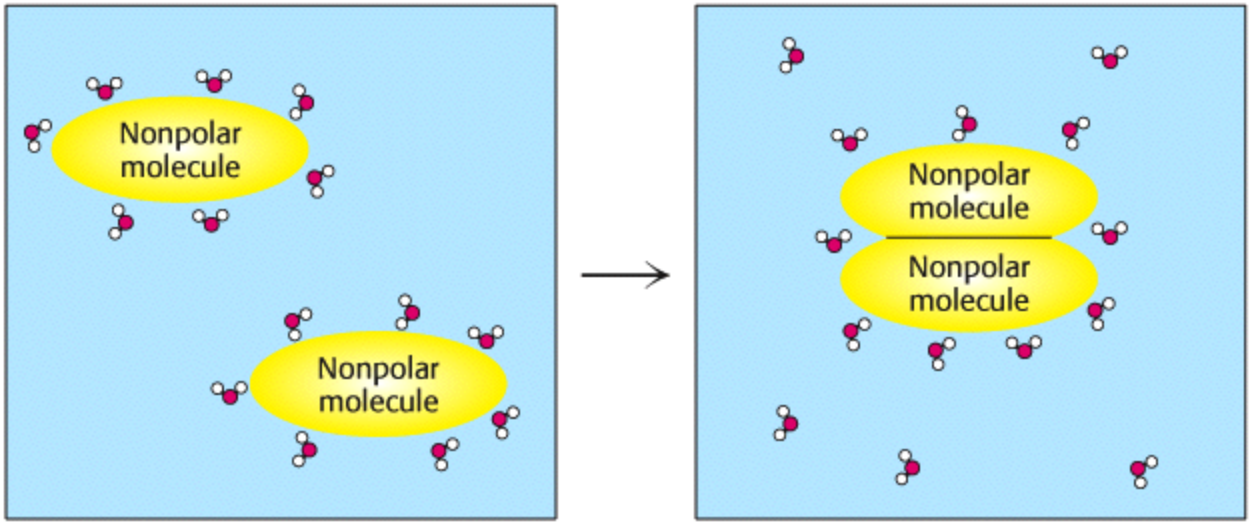
Hydrophobic interactions and biomembranes.

Hydrophobic effect

Non-polar molecules aggregate in aqueous solutions in order to separate from water.



Hydrophobic Effect

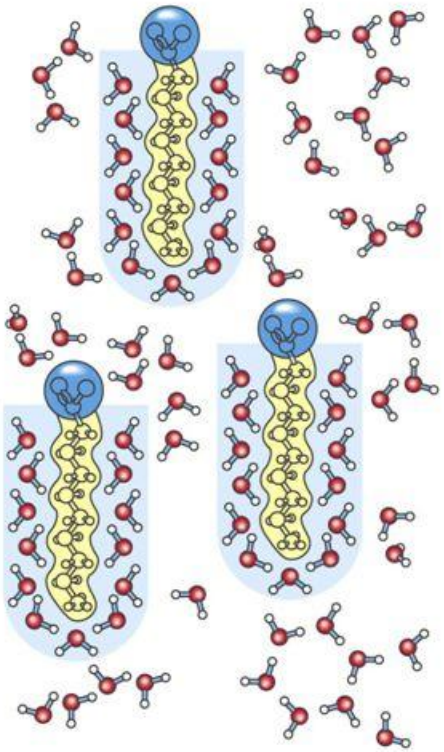


Figure 2-7b part 1
Lehninger Principles of Biochemistry, Fifth Edition

- Lipid molecules disperse in the solution; nonpolar tail of each lipid molecule is surrounded by ordered water molecules
- Lipid aggregates – Water released, surface area reduced

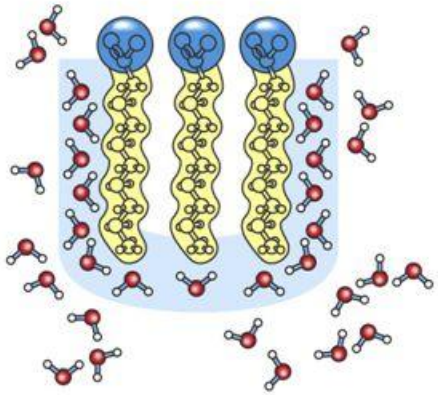
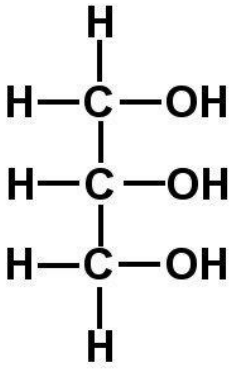


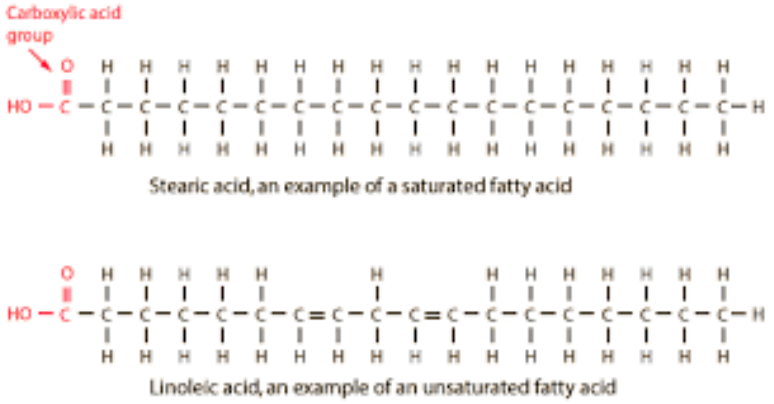
Figure 2-7b part 2
Lehninger Principles of Biochemistry, Fifth Edition

Example of a hydrophobic molecule – triglyceride (fat)



glycerol

+



Fatty acids

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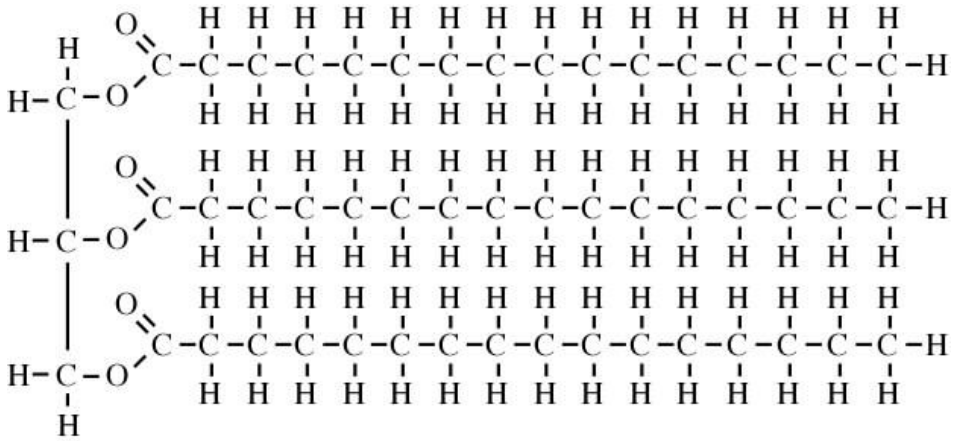

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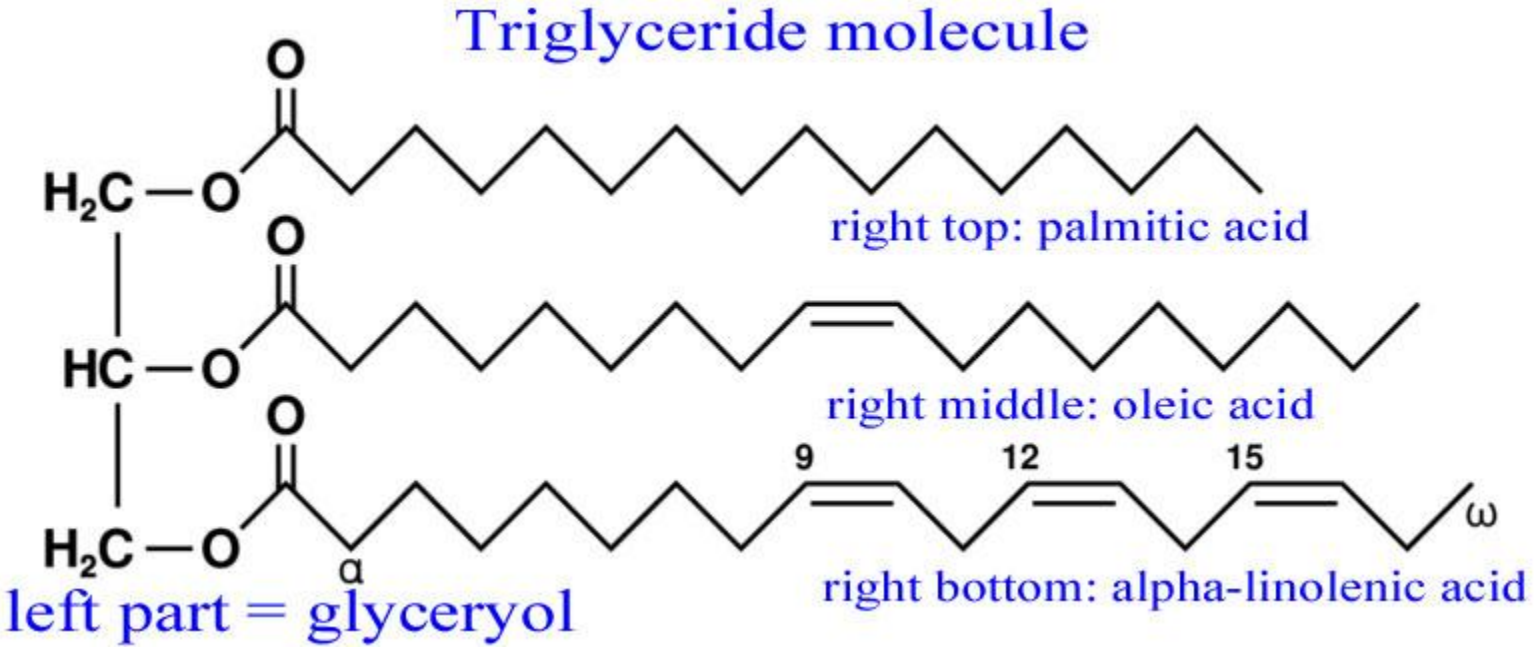
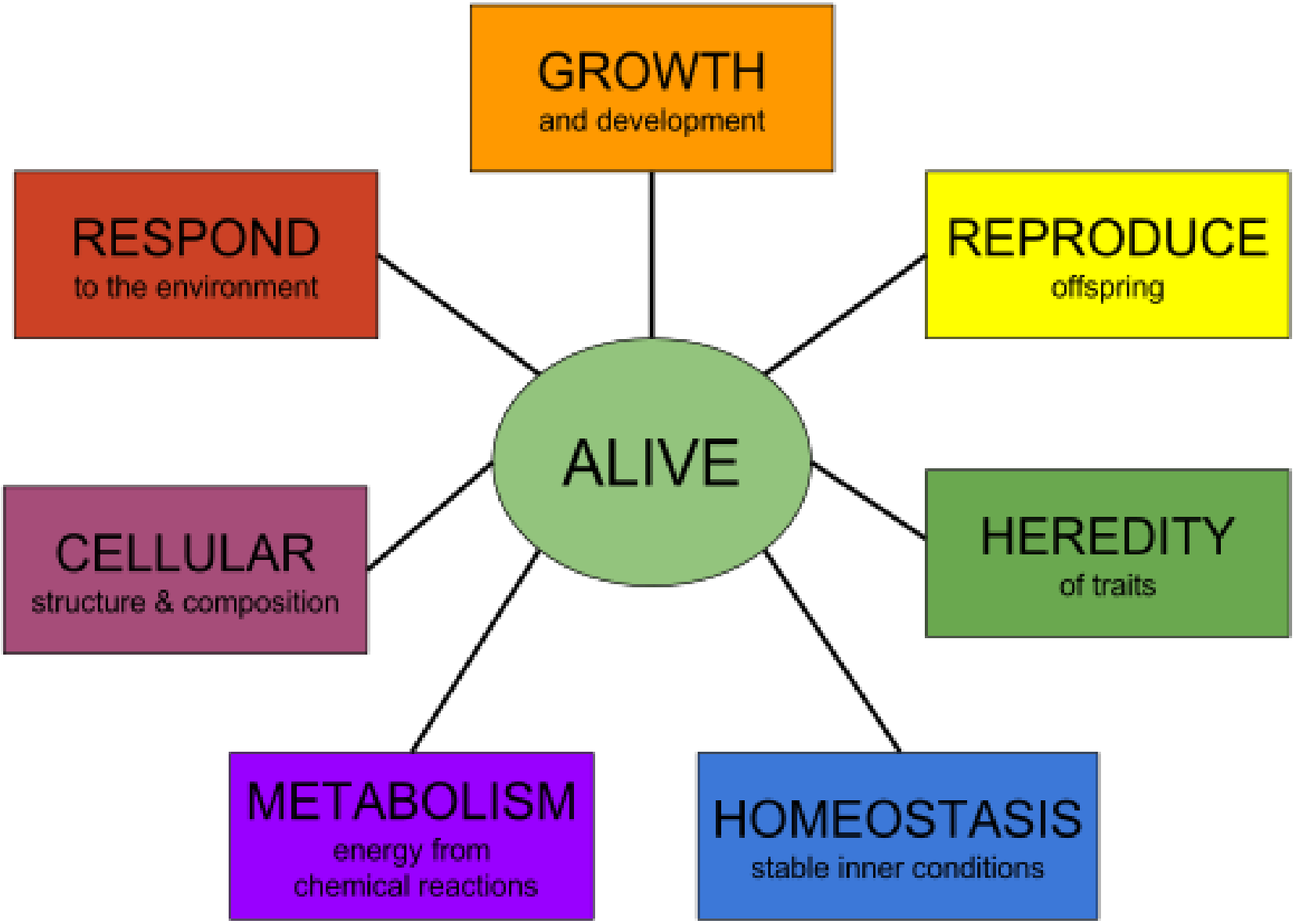
-triglyceride

triglyceride

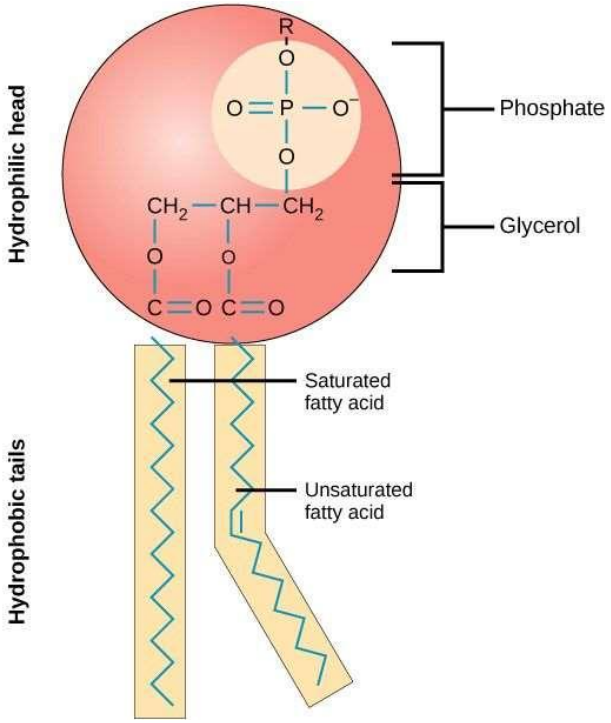


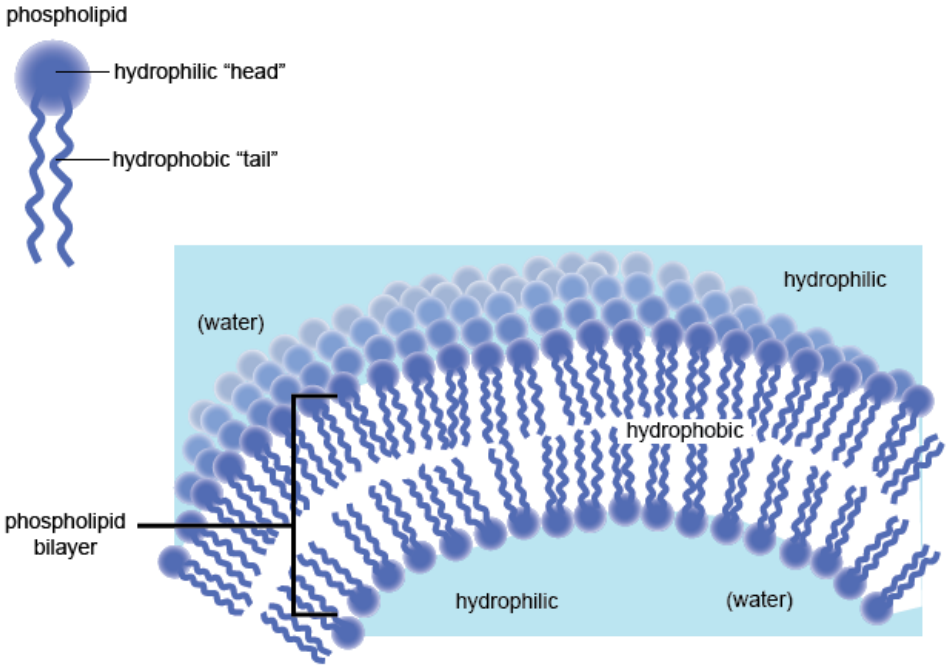
Cell membrane

- A cell is surrounded by the cell membrane that separates its interior from the outside environment (the extracellular space).
- The cell membrane is the barrier that keeps ions, proteins and other molecules where they are needed and prevents them from diffusing into areas where they should not be.
- Eukariotic cells have internal compartments separated from the rest of the cell by their own membranes


GROWTH
and development
RESPOND
to the environment
REPRODUCE
offspring
ALIVE
CELLULAR
structure & composition
HEREDITY
of traits
METABOLISM
energy from
chemical reactions
HOMEOSTASIS
stable inner conditions

Cell membrane consists of lipid bilayer





- The cell membrane is selectively permeable and able to regulate what enters and exits the cell, thus facilitating the transport of materials needed for survival. The movement of substances across the membrane can be either "passive", occurring without the input of cellular energy, or "active", requiring the cell to expend energy in transporting it. The cell membrane thus works as a selective filter that allows only certain things to come inside or go outside the cell.

A detailed diagram of the cell membrane