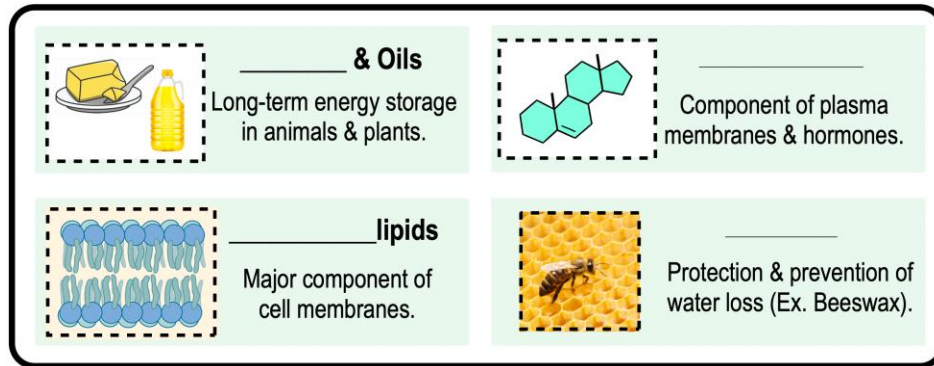


CONCEPT: LIPIDS

- _____: *hydrophobic* biomolecules insoluble in water that are highly diverse in their *structure & function*.
 - Can also be _____: having _____ *hydrophobic & hydrophilic* groups.
 - Do _____ form polymers (*unlike* the other classes of biomolecules).
 - Lipids include: *fats & oils, phospholipids, steroids, & waxes*.

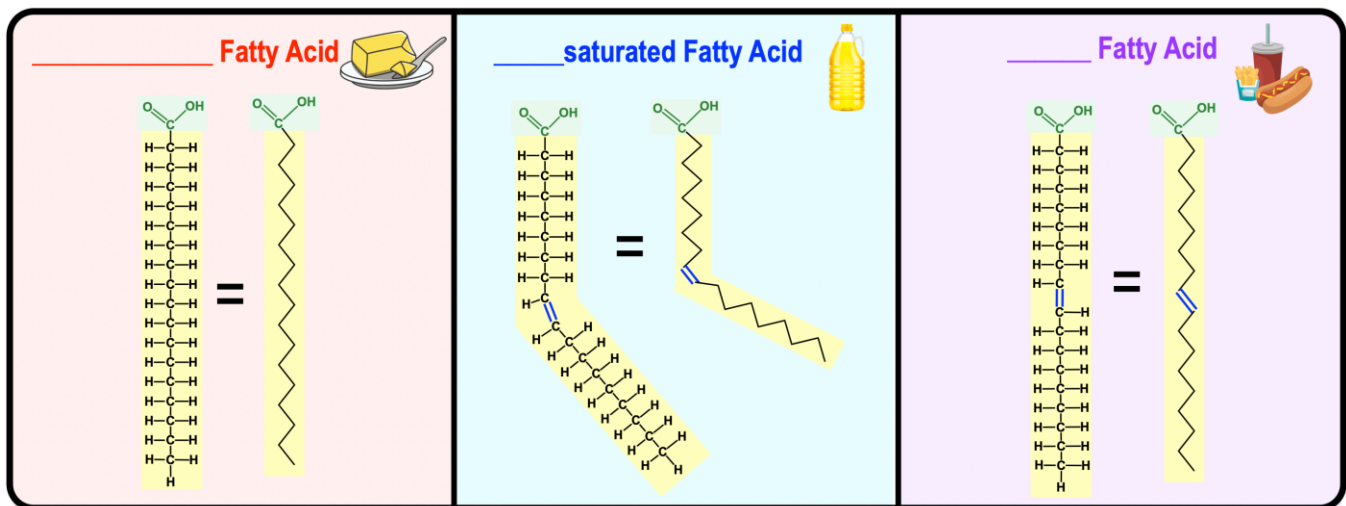
EXAMPLE: Types of Lipids.



Fatty Acids

- **Fatty Acids:** *hydrocarbon* chains of varying length with a _____ *acid*.
 - 1) **Saturated Fatty Acids:** fully _____ with hydrogens (only contains C-C _____ bonds).
 - _____ at room temp.
 - 2) **Unsaturated Fatty Acids:** _____ fully saturated with hydrogens due to presence of ≥ 1 C=C _____ bond.
 - Double bond creates a bend or a “_____” in the chain, making them _____ at room temp.
 - _____ **Fats:** artificial *unsaturated fatty acids* that are NOT kinked (linear).

EXAMPLE: Saturated, Unsaturated & Trans Fats.



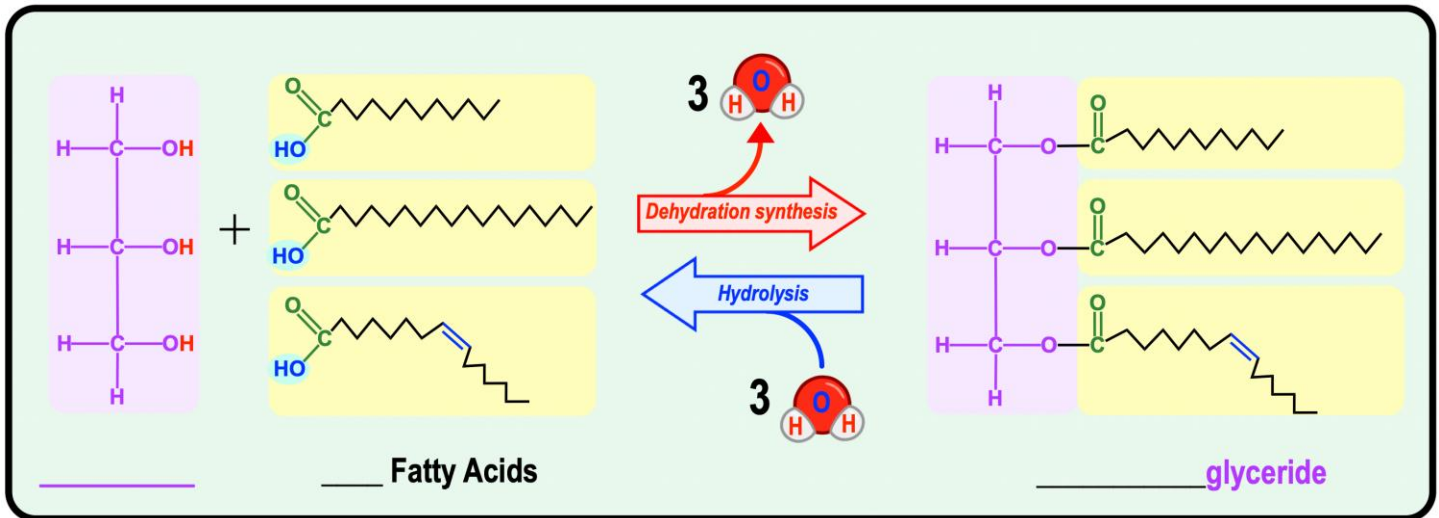
PRACTICE: Which type of fatty acids only contain Carbon-Carbon single bonds?

- a) Unsaturated. b) Saturated. c) Trans fats. d) Steroids.

CONCEPT: LIPIDS

Triglycerides

- **glycerides**: a lipid with _____ fatty acid chains covalently linked to a single _____ molecule.
 - Fatty acids linked to *glycerol* via _____ synthesis reactions.

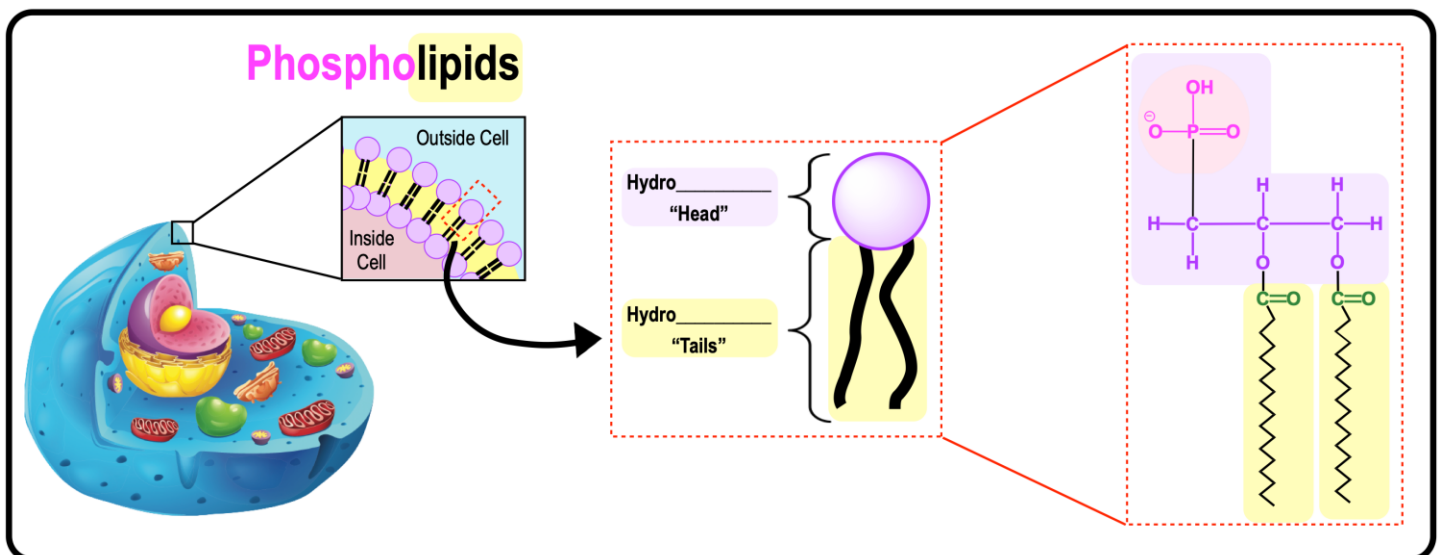


PRACTICE: A triglyceride is a form of _____ composed of _____.

- a) Lipid ; fatty acids & Glucose.
- b) Lipid ; Fatty acids & Glycerol.
- c) Carbohydrate ; Fatty acids only.
- d) Lipid ; Ribose.

Phospholipids

- **Phospholipids**: large class of *lipids* that contain a _____ group.
 - Major component of ALL _____.
 - *Amphipathic* molecules with a _____ head and _____ tails.



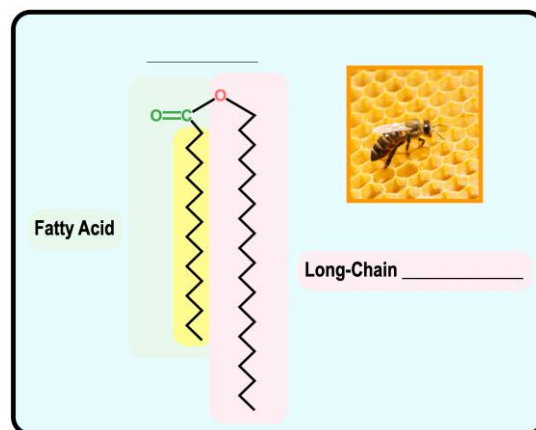
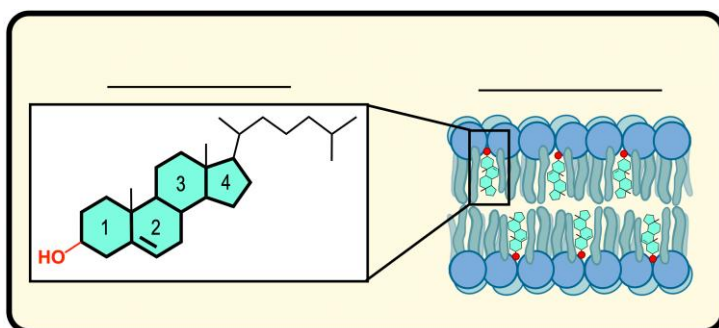
CONCEPT: LIPIDS

PRACTICE: How do phospholipids interact with water molecules?

- a) The polar heads avoid water; the nonpolar tails attract water (because water is polar and opposites attract).
- b) Phospholipids do not interact with water because water is polar and lipids are nonpolar.
- c) The polar heads interact with water; the nonpolar tails do not.
- d) Phospholipids dissolve in water.

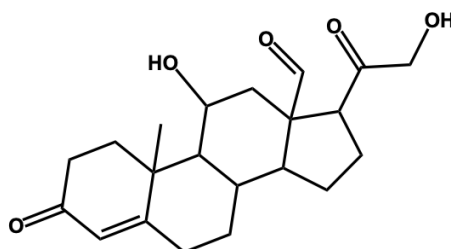
Steroids & Waxes

- _____: lipids that are made of _____ fused *carbon* ring structures.
 - **Cholesterol:** common steroid important for the *structure* of animal cell _____.
- _____: another class of lipid that can be used for protection & prevention of water loss.



PRACTICE: The molecule shown in the figure is a _____.

- a) Fatty acid.
- b) Wax.
- c) Steroid.
- d) Triacylglycerol.
- e) Phospholipid.



PRACTICE: Choose the correct statement about biological waxes:

- a) They contain at least one steroid molecule.
- b) They are fatty acids bound to long chain alcohol molecules.
- c) They are extremely hydrophilic.
- d) They are made of 4 fused carbon ring molecules.