CONCEPT: LIPIDS

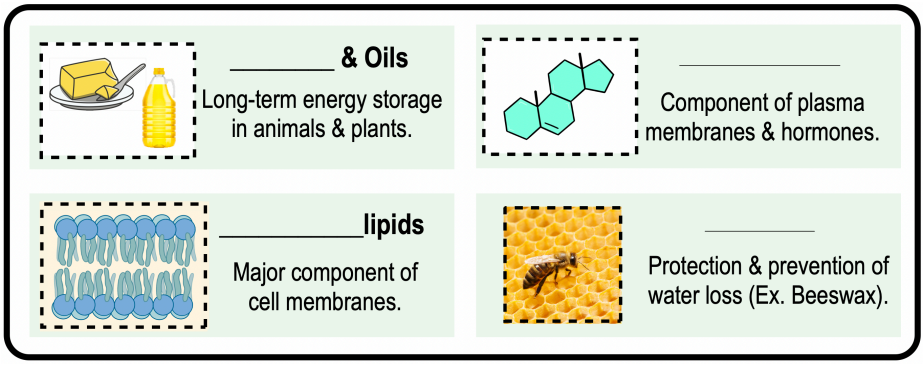
●_____: *hydrophobic* biomolecules insoluble in water that are highly diverse in their *structure* & *function.*

□ 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).

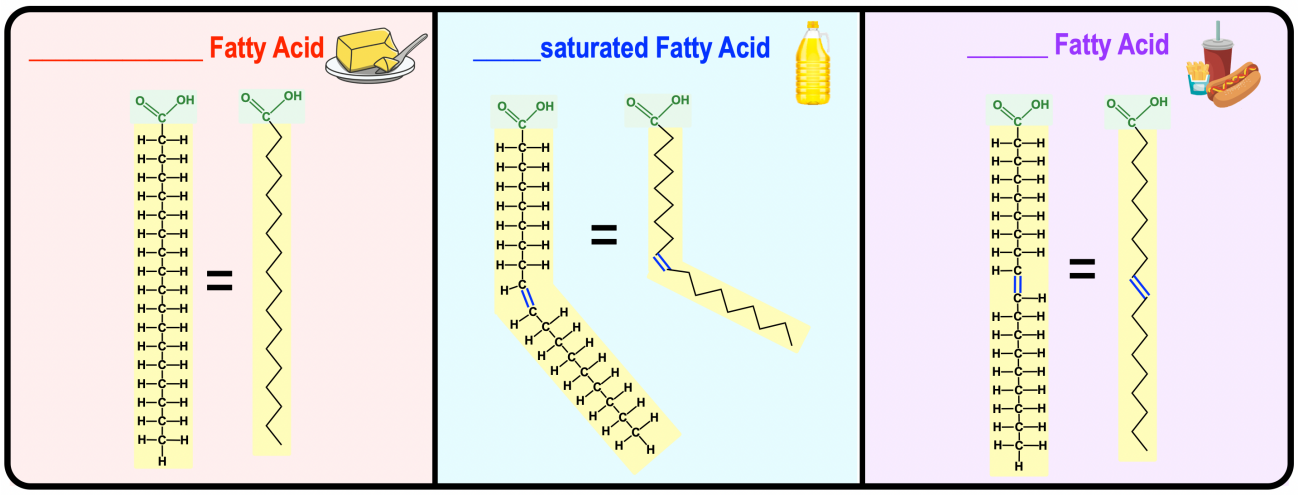
□ _____ at room temp.

2) **Un**saturated 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?

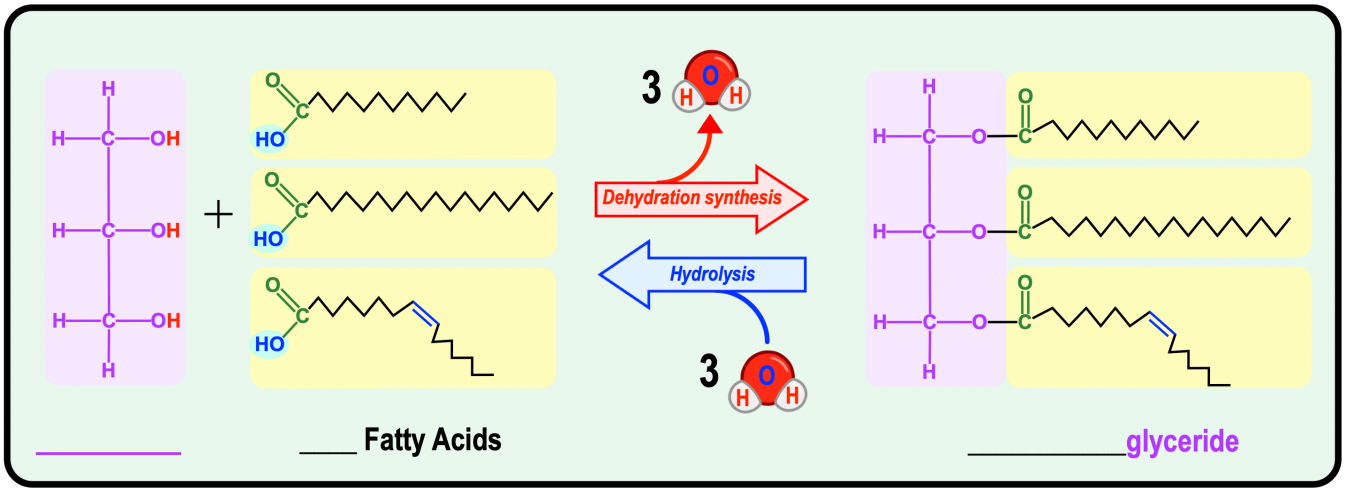
a) Unsaturated. b) Saturated. c) Trans fats. d) Steroids.

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 _____.

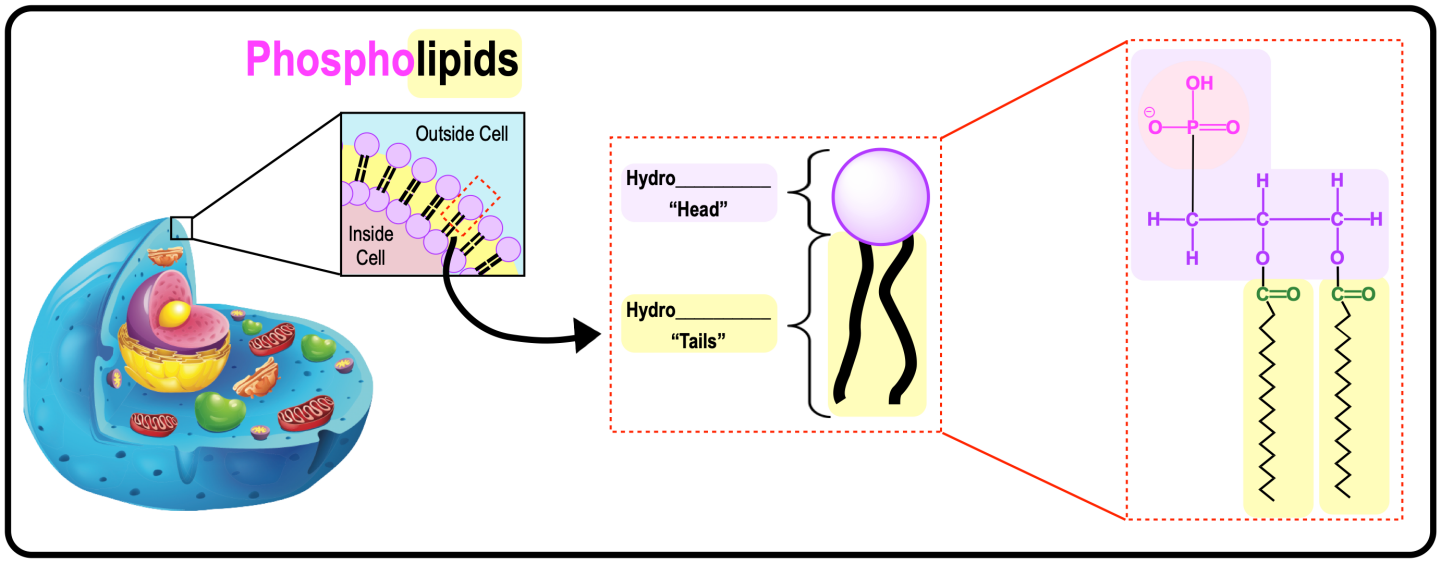
a) Lipid ; fatty acids & Glucose.
b) Lipid ; Fatty acids & Glycerol.
c) Carbohydrate ; Fatty acids only.
d) Lipid ; Ribose.

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.

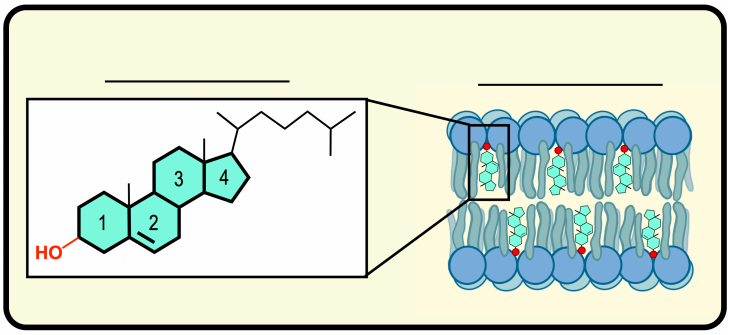
d) Phospholipids dissolve in water.

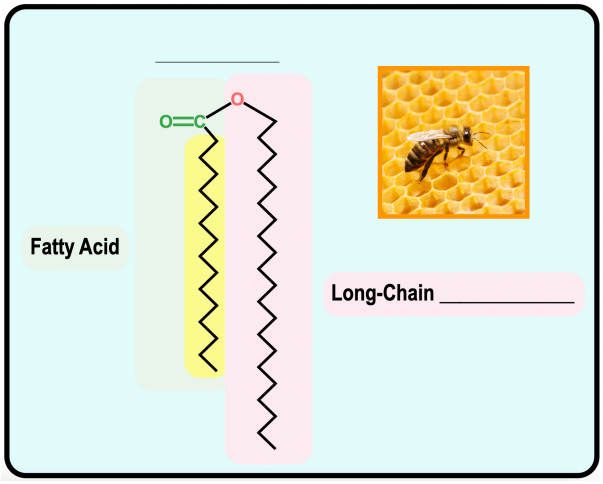
Steroids & Waxes

●_____: 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 the figure is a _____.

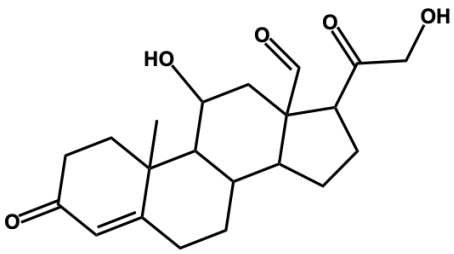
a) Fatty acid.

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.