

Lipids

Organic compounds that are not soluble in water but are soluble in oil. Some examples are:

-Phospholipids

-in the cell membrane, the heads are **hydrophilic**, the tails are

hydrophobic

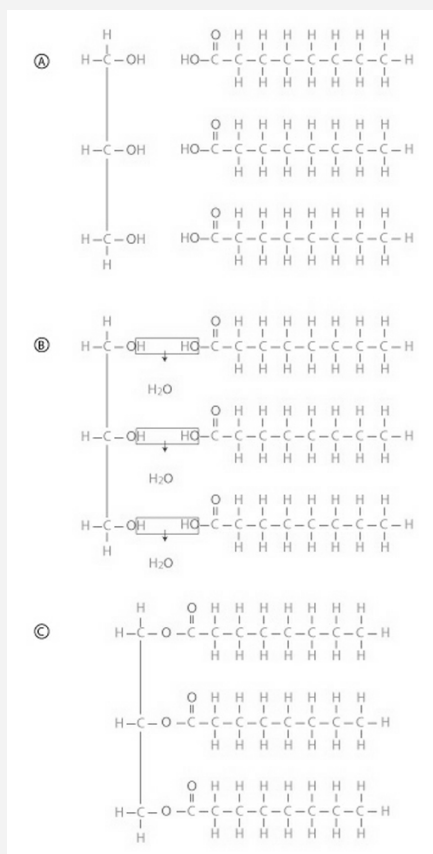
-Steroids

-include cholesterol and hormones (cholesterol is also in the cell membrane)

-Fats

Lipids store long-term energy, support cell membrane, cushion organs, insulate, help brain develop, etc.

Dehydration Synthesis Applied to Lipids



*This is a saturated triglyceride

When your body has more calories than it needs, it turns the calories to triglycerides and stores them.

To make a single triglyceride, you need one molecule of glycerol and three fatty acid chains.

Water is taken out and the four molecules bind together to form triglycerides.

Hydrolysis Applied to Lipids

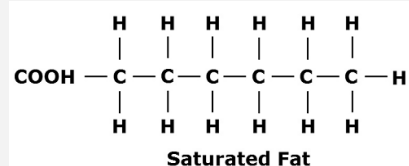
Vocabulary

Triglycerides	The type of fat our bodies make and store.
Hydrophilic	Likes water/faces water.
Hydrophobic	Doesn't like water/faces away from water.

Types of Fat

There is saturated fat and unsaturated fat. The saturated/unsaturated part refers to the amount of hydrogen atoms on one molecule of fat. There are two kinds of unsaturated fat, **monosaturated fat** and **polysaturated fat**

Saturated Fats



Saturated Fat has all of the possible hydrogen atoms on it.

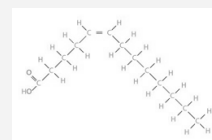
It also does not have a double bond, all the bonds are single.

Saturated triglycerides are generally solid at room temperature and tend to be the most unhealthy.

They can contribute to **arteriosclerosis** which is when blood vessels harden due to too much fat on the inner walls.

Some examples of saturated fat are: shortening (the worst possible fat), butter, cheese, beef and pork.

Monounsaturated Fat



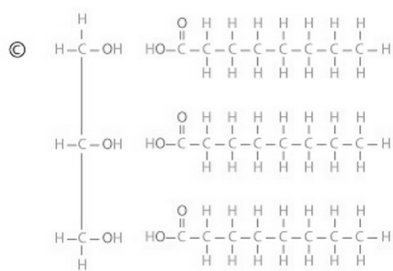
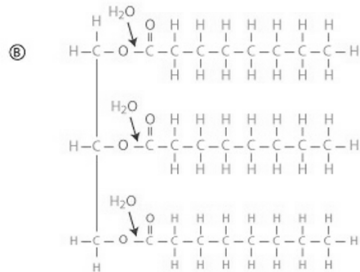
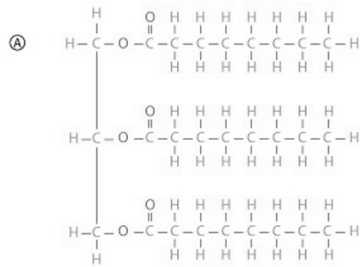
Monounsaturated fat is when the fatty acid chain has *one place* where it is unsaturated. This means that there is a double bond and it is missing hydrogen atoms. It also is bent/has a kink.

Monounsaturated fat is actually better for you. It does not increase risk of arteriosclerosis and it reduces cholesterol which causes heart disease.

It is usually liquid at room temperature.

One example is olive oil. Monounsaturated fats can usually be found in avocado and nuts.

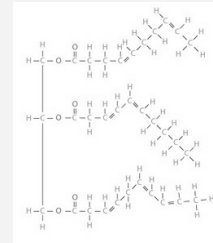
Polyunsaturated Fat



Breaking down lipids with water

1. You ate lipids that need to be broken down to use
2. Your body ran out of carbohydrates and needs to break down fat stores for energy

3500 calories in one pound of fat



Where the fatty acid chains have two or more points of unsaturation

Liquid at room temp

Better than saturated fat but worse than monounsaturated fat

Ex: Corn oil, soy oil, canola oil, safflower oil



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