

Name: ..... Date: .....

# MACROMOLECULES WORKSHEET

## Carbohydrates

1. What is the name of the reaction when you split a disaccharide? What products do you gain?
2. What are the names of the four polysaccharides? What are the respective roles of energy storage?

## Lipids

1. How is a phospholipid formed? Why, when placed in water, do phospholipids form a micelle?
2. Draw and label a phospholipid bilayer. Label which regions are hydrophobic and hydrophilic.

## Proteins

1. How are polypeptides formed? How are many amino acids joined together?
2. What defines a protein?
3. List the important biological functions of proteins

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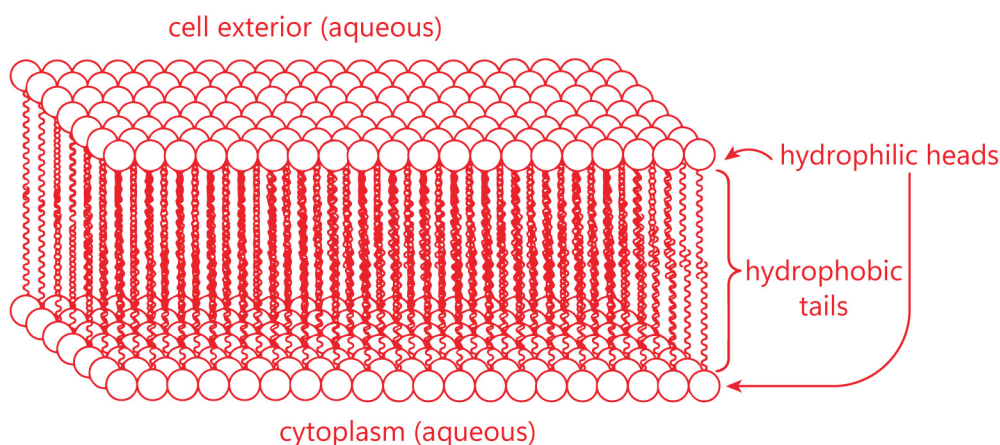
## Answers

### Carbohydrates

1. What is the name of the reaction when you split a disaccharide? What products do you gain?  
**Hydrolysis. Two monosaccharides.**
2. What are the names of the four polysaccharides? What are the respective roles of energy storage?  
**Starch: A highly compact polymer that stores glucose in plants.**  
**Glycogen: A highly compact polymer that stores glucose in animals.**  
**Cellulose: A linear polymer that provides structure and support in plants.**  
**Chitin: A linear polymer that provides structure and support in animals.**

### Lipids

1. How is a phospholipid formed? Why, when placed in water, do phospholipids form a micelle?  
**Fatty acids attach to glycerol molecules via covalent ester bonds. Phospholipids are formed of two types: a hydrophilic part attracted to water and a hydrophobic part repelled by water. The phospholipid forms the bilayer to keep the hydrophobic part from contacting the water. It puts the hydrophobic part on the inside of the two layers of the hydrophilic part.**
2. Draw and label a phospholipid bilayer. Label which regions are hydrophobic and hydrophilic.



### Proteins

1. How are polypeptides formed? How are many amino acids joined together?  
**Peptide bonds link amino acids via dehydration synthesis during protein synthesis.**
2. What defines a protein?  
**The sequence of amino acids determines the structure and function of proteins.**
3. List the important biological functions of proteins  
**Digestion, provide structure, hormonal functions, transportation, defence, and storage.**