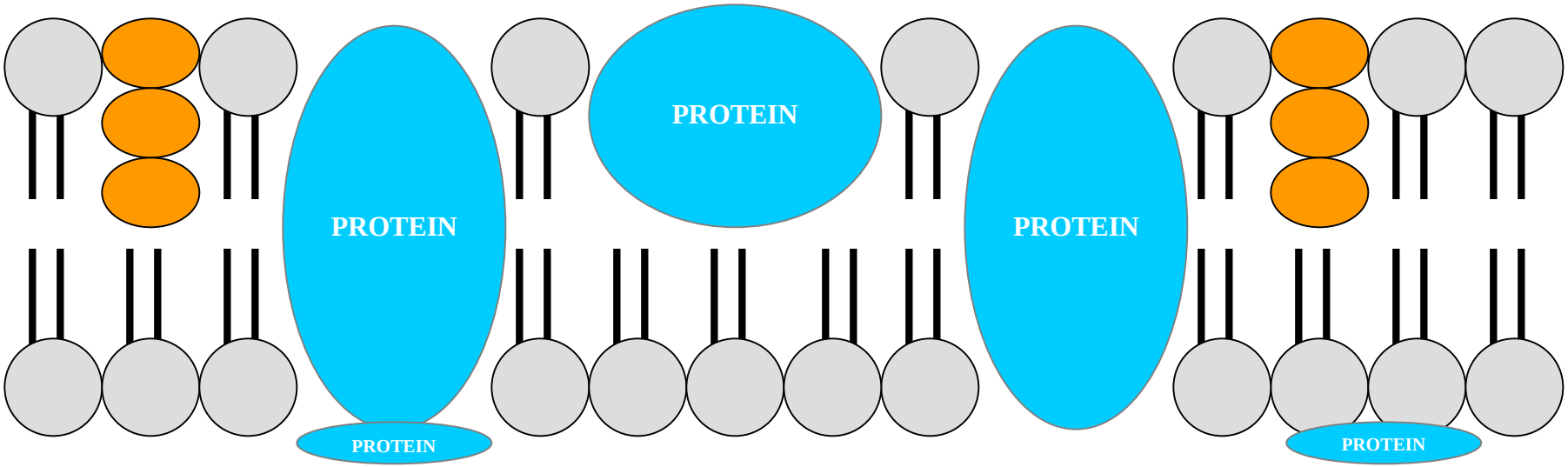



**PROTEINS**
**PRINCIPLE FUNCTIONAL**
**MEMBRANE COMPONENT**

# MEMBRANE FUNCTION

D

WATER WATER WATER

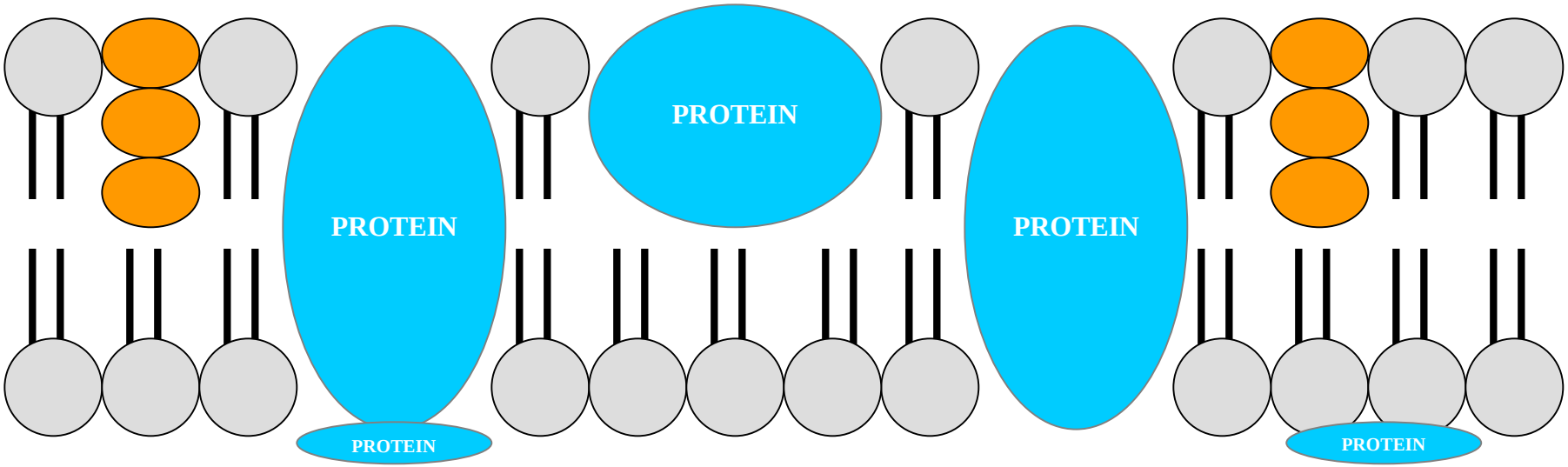



**DIFFERENT MEMBRANES**

# MEMBRANE FUNCTION

D

WATER WATER WATER

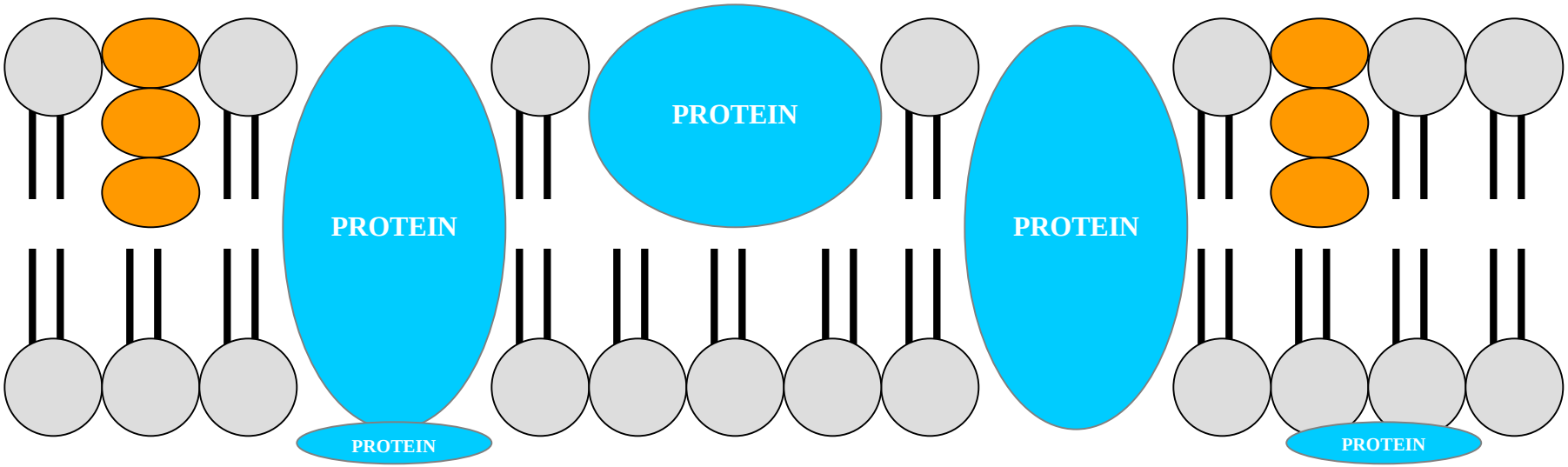



**DIFFERENT MEMBRANES**
**DIFFERENT PROTEINS**

EG

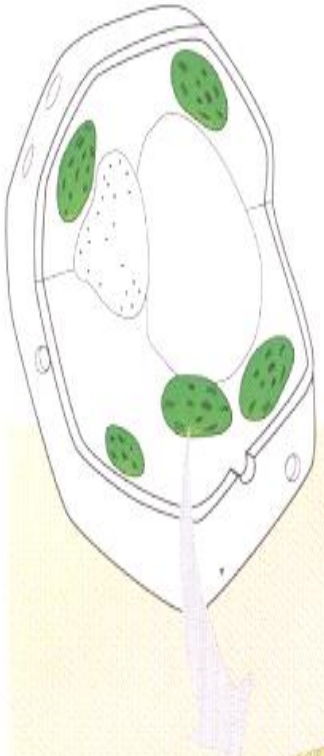
# MEMBRANE FUNCTION

WATER WATER WATER



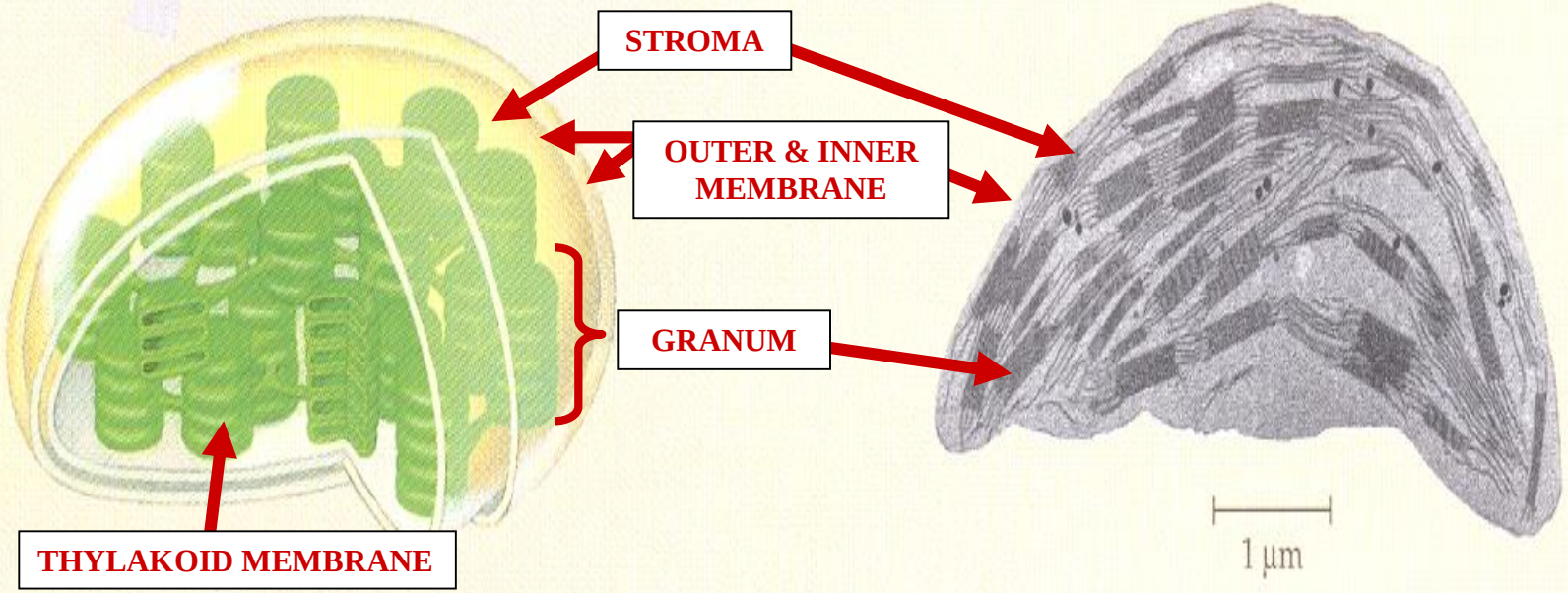

**DIFFERENT MEMBRANES**
**DIFFERENT PROTEINS**
**DIFFERENT FUNCTIONS**

# MEMBRANE FUNCTION EXAMPLE

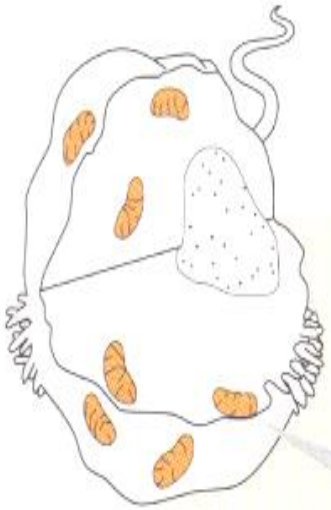


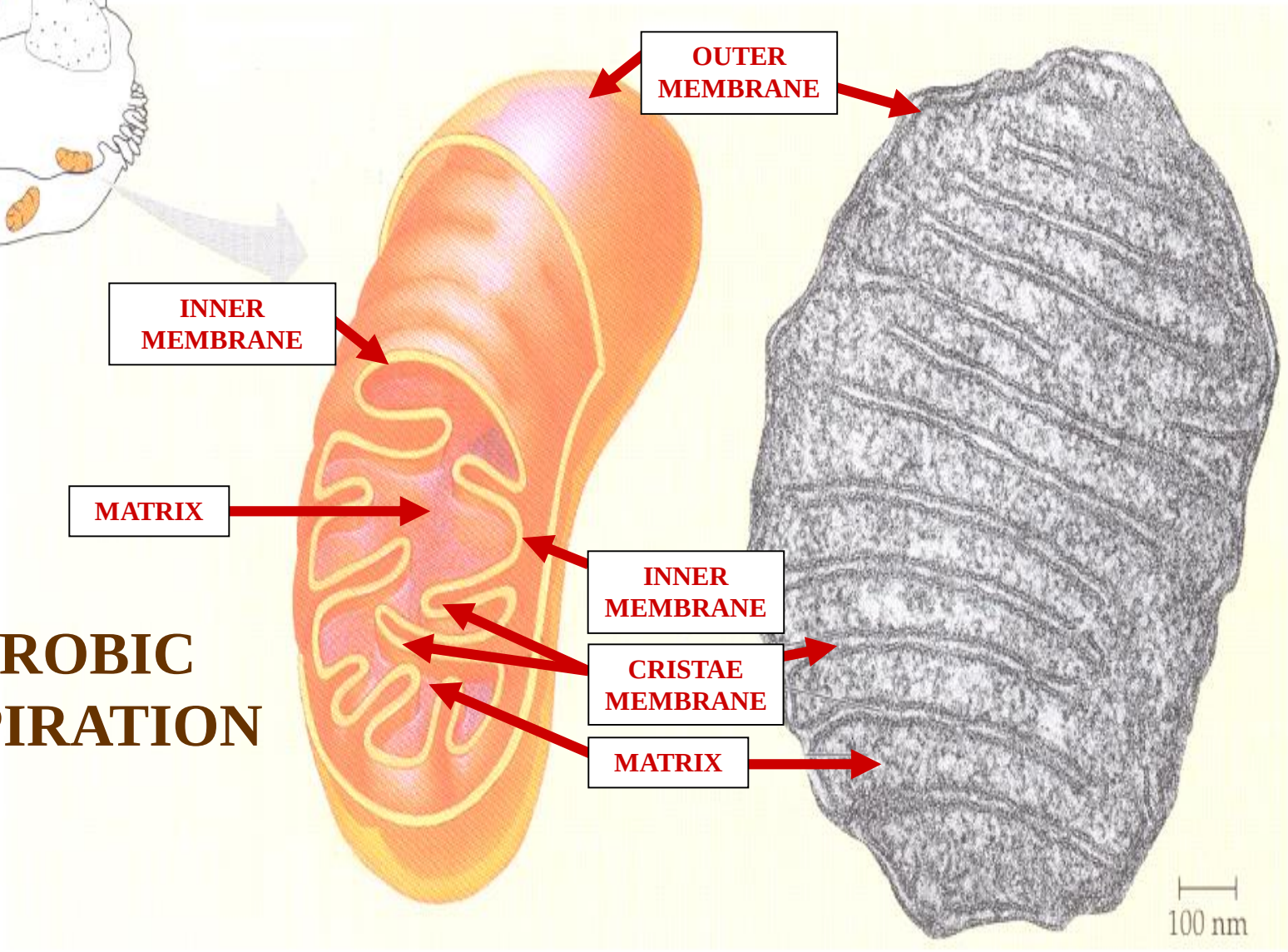
# CHLOROPLAST
# THYLAKOID

## PHOTOSYNTHESIS



# MITOCHONDRION
# CRISTAE






## AEROBIC RESPIRATION

E

# MEMBRANE PROTEIN FUNCTIONS

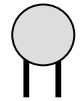
# MEMBRANE PROTEIN ENZYMATIC FUNCTION

# ENZYMATIC FUNCTION

## CATALYST

# ENZYMATIC FUNCTION

# ENZYMATIC FUNCTION



## CATALYST

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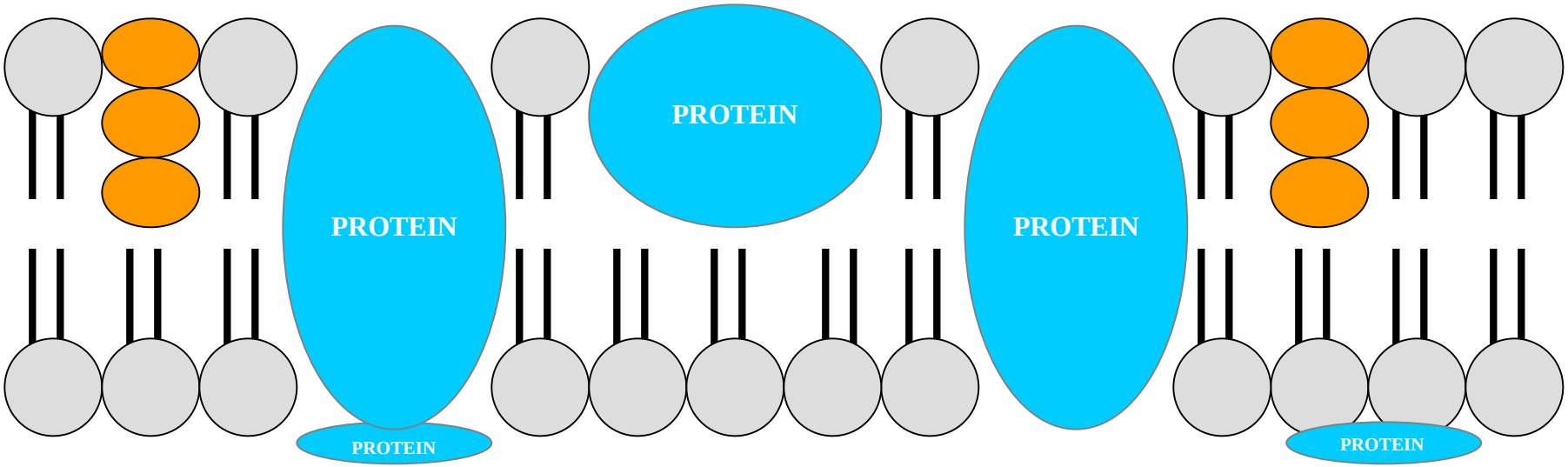
## INTEGRAL & PERIPHERAL PROTEINS

# ENZYMATIC FUNCTION

# BIOLOGICAL MEMBRANE PROTEINS

IP

WATER WATER WATER

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# BIOLOGICAL MEMBRANE PROTEINS

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# INTEGRAL PROTEINS

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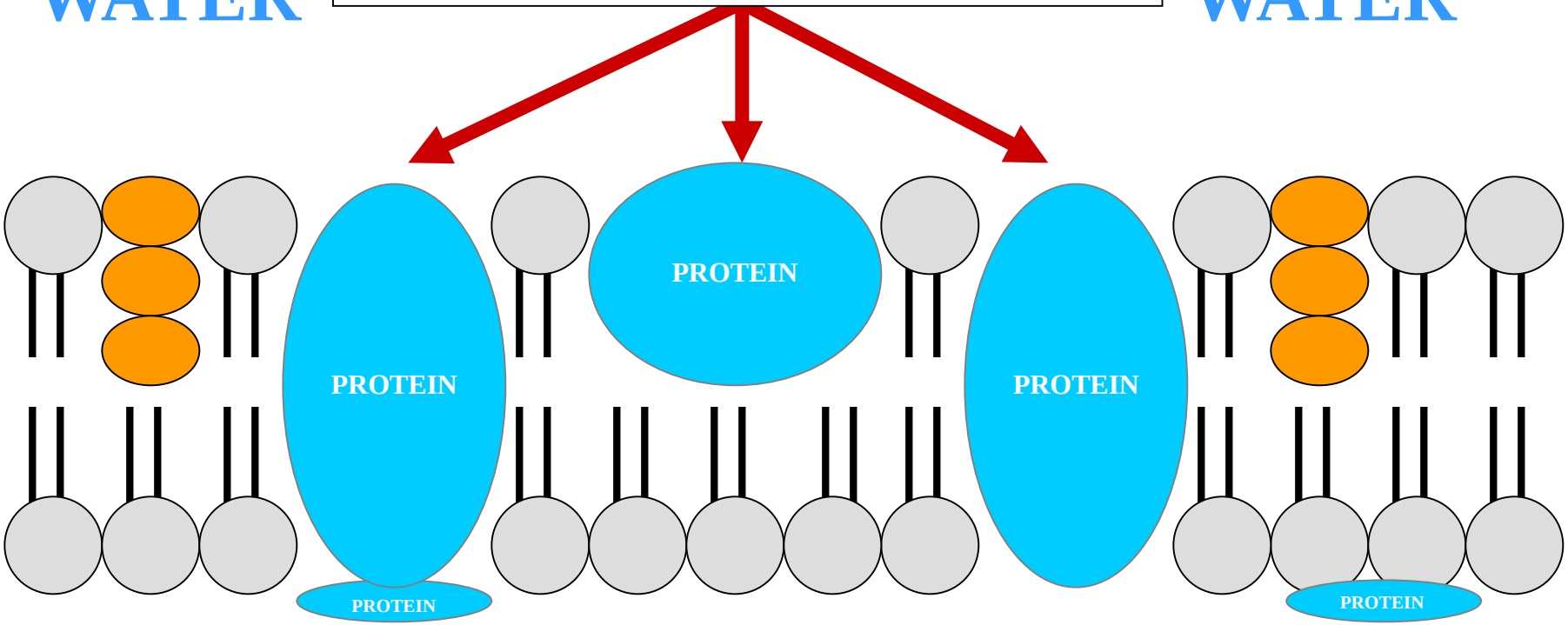


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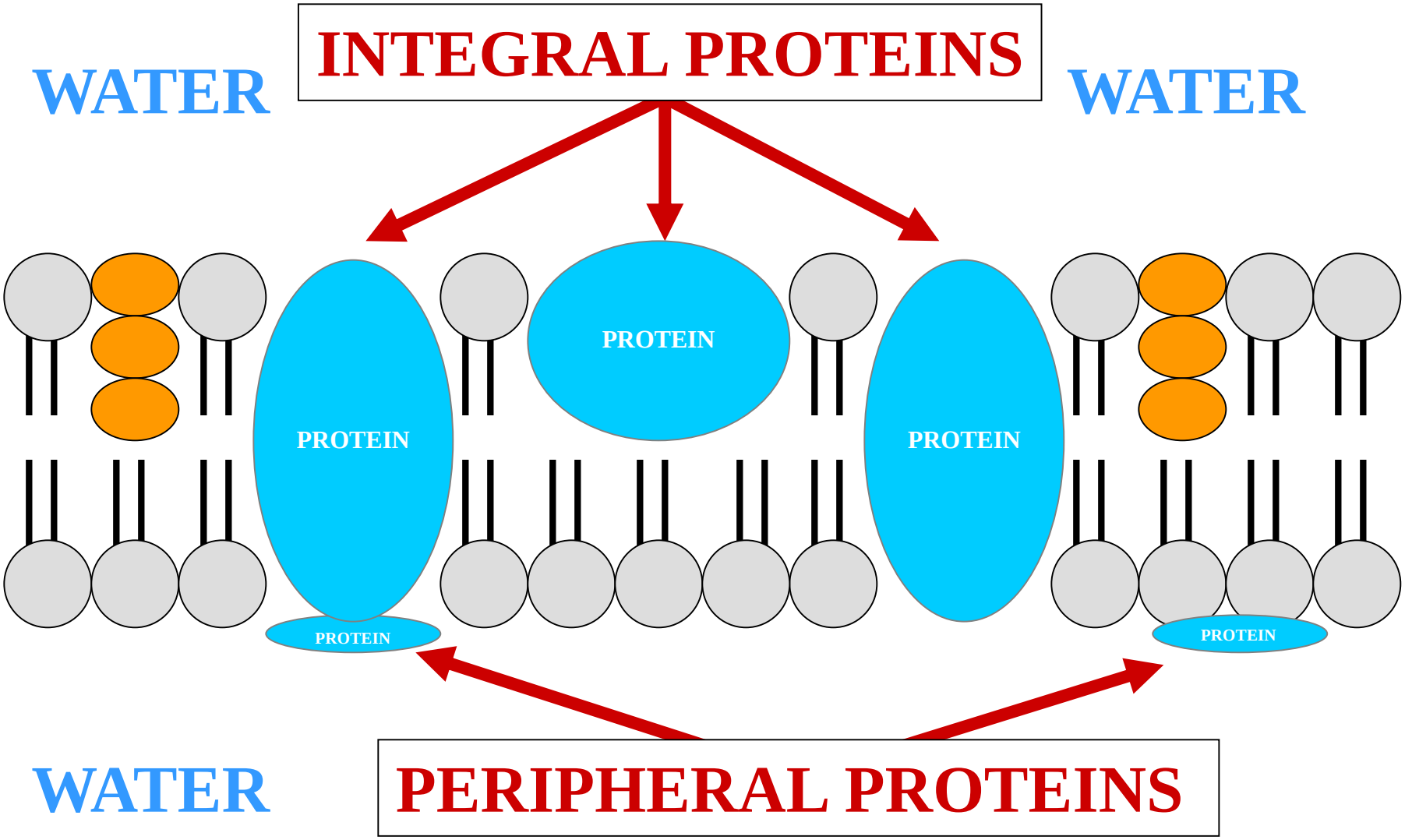
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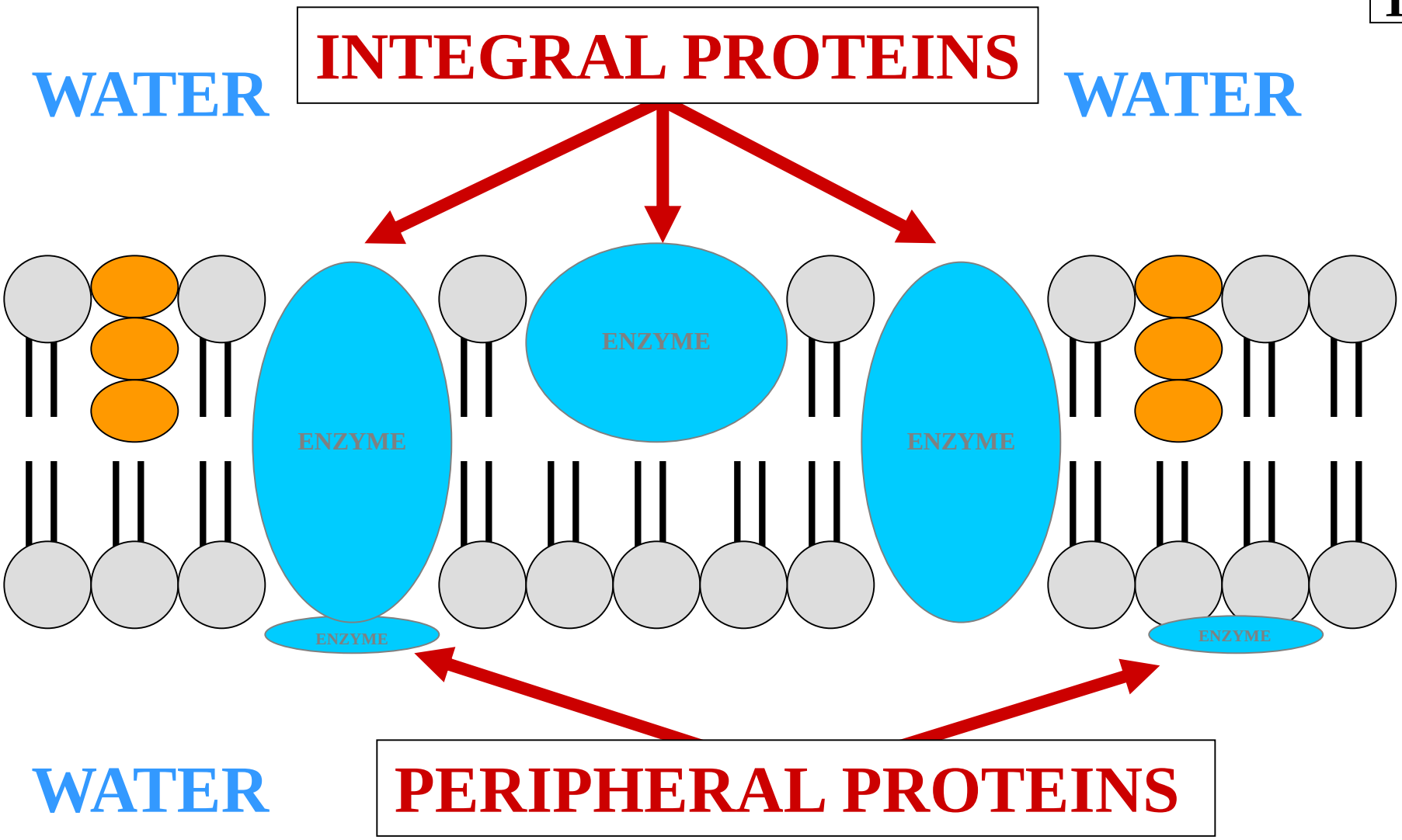
PERIPHERAL PROTEINS


INTEGRAL PROTEINS
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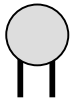
PERIPHERAL PROTEINS

# MEMBRANE PROTEIN TRANSPORT FUNCTION

# TRANSPORT FUNCTION



**MEMBRANE PROTEINS MOVE POLAR SOLUTES ACROSS MEMBRANE**

TRANSPORT FUNCTION

# BIOLOGICAL MEMBRANE PROTEINS

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IP

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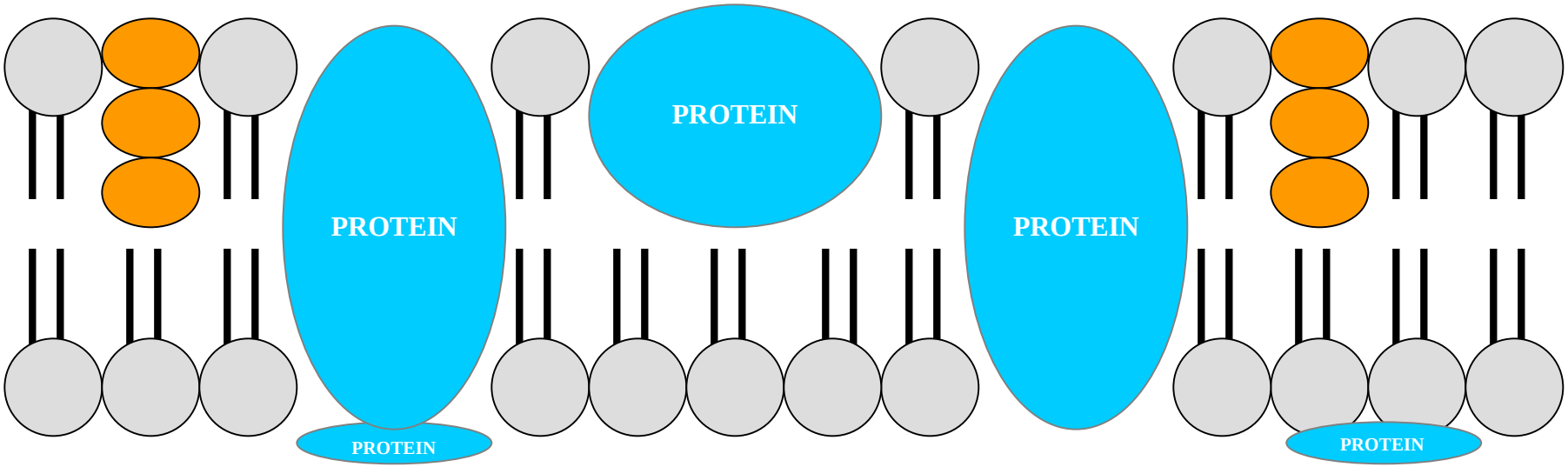


WATER WATER WATER

BIOLOGICAL MEMBRANE PROTEINS

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# INTEGRAL PROTEINS

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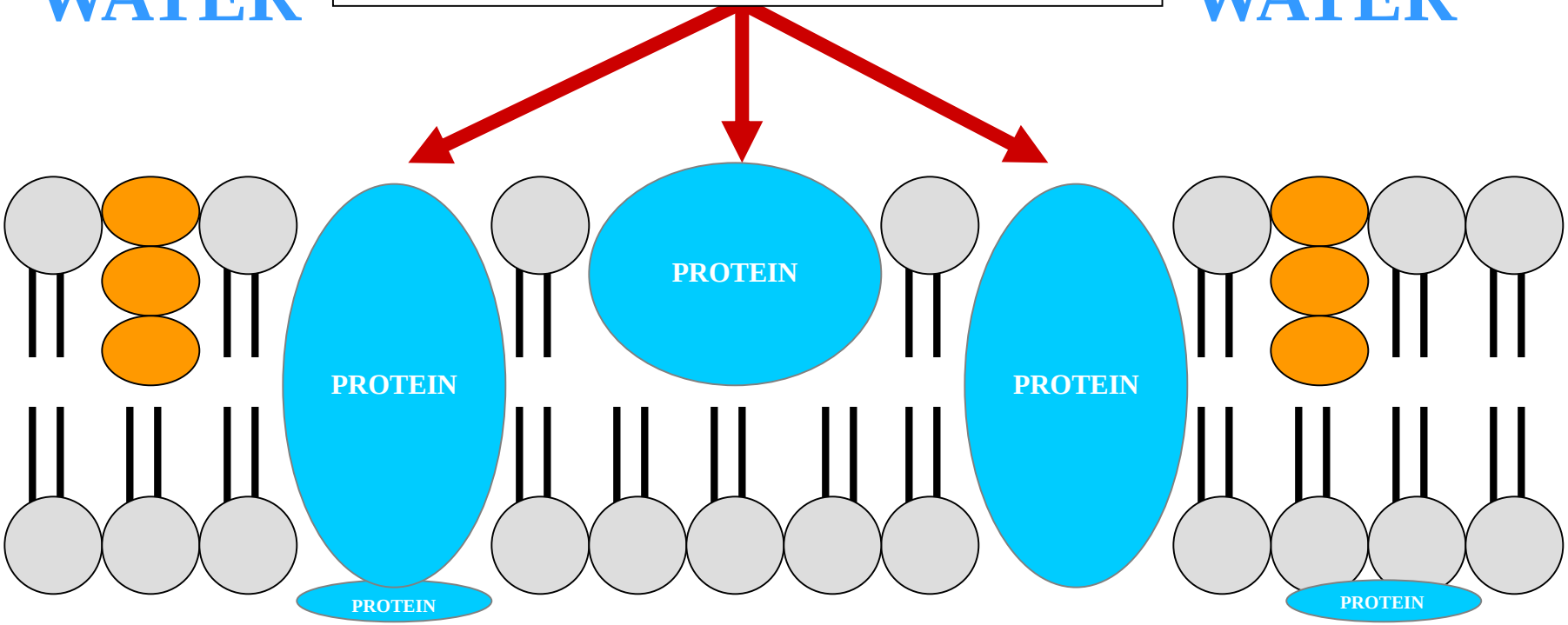


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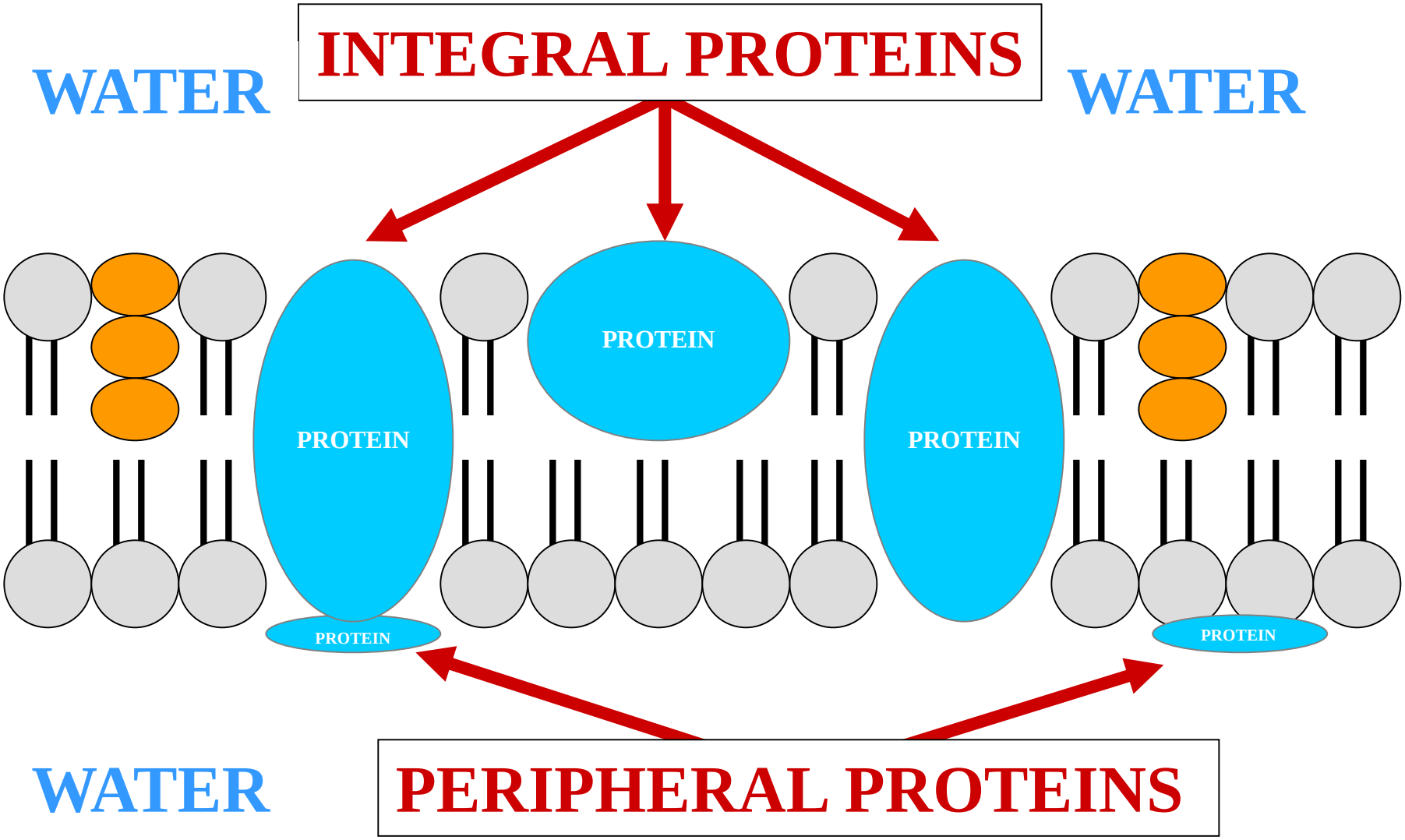
INTEGRAL PROTEINS
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PERIPHERAL PROTEINS

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# INTEGRAL PROTEINS

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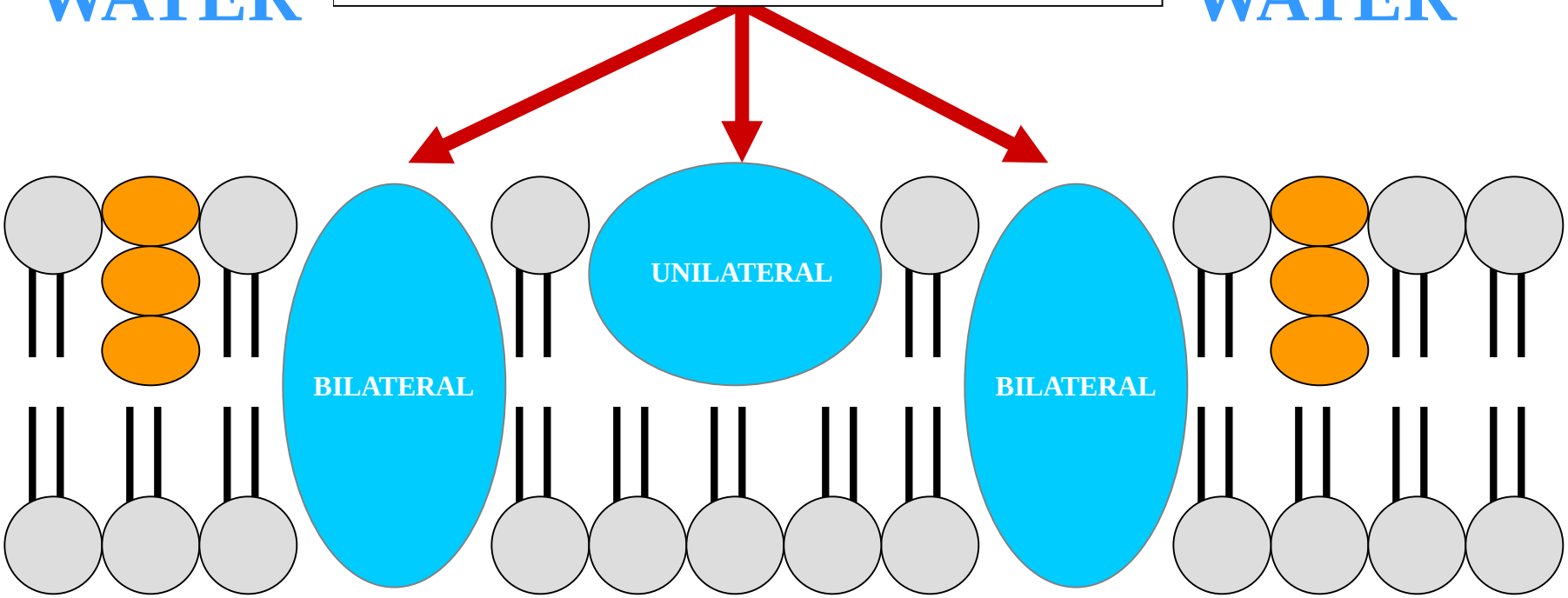


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# BILATERAL INTEGRAL PROTEINS

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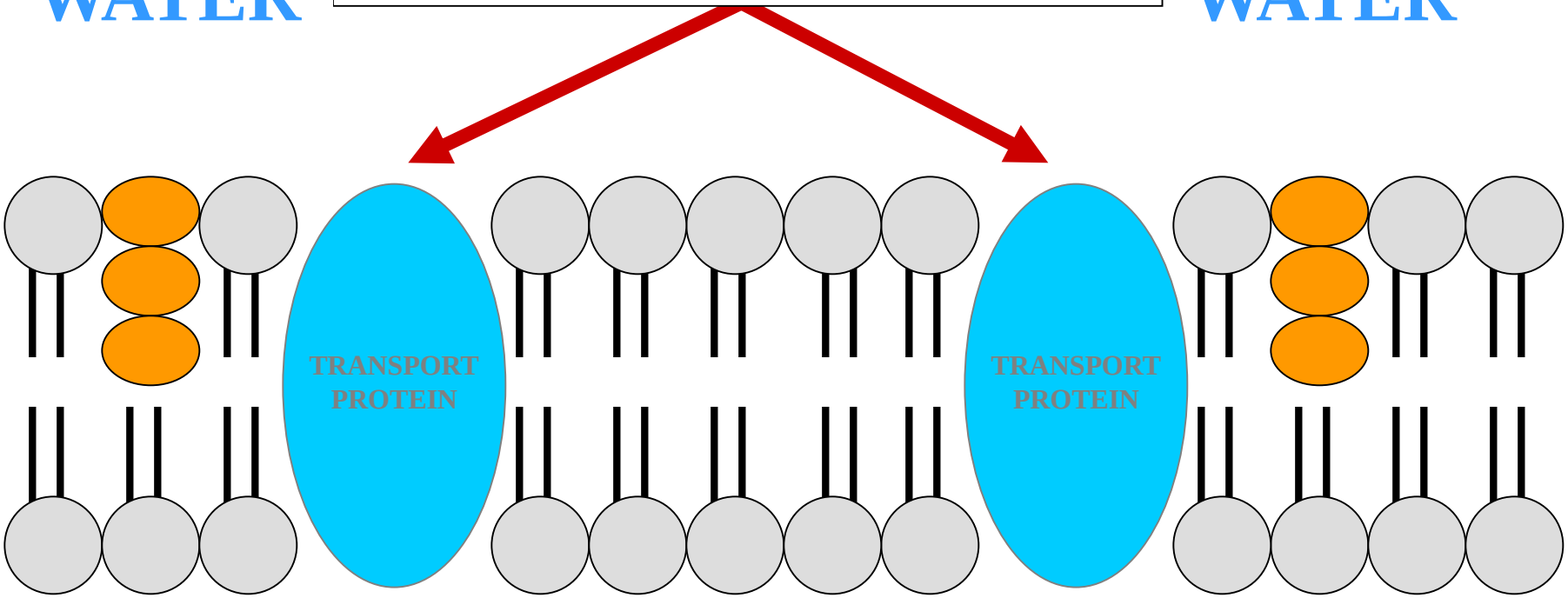


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**BILATERAL PROTEINS SPAN MEMBRANE**

# TRANSPORT FUNCTION

## BILATERAL INTEGRAL PROTEINS MOVE POLAR SOLUTES ACROSS MEMBRANE

TRANSPORT FUNCTION

S

# MEMBRANE PERMEABILITY

# SELECTIVELY PERMEABLE

# SELECTIVELY PERMEABLE

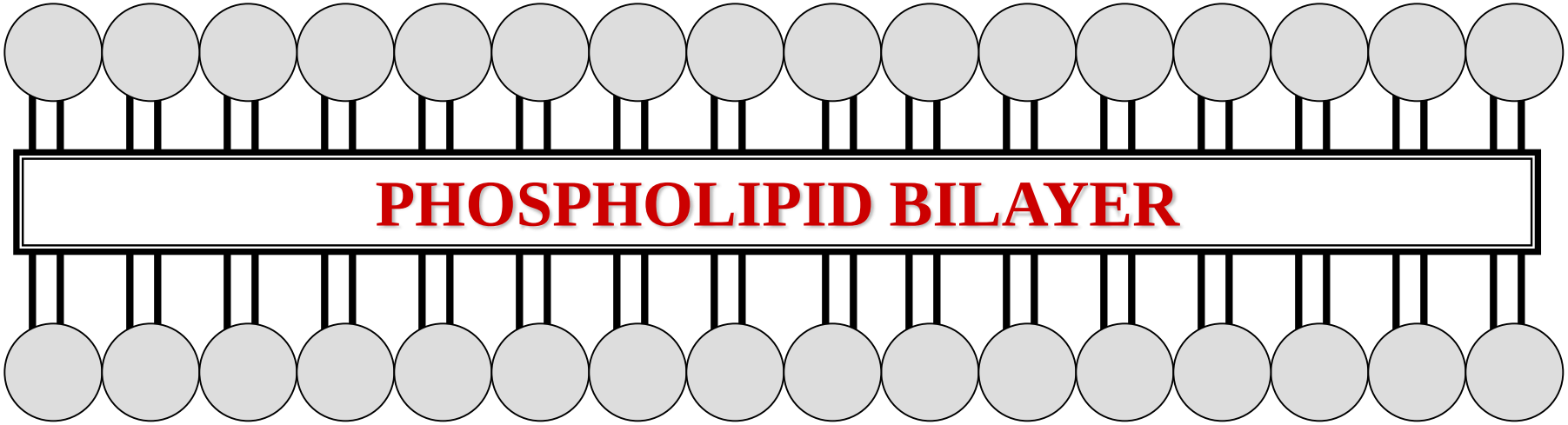
# BIO-MEMBRANE REGULATES PASSAGE

# SELECTIVELY PERMEABLE

# PHOSPHOLIPID BILAYER PERMEABILITY

WATER WATER WATER

WATER WATER WATER

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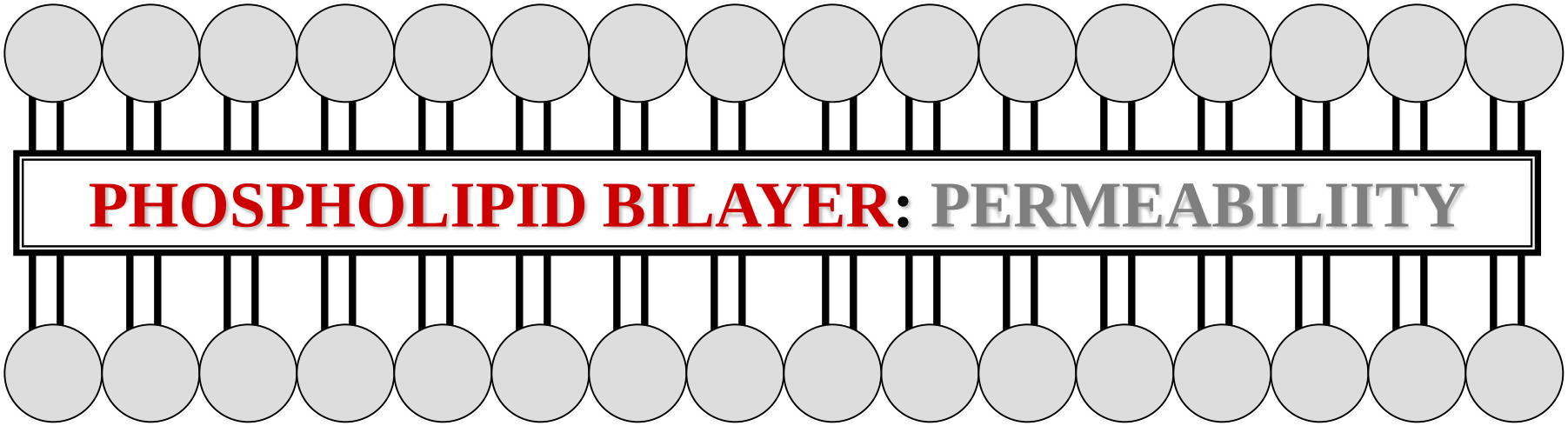


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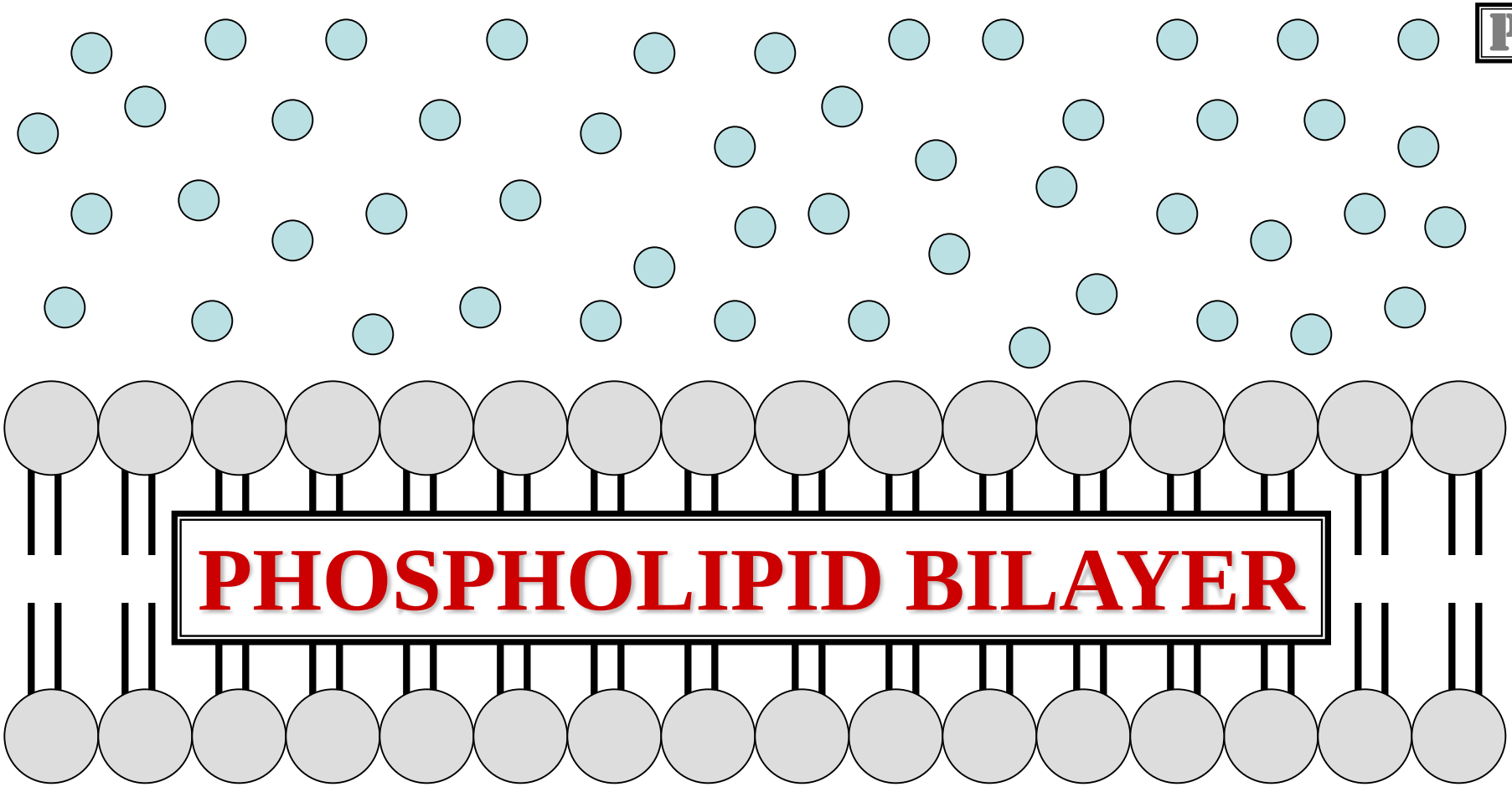
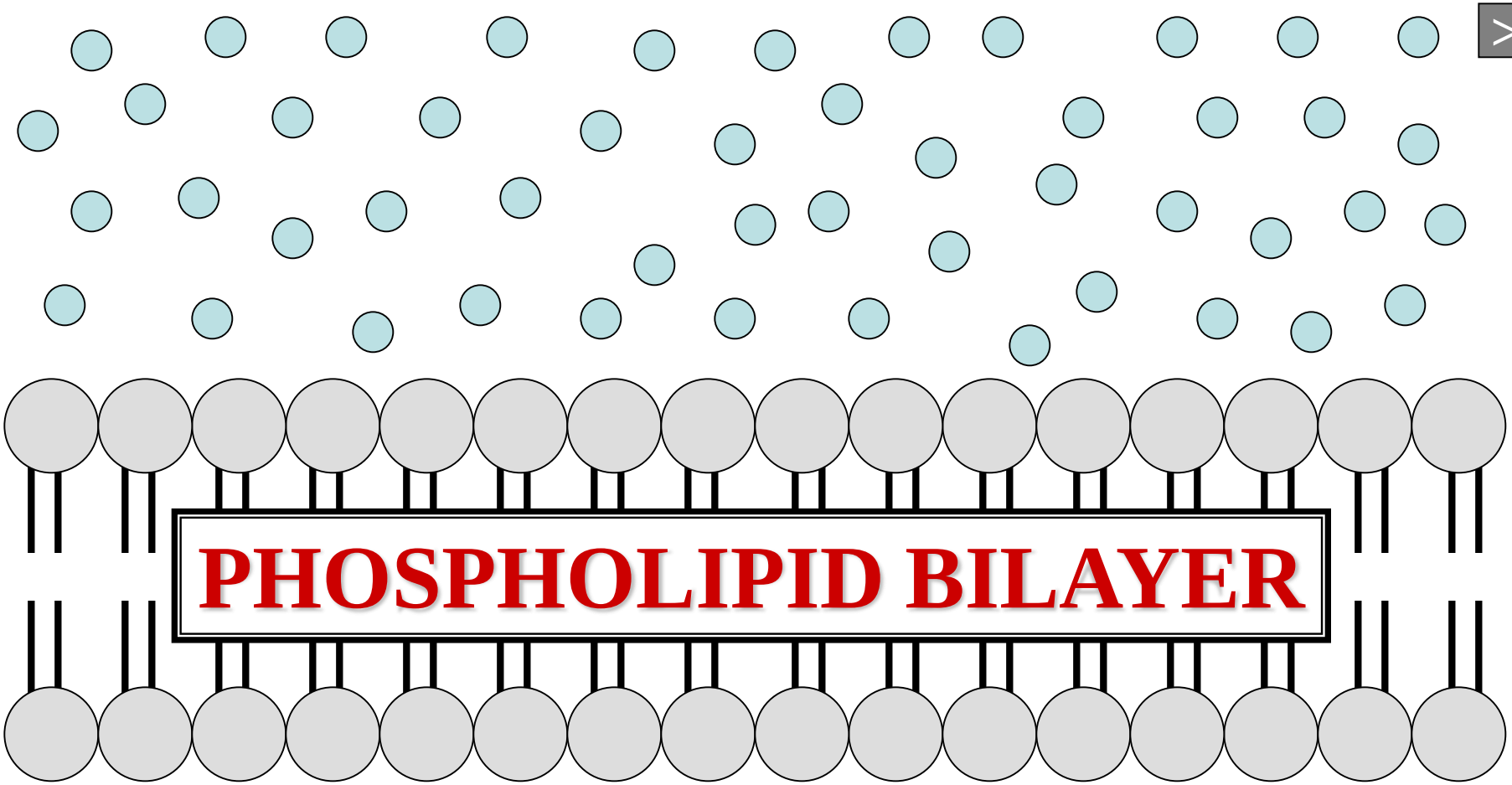
# PHOSPHOLIPID BILAYER PERMEABILITY

# NON-POLAR SOLUTES

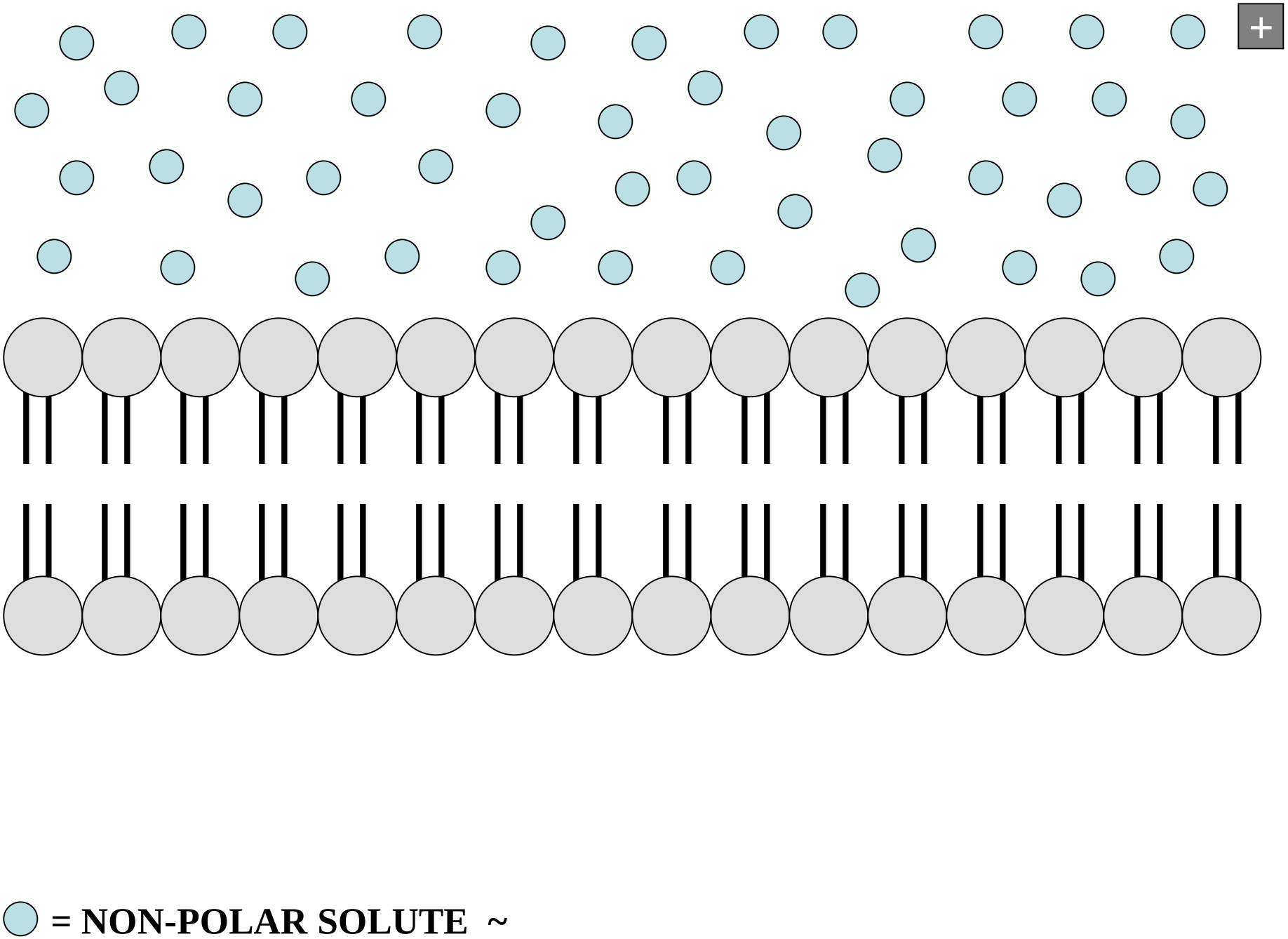



= NON-POLAR SOLUTE ~

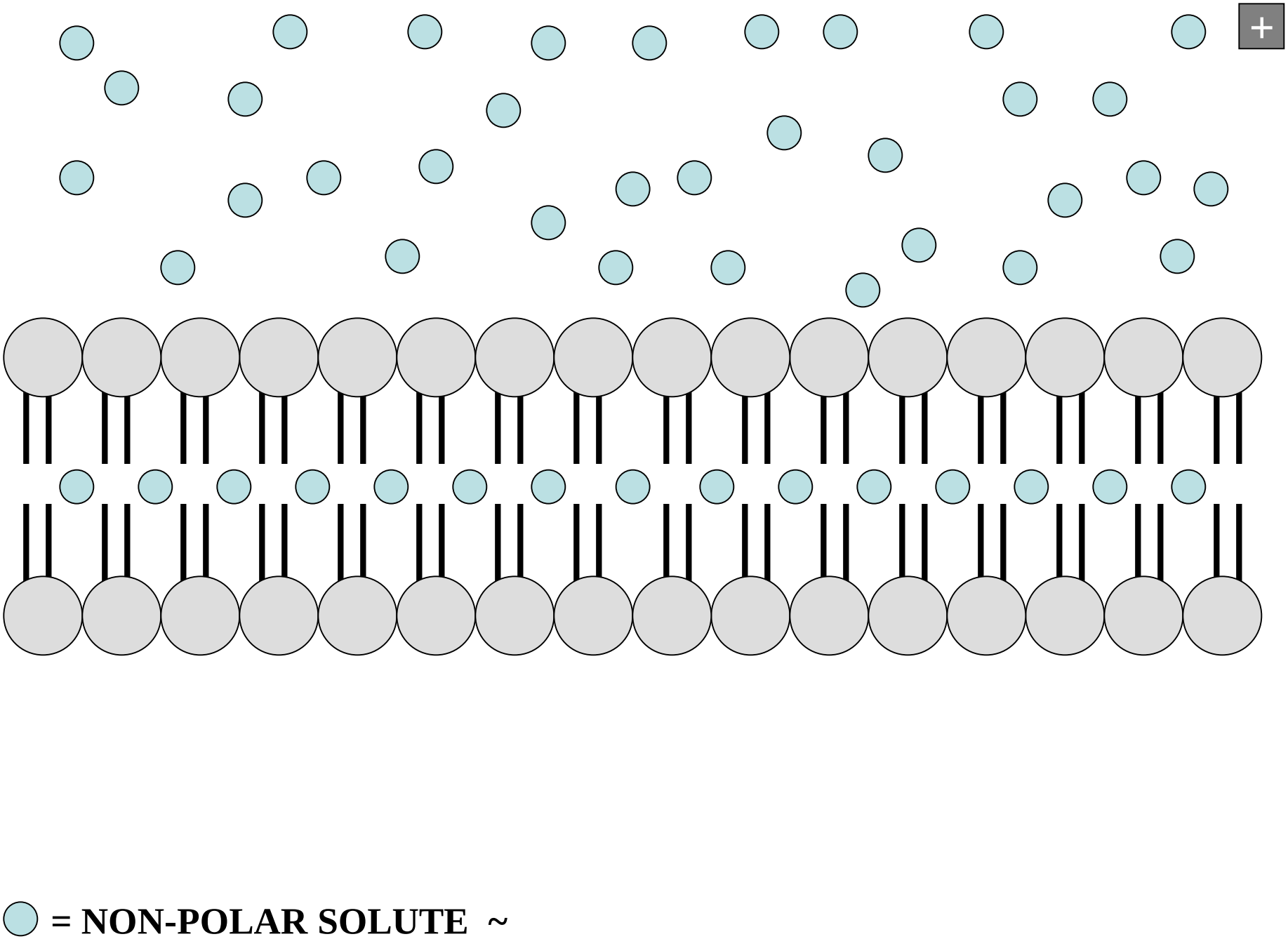



**BILAYER PERMITS PASSAGE NON-POLAR SOLUTES**

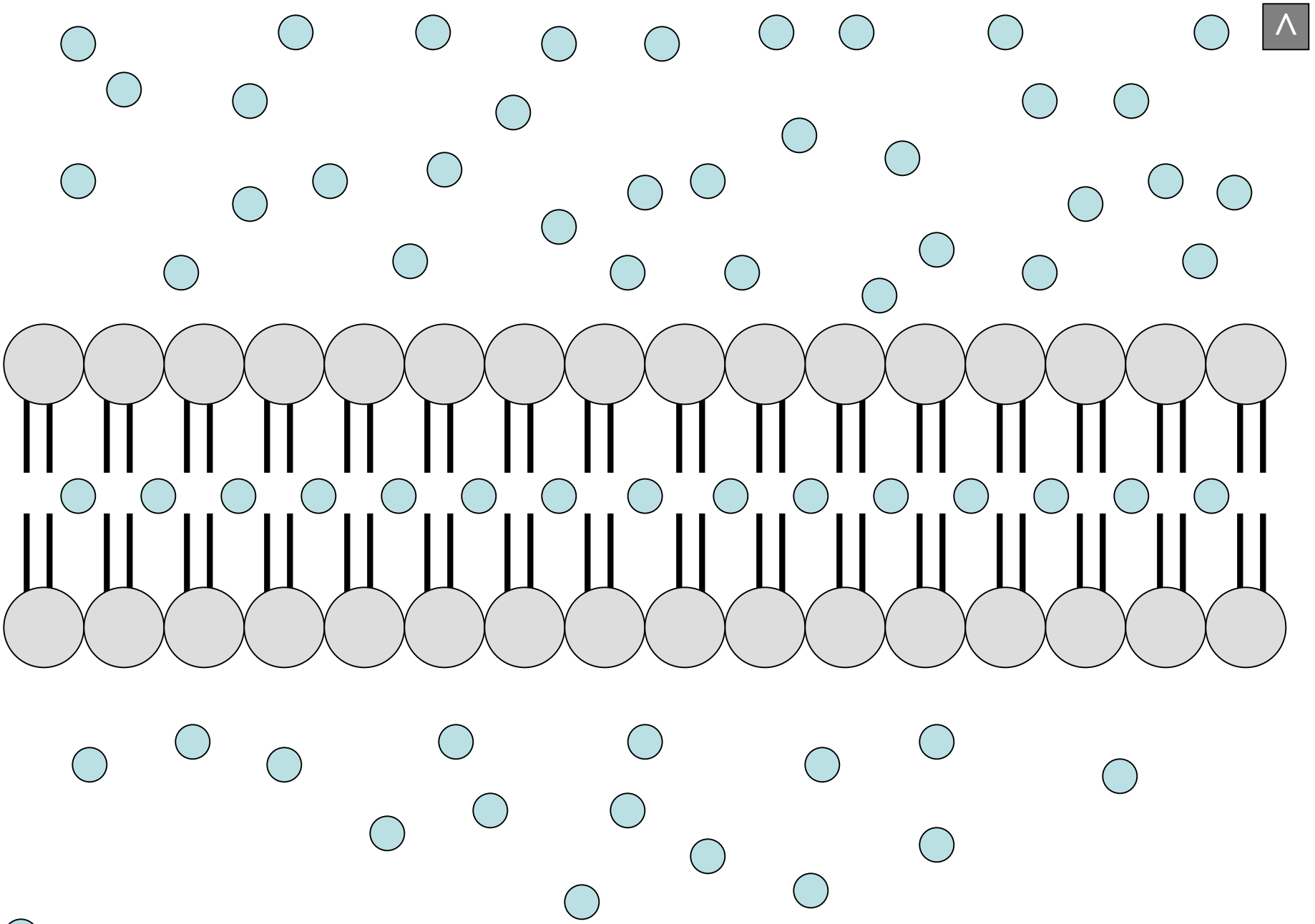
○ = NON-POLAR SOLUTE ~



= NON-POLAR SOLUTE ~

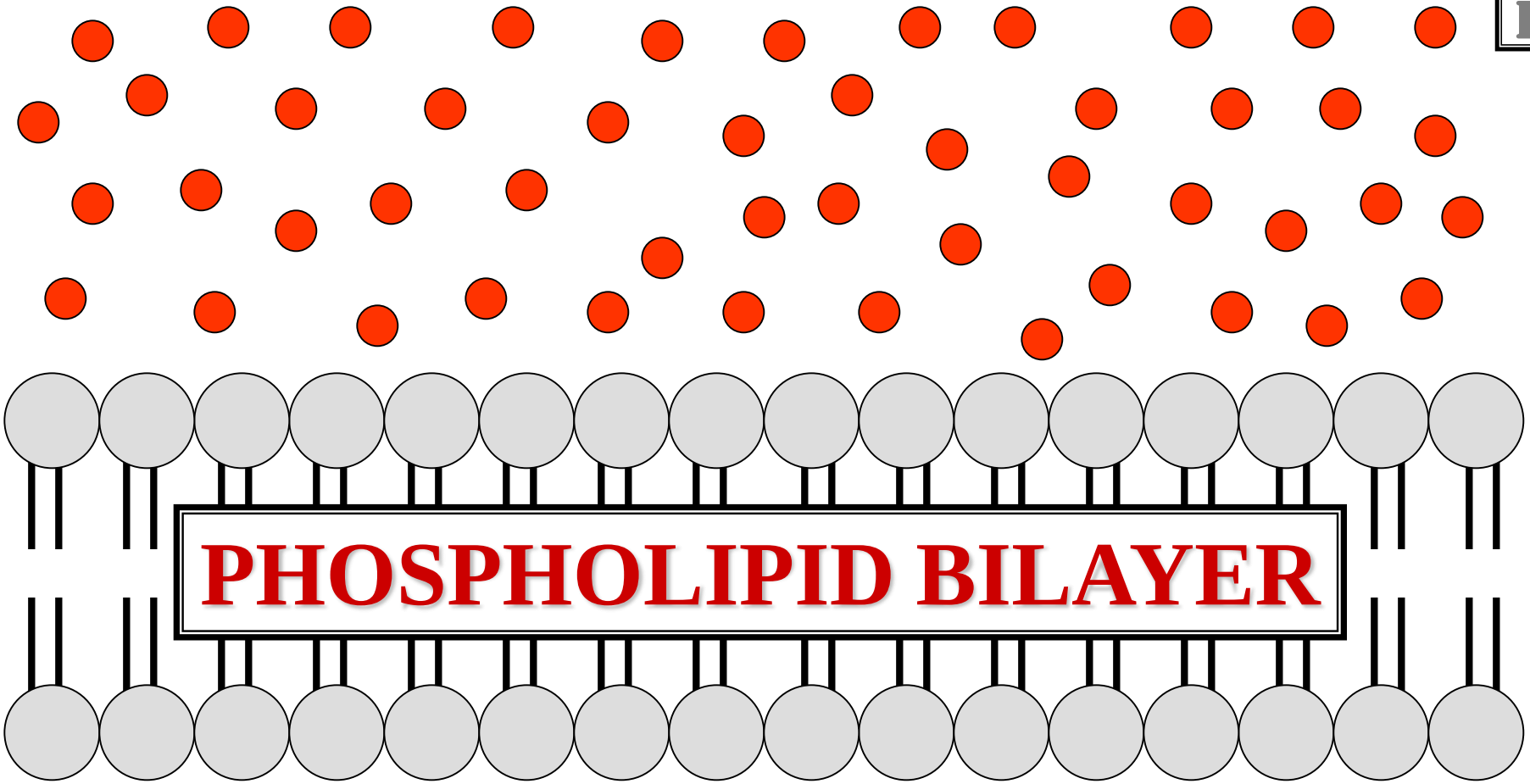


= NON-POLAR SOLUTE ~

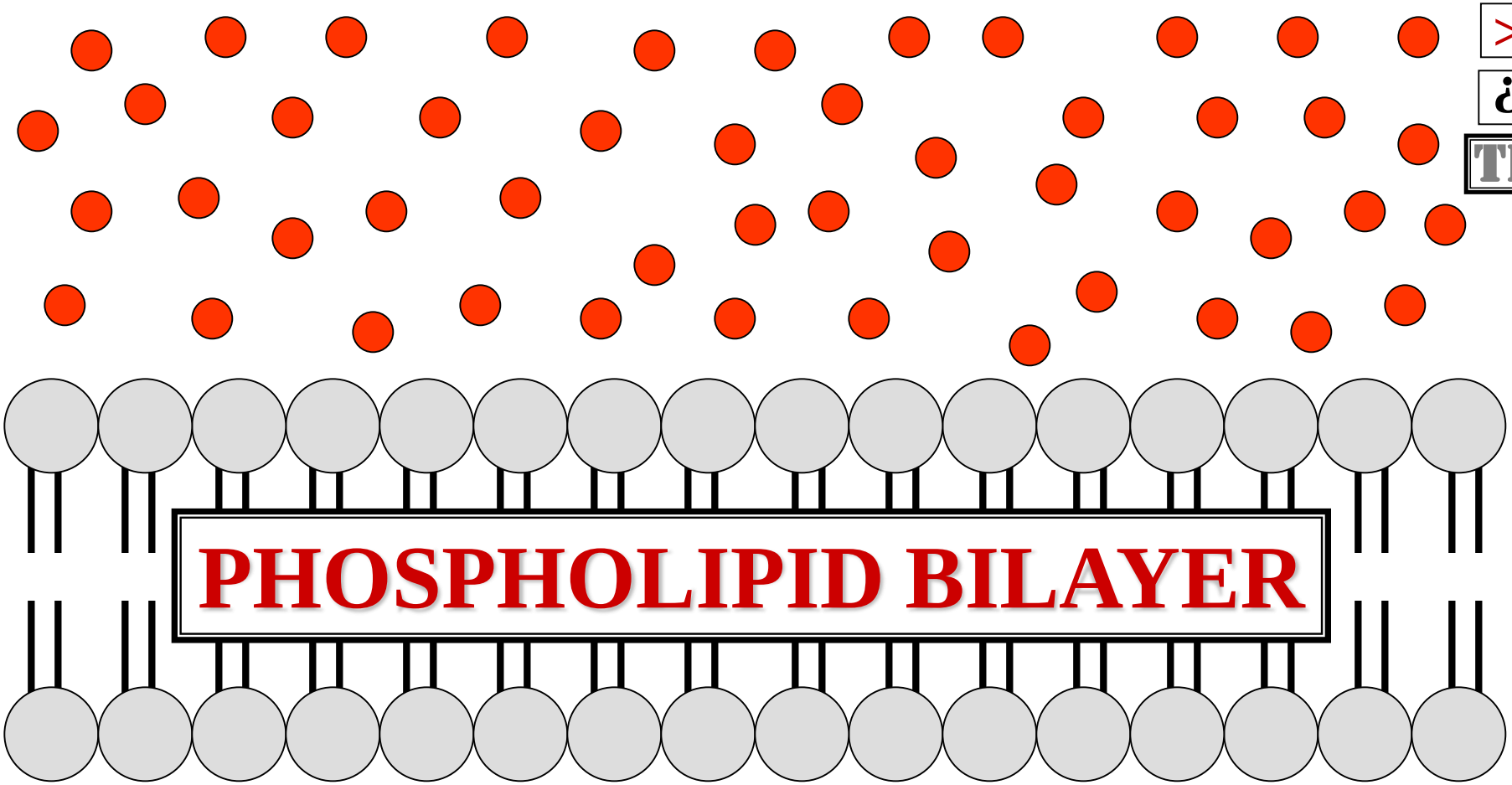

= NON-POLAR SOLUTE ~

# PHOSPHOLIPID BILAYER PERMEABILITY

# POLAR SOLUTES

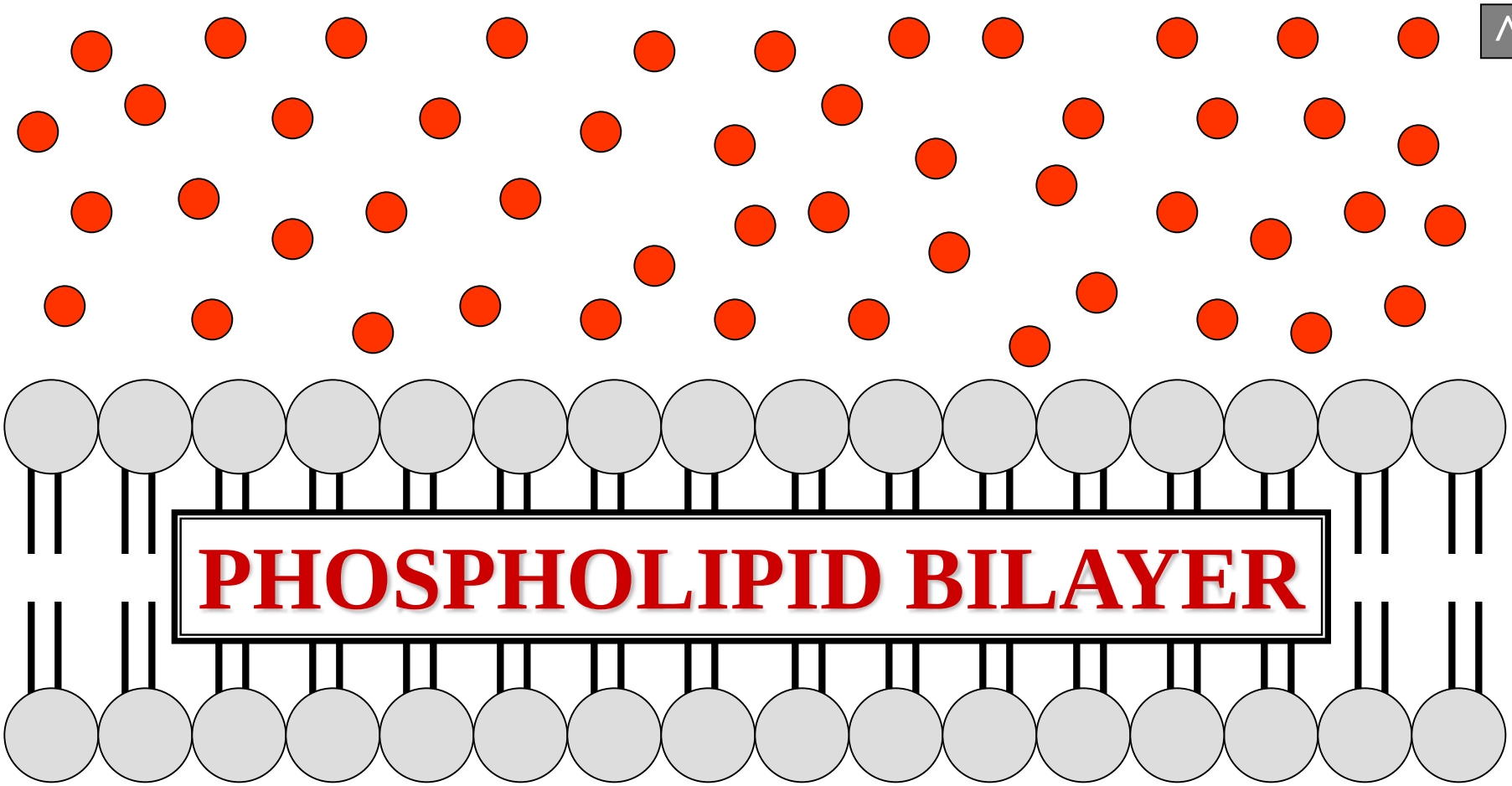



= POLAR SOLUTE +/-




**BILAYER INHIBITS PASSAGE**
**POLAR SOLUTES**

● = POLAR SOLUTE +/-




**POLAR SOLUTES REQUIRE**

**TRANSPORT PROTEINS**

● **= POLAR SOLUTE +/-**

# TRANSPORT PROTEINS

# TRANSPORT PROTEINS TYPES

# TRANSPORT PROTEIN TYPES

## CHANNEL TRANSPORT PROTEIN

# TRANSPORT PROTEIN TYPES

# TRANSPORT PROTEIN TYPES

C

CHANNEL TRANSPORT PROTEIN
CARRIER TRANSPORT PROTEIN

# TRANSPORT PROTEIN TYPES

# CHANNEL TRANSPORT PROTEIN

# CHANNEL TRANSPORT PROTEIN

## WATER CHANNEL
## PERMITS
## POLAR SOLUTES
## ACROSS MEMBRANE

# CHANNEL TRANSPORT PROTEIN

# CHANNEL TRANSPORT PROTEIN

## CONFORMATION CHANGE: ABSENT

# CHANNEL TRANSPORT PROTEIN

# CHANNEL TRANSPORT PROTEIN

**CONFORMATION CHANGE: ABSENT**

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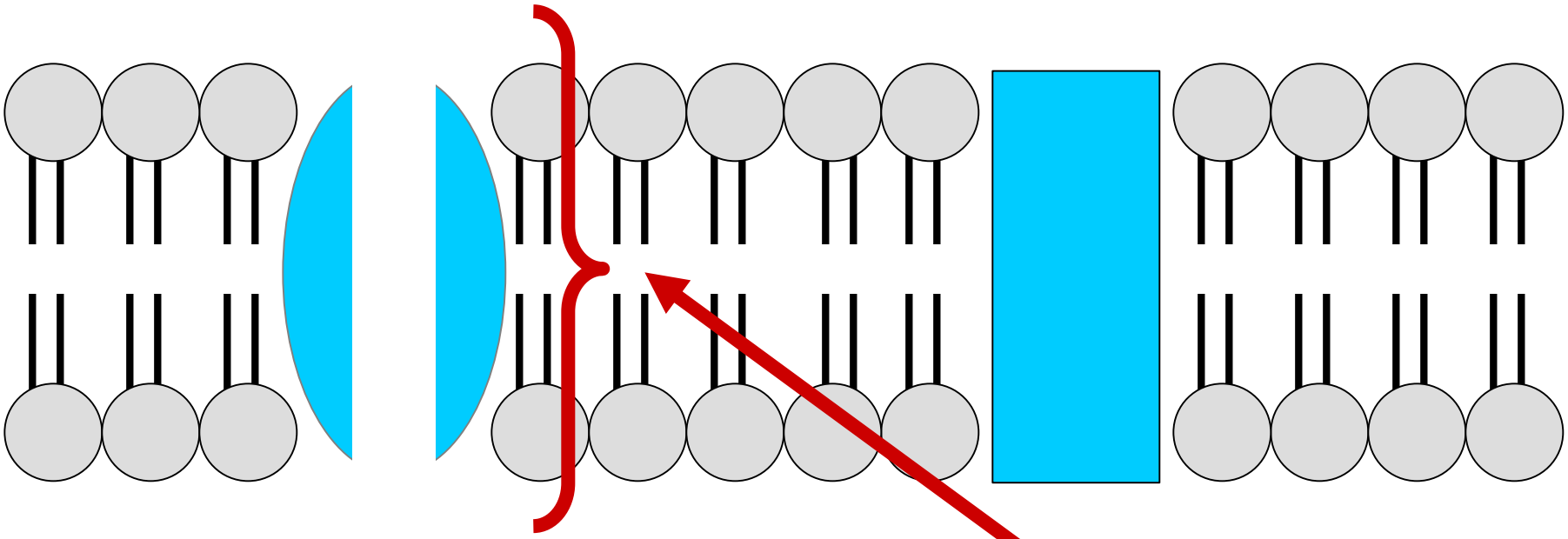
**ATP EXPENSE: ABSENT**

CHANNEL TRANSPORT PROTEIN

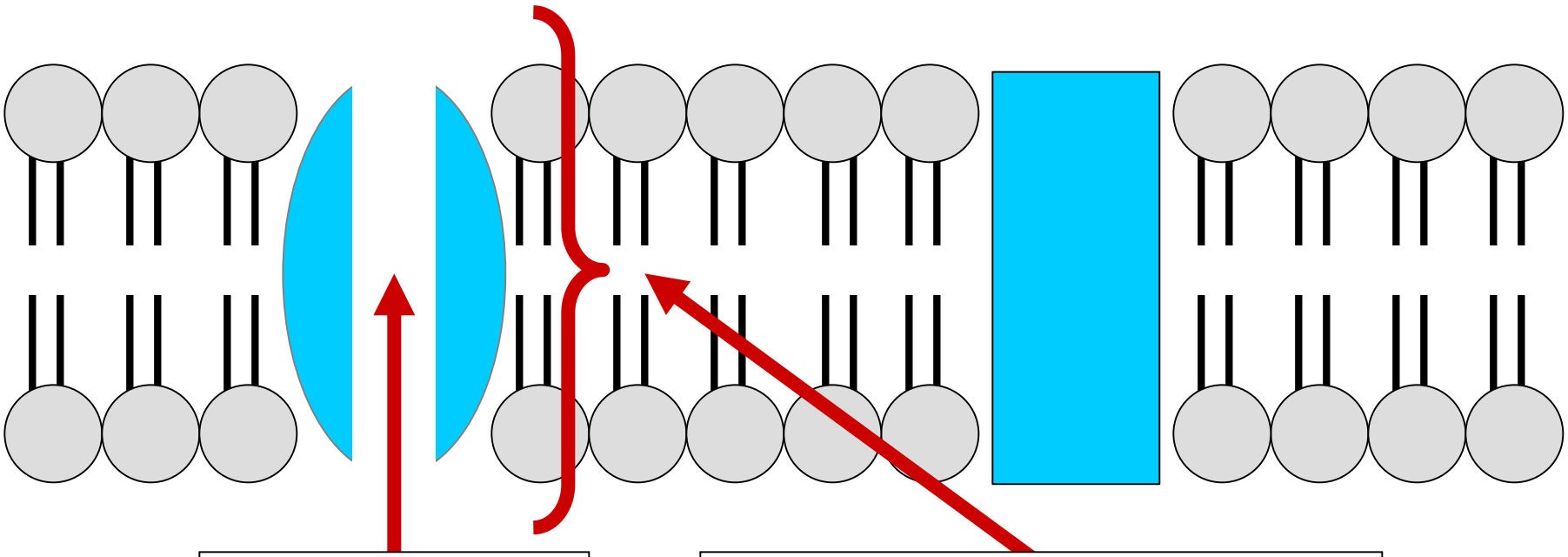
# TRANSPORT PROTEINS



**CHANNEL TRANSPORT PROTEIN**

**= POLAR SOLUTE +/-**

# TRANSPORT PROTEINS

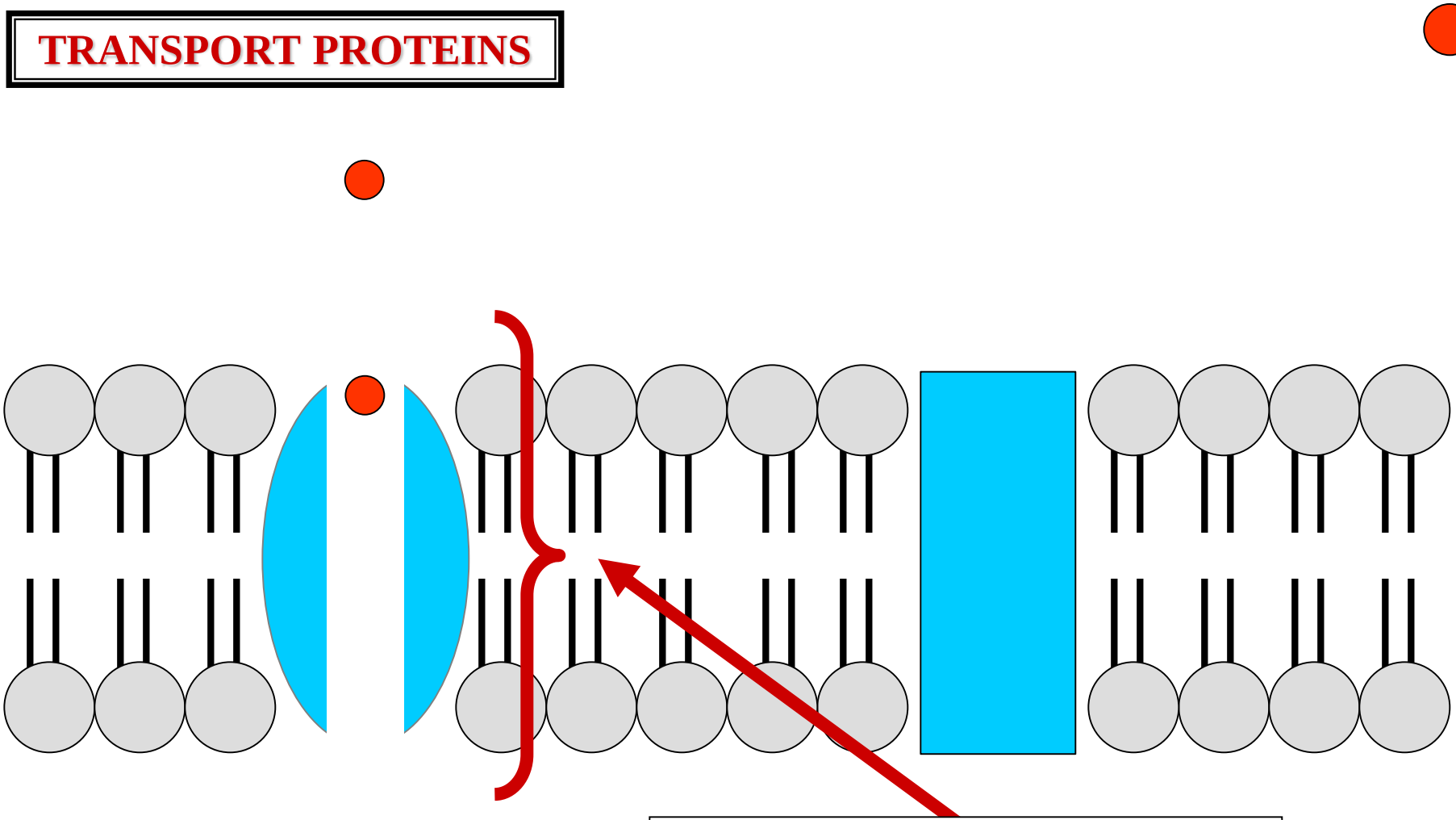


WATER CHANNEL

CHANNEL TRANSPORT PROTEIN

= POLAR SOLUTE +/-

# TRANSPORT PROTEINS



**CHANNEL TRANSPORT PROTEIN**

= POLAR SOLUTE +/-