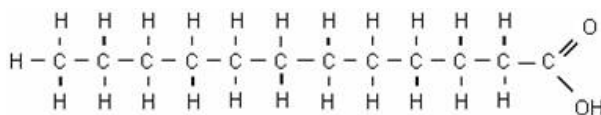


## Lab-Organic Macromolecules Part 3 – Lipids

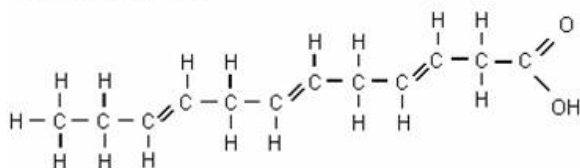
What is the basic structure and function of lipids?

- Look at the following list of lipids. Based on what you know, sort them into fats that come from plants and those from animals.
  - Olive Oil
  - Butter
  - Crisco
  - Lard
  - Vegetable Oil
  - Plant Lipids:**
  - Animal Lipids:**
  - What do you notice about the plant lipids vs. the animal lipids?**
- Lipids can be either saturated or unsaturated.
  - Saturated lipids have every carbon atom bonded 4 times to other atoms. Saturated lipids are often solid at room temperature because they are able to pack together closely due to their single bonds.
  - Unsaturated lipids have at least two carbon atoms sharing more than one electron between them – this is called a double bond. These double bonds cause the molecule to bend – this does NOT allow the fat to pack together, which means unsaturated fats are liquid at room temperature

**i. In the drawing below circle the unsaturated spot in the molecule.**



Saturated Fatty Acid



Unsaturated Fatty Acid

- In the grocery store, what is an easy way to determine if a fat is saturated or unsaturated (Aside from looking at the label)?
  - What elements are found in lipids? Which two are most abundant?
  - What property do all lipids have in common?
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**Procedure:**

1. Get a piece of brown paper towel. With a pencil draw 5 circles. Label them as positive control, negative control, food 1, food 2 and food 3.
2. Rub a little bit of each substance into the corresponding circle.
3. Wait for 5 minutes then scrape excess food from the bag.
4. Observe whether the substance created a greasy area. Record results in the table below.

Test item	Do you expect this to have lipids?	Sudan test result/ observations	What does this indicate?
Posiitive control - oil			
Negative control - water			
Food 1			
Food 2			
Food 3			

**Analysis Questions: Answer all questions in complete sentences**

1. There are three types of lipids. What are they?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
2. Of the three types of lipids, which kind of lipid was observed in this lab?
3. Draw the molecular structure of a **mono**-unsaturated fatty acid in the space below. How many double bonds are in the carbon chain?
4. What functions do lipids perform for your body?
5. All lipids are hydrophobic. What does this mean?
6. What property of lipids causes them to be hydrophobic?