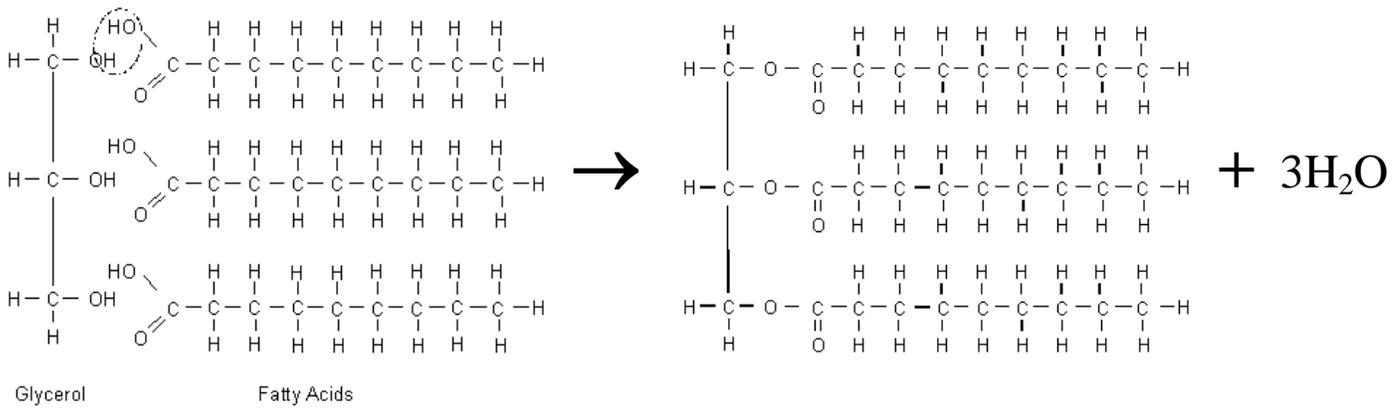


To do this we remove the “H” from each hydroxyl group on Glycerol and an “OH” from each carboxyl group on the fatty acids. This will form 3 water molecules.

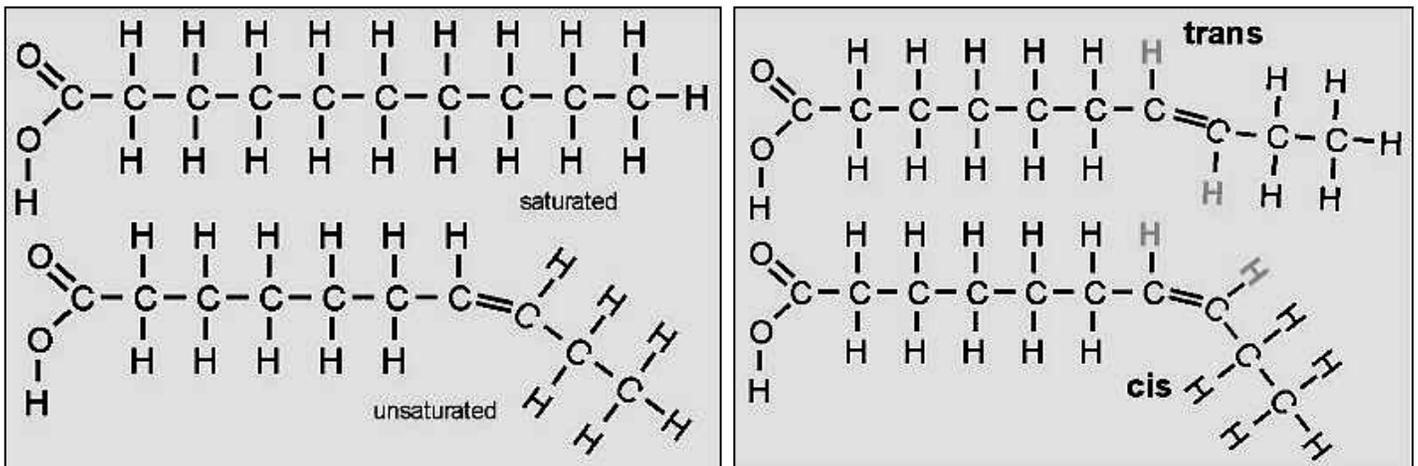


Saturated vs. Unsaturated

Saturated – Fatty Acids that contain the maximum number of hydrogen atoms, and therefore no carbon to carbon double bonds

Unsaturated – Fatty Acids that contain less than the maximum number of hydrogen atoms in one or more of its fatty acid chains because some of its carbon atoms are double-bonded to each other.

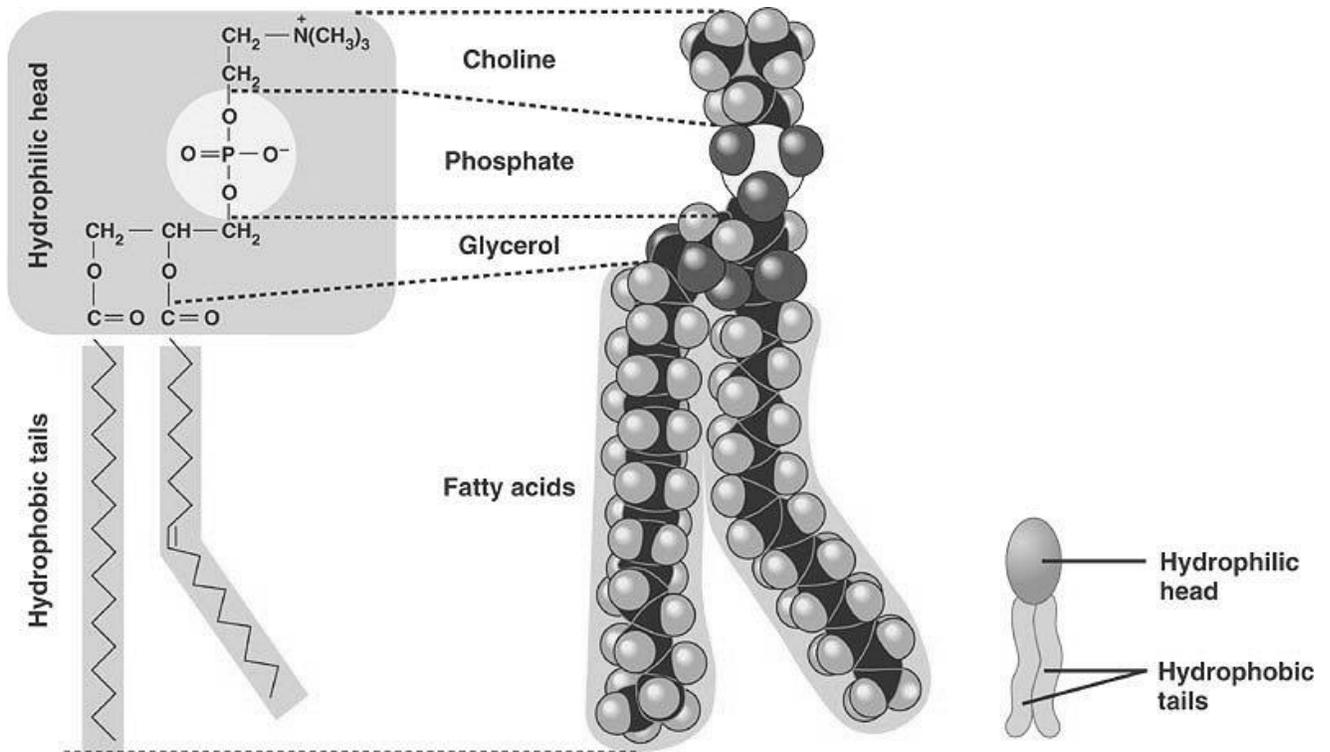
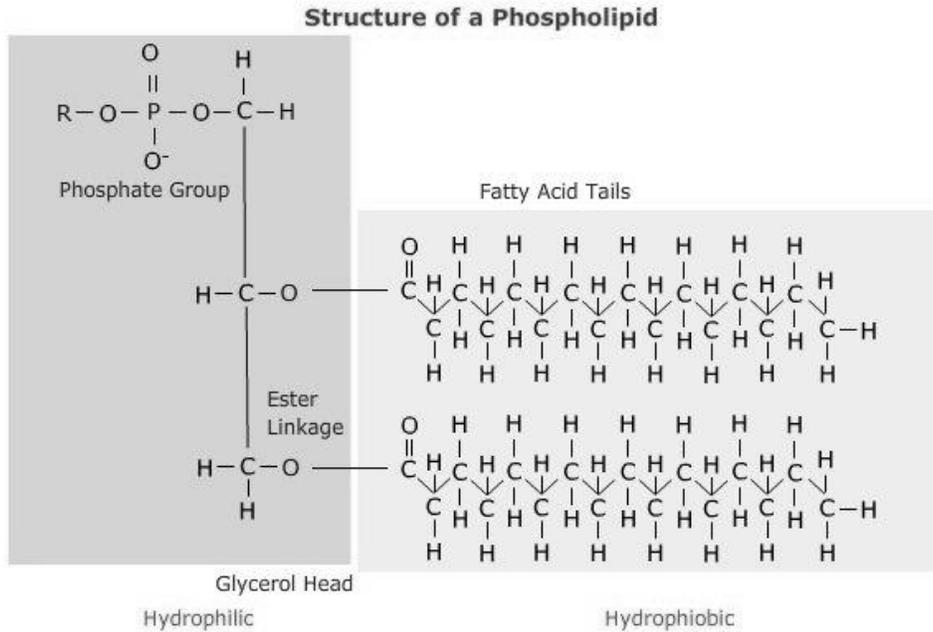
- * **Trans Unsaturated Fatty Acids** – Carbons are missing on opposite sides of the carbon chain
- * **Cis Unsaturated Fatty Acids** – Carbons are missing on the same side of the carbon chain



Phospholipids

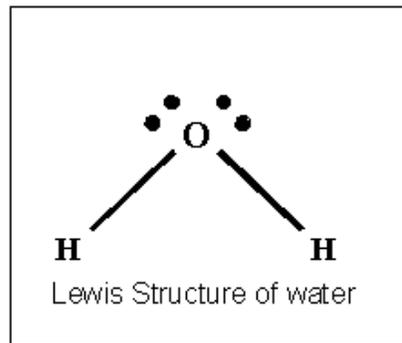
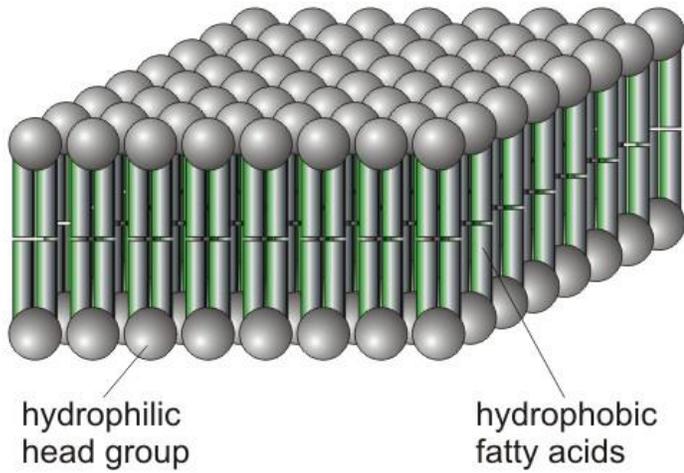
Phospholipids are very important molecules that compose the cell membrane of a cell

Phospholipids are very similar to triglycerides, except Phospholipids contain Glycerol, two Fatty Acids, and one Phosphate Group. (the Phosphate Group replaces one of the fatty acids)

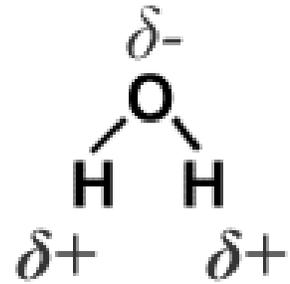


Phospholipids contain a polar head (the phosphate group) and a non-polar tail (the two fatty acids). This allows phospholipids to form a phospholipid bi-layer (Two layers of phospholipids) when placed in water. (Remember, water is Polar!).

Phospholipid bilayer



Hydrophobic – “water fearing”
Hydrophilic – “water loving”

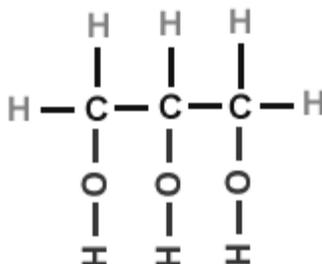


PART B: Applying your knowledge of lipids

Lipids include triglycerides (fats), phospholipids, and waxes. One of the key parts that make up a lipid is an **alcohol**. An alcohol is recognizable by its hydroxyl (-OH) groups.

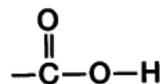
- Use the chemical models to build a model of the alcohol called glycerol. Use the key below. When you have finished, have your teacher sign his/her name. _____

key	
carbon	black
hydrogen	white
oxygen	blue
bond	white tube



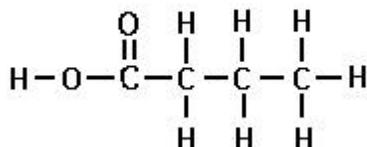
- Draw a box around each OH group.
- The molecular formula for glycerol is C ___ H ___ O ___.

Another key component of lipids is a **fatty acid**.
A fatty acid is recognizable by its carboxyl group.

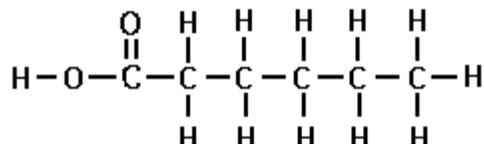


- Use the chemical models to build a model of each of the fatty acids shown below. When you have finished, have your teacher sign his/her name. _____

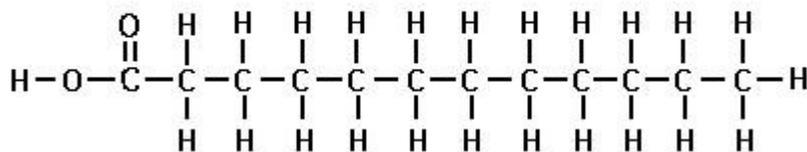
butyric acid



caproic acid



lauric acid



- Draw a box around the carboxyl group on each fatty acid.
- The molecular formula for butyric acid is C ___ H ___ O ___.
- The molecular formula for caproic acid is C ___ H ___ O ___.
- The molecular formula for lauric acid is C ___ H ___ O ___.

