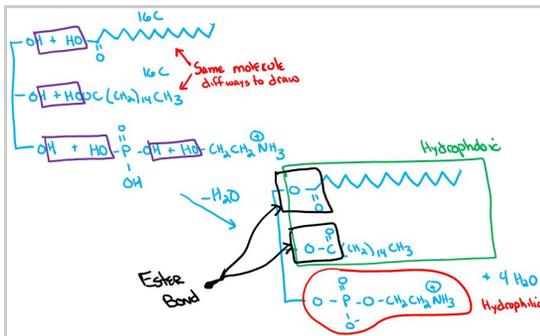


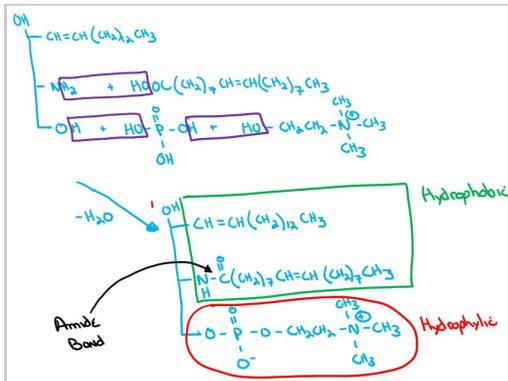
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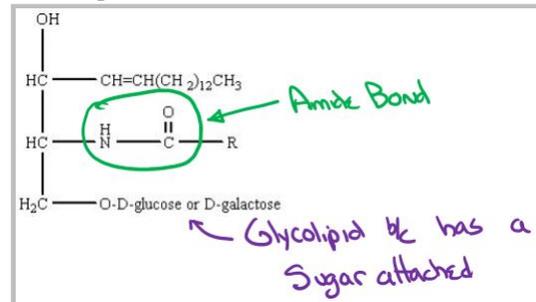
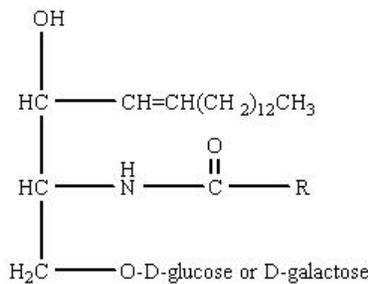
- [4 pt] 1. Draw the structure of a phospholipid that when hydrolyzed yields: glycerol, phosphoric acid, palmitic acid and ethanolamine. Circle the hydrophilic part of the molecule.



- [4 pt] 2. Draw the structure of the sphingolipid that when hydrolyzed yields: sphingosine, oleic acid, phosphoric acid and choline. Place a square around the hydrophobic part of the molecule.



- [3 pt] 3. What class of molecules does the following compound belong too? Circle the amide bond.



- [4 pt] 4. Why are cholesterol and arachidonic acid important compounds. What is similar about cholesterol and arachidonic acid? (Use complete sentences.)

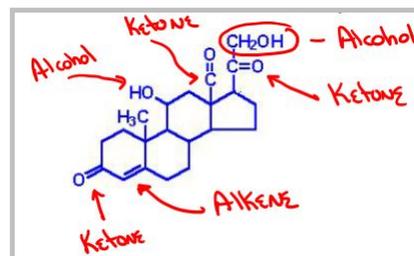
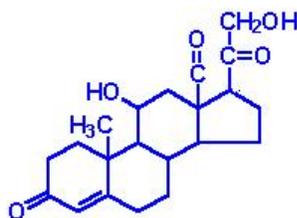
(Hein 28.3) - Arachidonic acid is the starting point for a biological pathway that produces several classes of hormones (eicosanoids) that regulate cellular responses.

(Hein 28.6) - Cholesterol is the starting point for a biological pathway that produces many different sex hormones

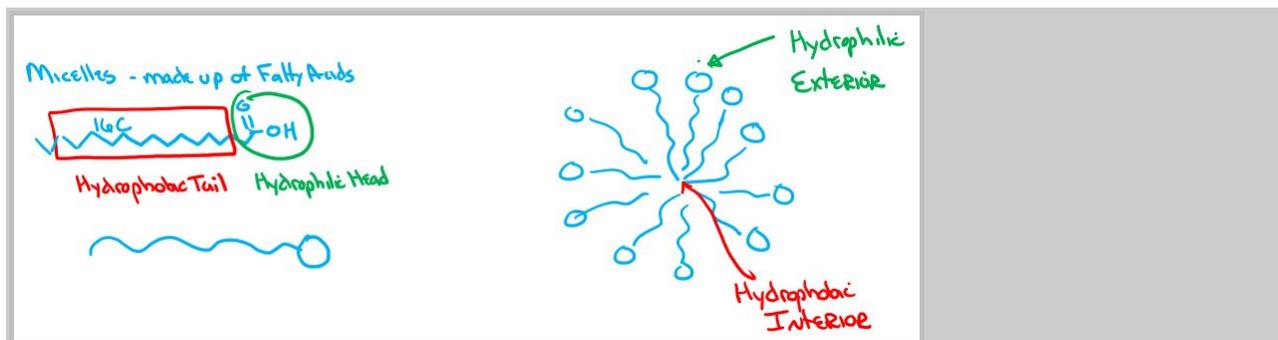
Both compounds are "Mother"/Precursor compounds for a biological pathway. Additionally an excess of either compound can lead to increased risk of heart attacks.

CHE 102 - Homework - Ch 28b

- [4 pt] 5. Aldosterone is responsible for blood pressure, fluid volume and increases Na^+ uptake. Identify as many structural features on the molecule as you can.



- [4 pt] 6. Generically sketch a portion of a micelles that forms from palmitic acid. Identify which part is hydrophobic and hydrophilic.



- [4 pt] 7. How are micelles and liposomes alike? How are they different? (Use complete sentences.)

Alike - both lipids that exhibit the property of "self-assembly". Both also have hydrophilic exteriors make them soluble in water.

Different - Micelles form a single layer and have a hydrophobic interior while Liposomes form a double layer and have a hydrophilic interior.

- [4 pt] 8. What is atherosclerosis. In general, how does it occur and what are its symptoms? (Use complete sentences.)

(Hein 28.7) Metabolic disease that leads to deposits of cholesterol and other lipids on the inner walls of arteries which can lead to coronary thrombosis/heart attacks.

It is produced by the improper transport of cholesterol/lipids in the body. A high LDL concentration is an indication of this.

Symptoms are generally increased blood pressure due to the narrowing of arteries due to the accumulation of fatty deposits (plaque) in blood arteries.

- [4 pt] 9. (Hein 28.7) Briefly discuss why Statin drugs are so effective at reducing cholesterol levels. (Use complete sentences.)

Different drugs effect different parts of the biological pathway that seek to either decrease cholesterol/triglyceride production or increase excretion. For instance the "fibrate" drugs reduce cholesterol production by blocking its metabolic production. Another example is "resin" drugs that bind bile acids causing less cholesterol to be absorbed by the body during digestion. One last example is Sitostanol esters which can be added to food and decrease the intestinal absorption of cholesterol.

The best solution however is probably low-cholesterol diets combined with exercise.