

Pop Quiz: You can use your graphic organizer

1. What is the main compound of the cell membrane?
2. List properties of the phosphate head and the fatty acid tails
3. What is an important biological role of the cell membrane?

Pop Quiz: You can use your graphic organizer

1. What is the main compound of the cell membrane?

- Phospholipids

1. List properties of the phosphate head and the fatty acid tails

Phosphate Head: polar, charged and hydrophilic

Fatty Acid Tail: non-polar, hydrophobic

1. What is an important biological role of the cell membrane?

Creates a barrier for large molecules and polar molecules.

Learning Intentions

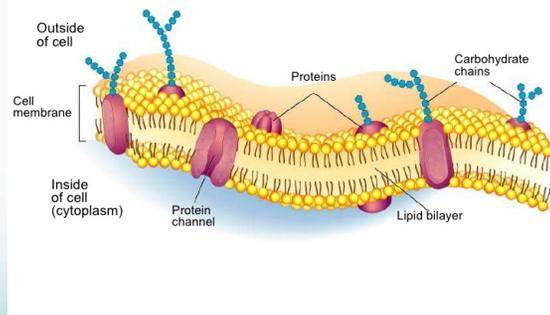
- I can identify and explain the function of proteins in a plasma membrane
- I can identify and explain the function of carbohydrate chains
- I can explain the function of cholesterol within a plasma membrane

New Vocabulary

- **Glycoprotein**
- **Glycolipid:**
- **Semi-permeable**
- **Transport Protein**
- **Receptor**
- **Anchor Protein**
- **Cholesterol**
- **Cell Membrane**
- **Phospholipid**
- **Fluid Mosaic**

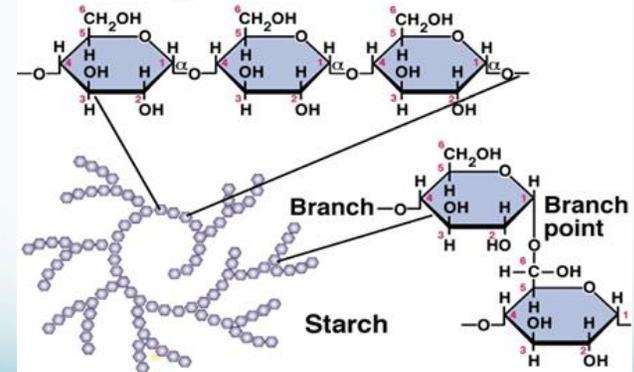
Carbohydrate Chain

Structure of the Plasma Membrane



Carbohydrate Chain

Polysaccharides



Function of Carbohydrates Chains

- Face the exterior of the cell
- Play a role in cell recognition and cell-cell interactions

Glycoprotein: A membrane component that contains a sugar, or carbohydrate, bound to an amino acid

Glycolipid: any membrane lipid that is bound to a carbohydrate

Challenge Questions

1. Why is knowing your blood type important?
2. How do we determine the probability of a child's blood type if you know the parents alleles?
3. For example, what would the child's blood type be if one parent had type O and the other parent type AB?

Blood Types

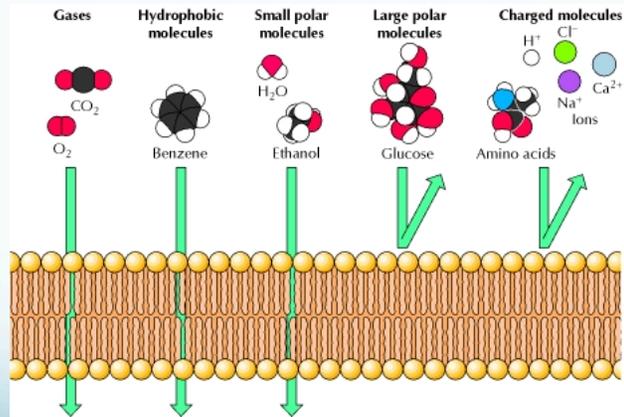


Punnet Squares: Blood Types

	O	O
A	AO	AO
B	BO	BO

	A	B
A	AA	AB
B	BA	BB

What can cross the cell membrane?



Cell Membrane is **Semi-Permeable**

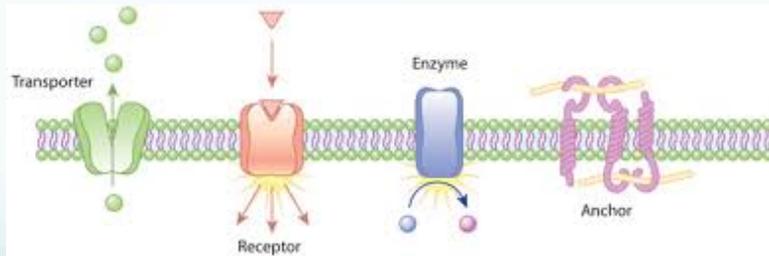
Discussion Questions

With the knowledge that all living things are made up of cells and all cells are surrounded by membranes and these membranes are **semi-permeable**

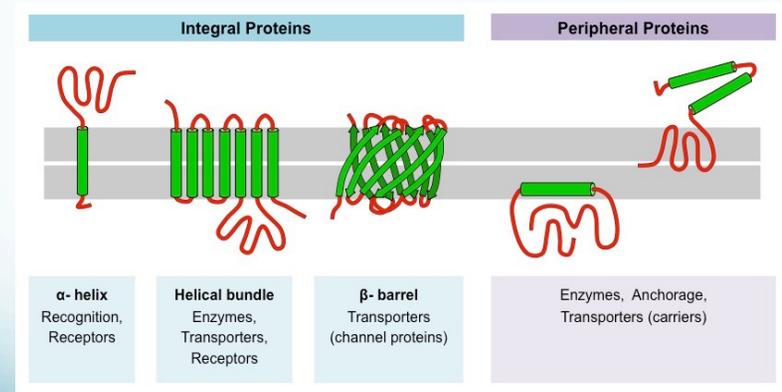
- Can you think of ways of how cells may communicate? How do cells regulate what can enter and exit the cell?

Semi-Permeable: A membrane that is selectively permeable, i.e. being permeable to only certain molecules and not to all molecules.

Function of Proteins

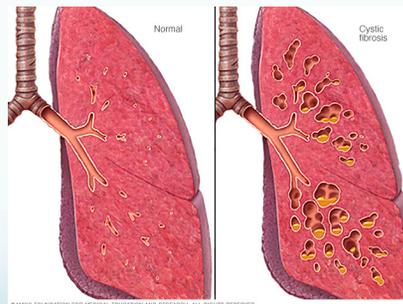


Function of Proteins



Pause to think

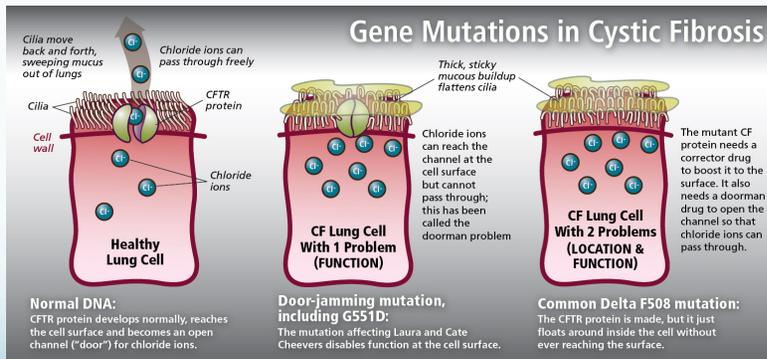
- Imagine what it would be like to have so much congestion in the lungs that it is hard to breathe.
- What would that feel like?
- For example individuals with cystic fibrosis or asthma can experience this feeling.



Why?

- CF is due to a problem with a **chloride transport protein**, that normally causes Cl^- and Na^+ ions to move to the outside of the cell. These movements lead to water moving to the outside of the cell, which keeps the mucus lining of the lungs very fluid. Individuals with CF, have thick mucus on their lungs and this mucus can not remove bacteria or dust particles.

Cystic Fibrosis



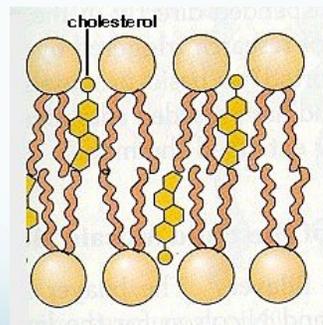
Fluidity of the Membrane

- Dependent on how densely the individual lipid molecules can pack together.

1. Composition of the lipid molecules
 - Saturated
 - Non-Saturated
2. Temperature
3. Cholesterol membrane stabilizer

Cholesterol

- At high temperatures they help restrain the movement of the lipid molecules in the membrane, thus reducing the fluidity
- At low temperature it provides spaces between the lipid molecules thus preventing fatty acids from associating and forming a non-fluid gel



Take Away Tasks:

- Reading: <http://www.bbc.com/future/story/20150610-blue-energy-how-mixing-water-can-create-electricity>
- Graphic organizer of function of the different compounds of the cell membrane
- Complete section on carbohydrates chain, cholesterol and proteins.
- Leave more room for the proteins section, we will add to this when we talk about membrane transport.