
Water

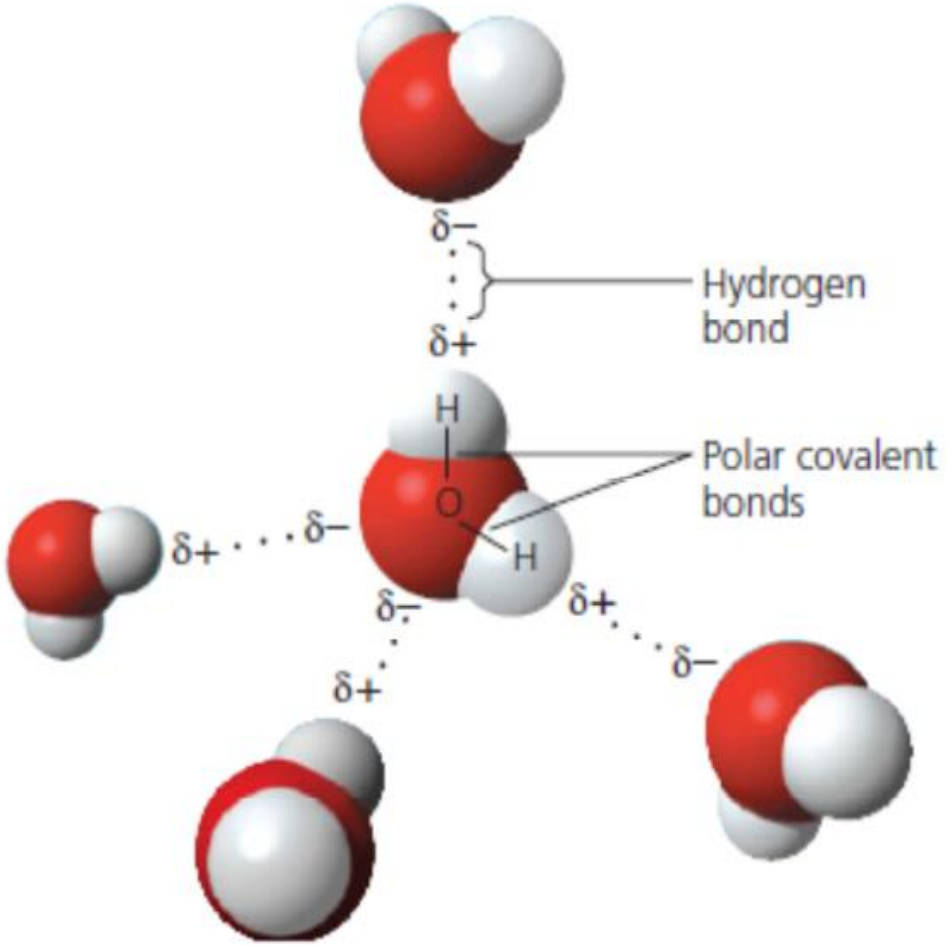
Life on earth began in water about three billion years earlier.

Forms:

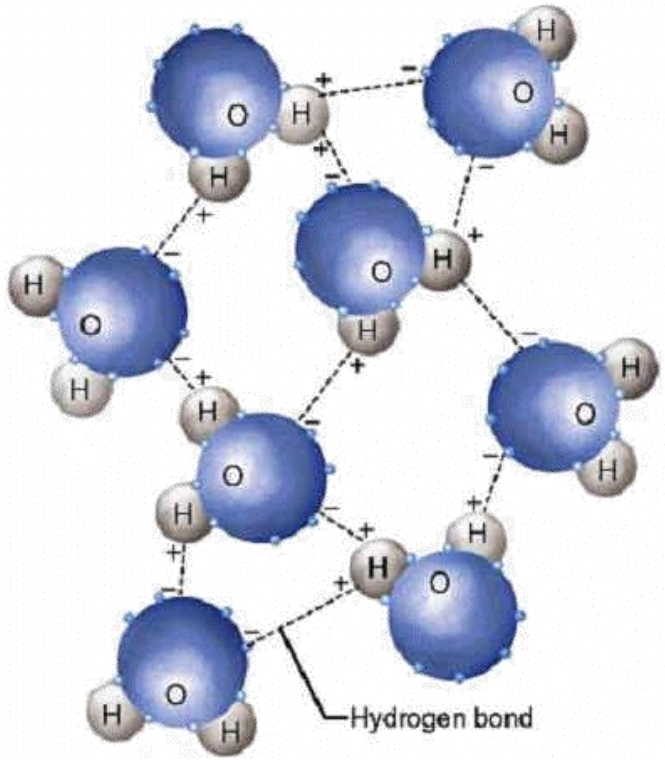
Solid, Liquid & Gas

If the form is Interchanged???

Properties of water which suites life existence on earth



- Hydrogen bonds form, break and re-form
- Few trillionths of a second

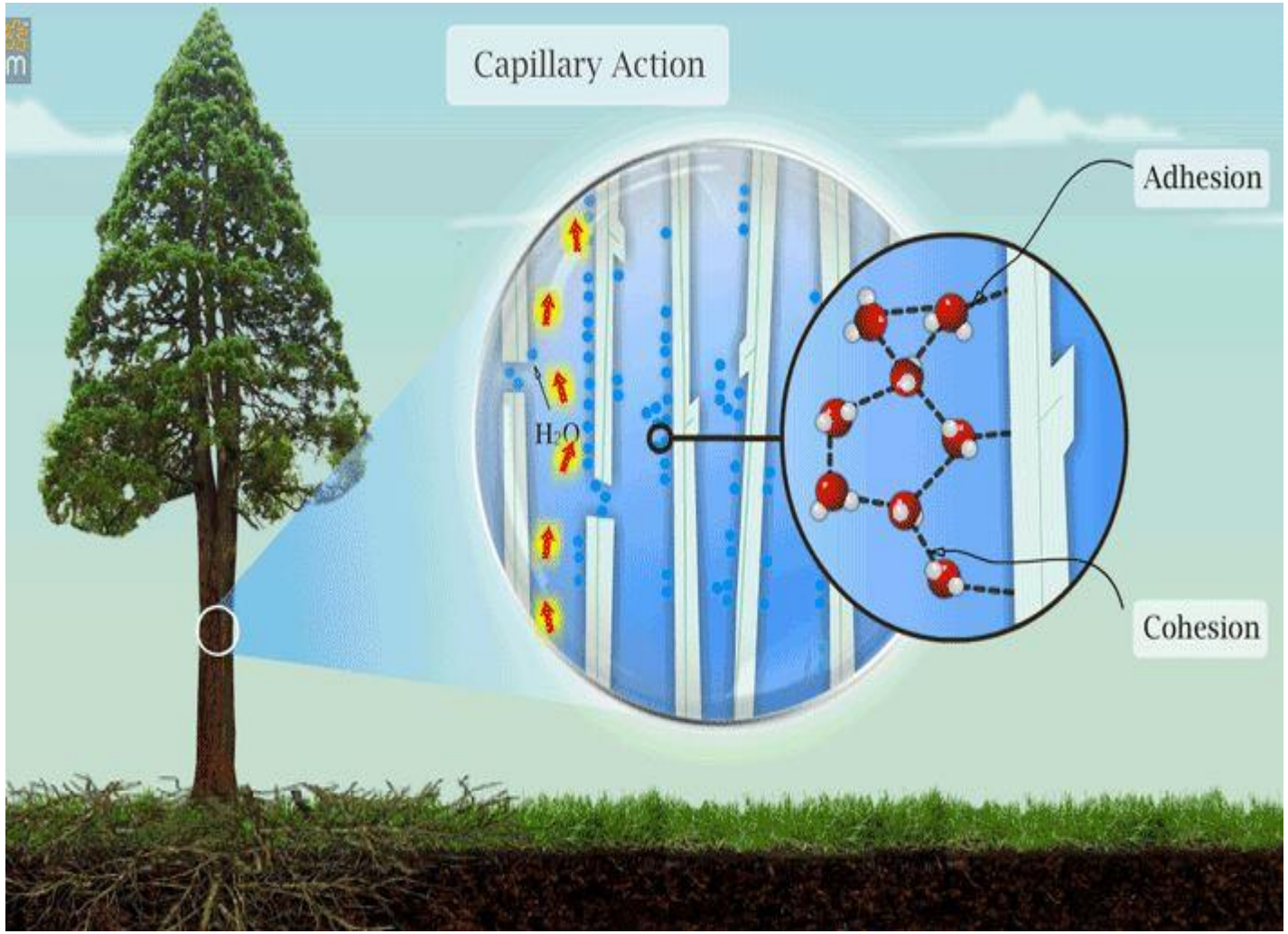


Property:

- Cohesive and adhesive properties of water
- Stay close is result of hydrogen bonding.
- liquid water is constantly changing
- linkages make water more structured
- Collectively, the hydrogen bonds hold the substance together

Property:

- the clinging of one substance to another
- Adhesion of water to cell walls by hydrogen bonds



Property:

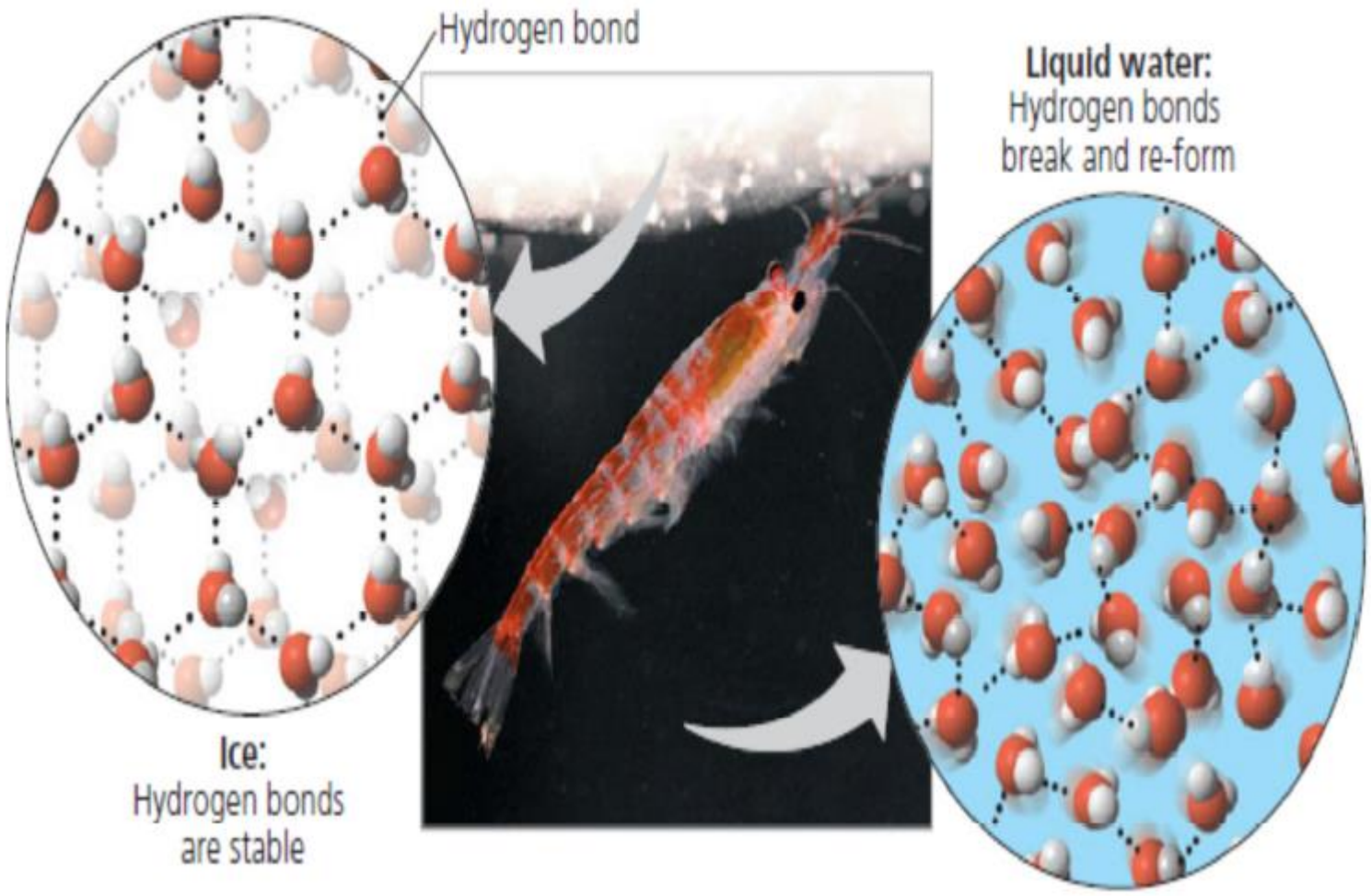
- Moderation of Temperature
- moderates air temperature by absorbing heat

- releasing the stored heat to air that is cooler

- ✓ water has an unusually high specific heat
- ✓ 1 calorie per gram and per degree Celsius

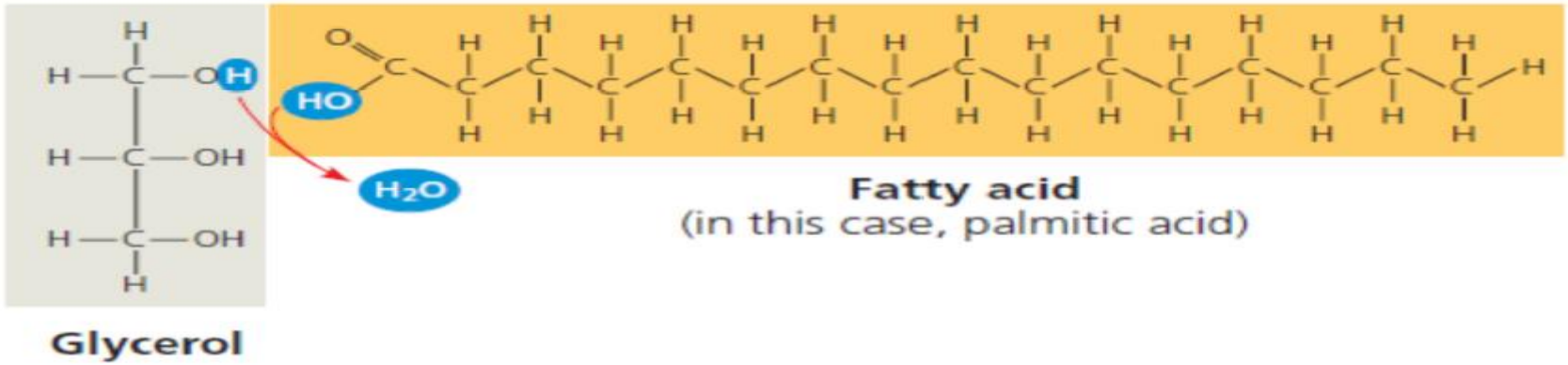
Heat must be absorbed in order to break hydrogen bonds

- Floating of Ice on Liquid Water
- Water: The Solvent of Life??
- Possible Evolution of Life on Other Planets with Water



Lipids

- Lipids are hydrophobic molecules
- hydrophobic nature is based on their molecular structure



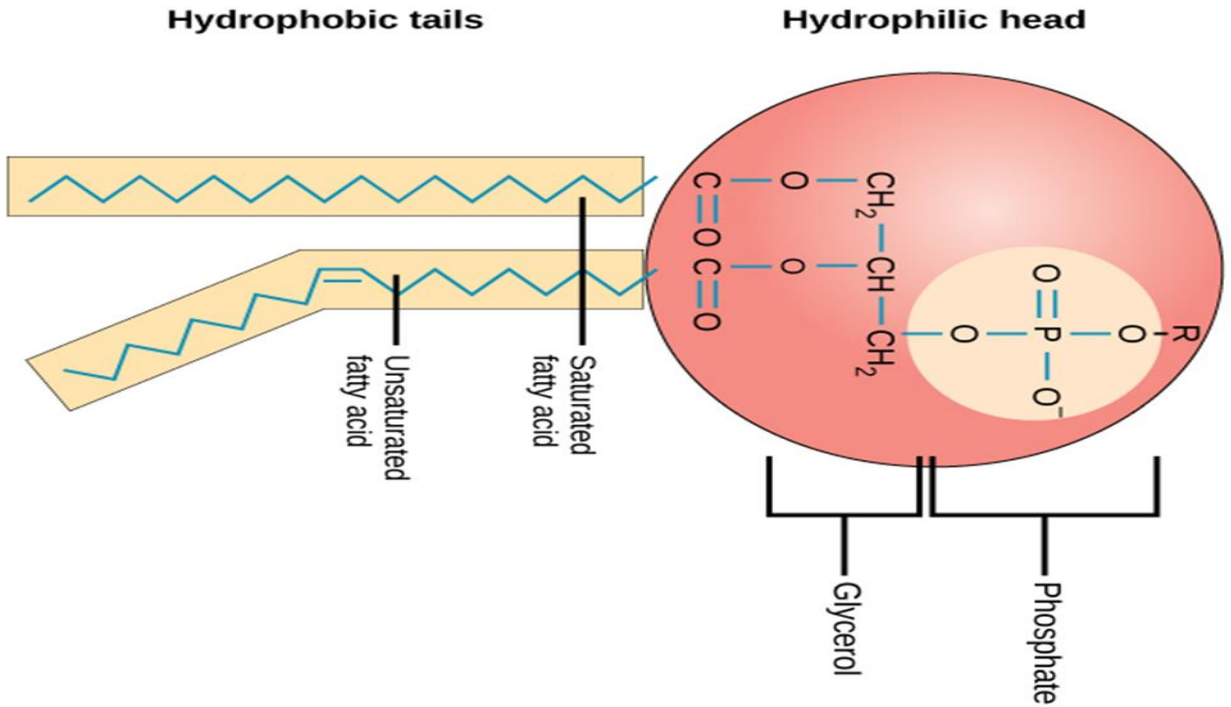
- ✓ also some polar bonds associated with oxygen
- ✓ lipids consist mostly of hydrocarbon regions
- ✓ varied in form and function ex. Wax, pigments
- ✓ Biological ex.

Phospho-Lipids

Characteristics:

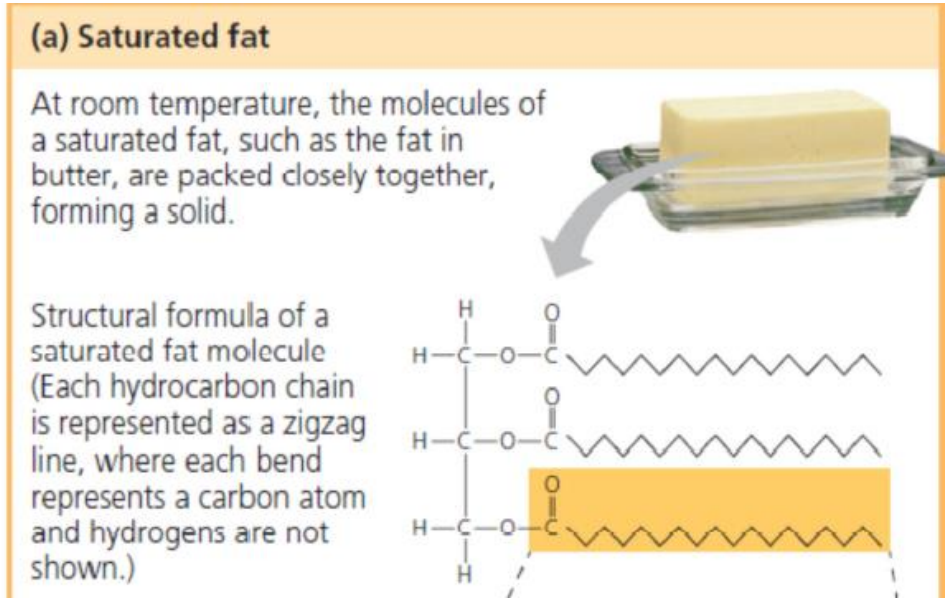
Phospholipids are major components of the plasma membrane

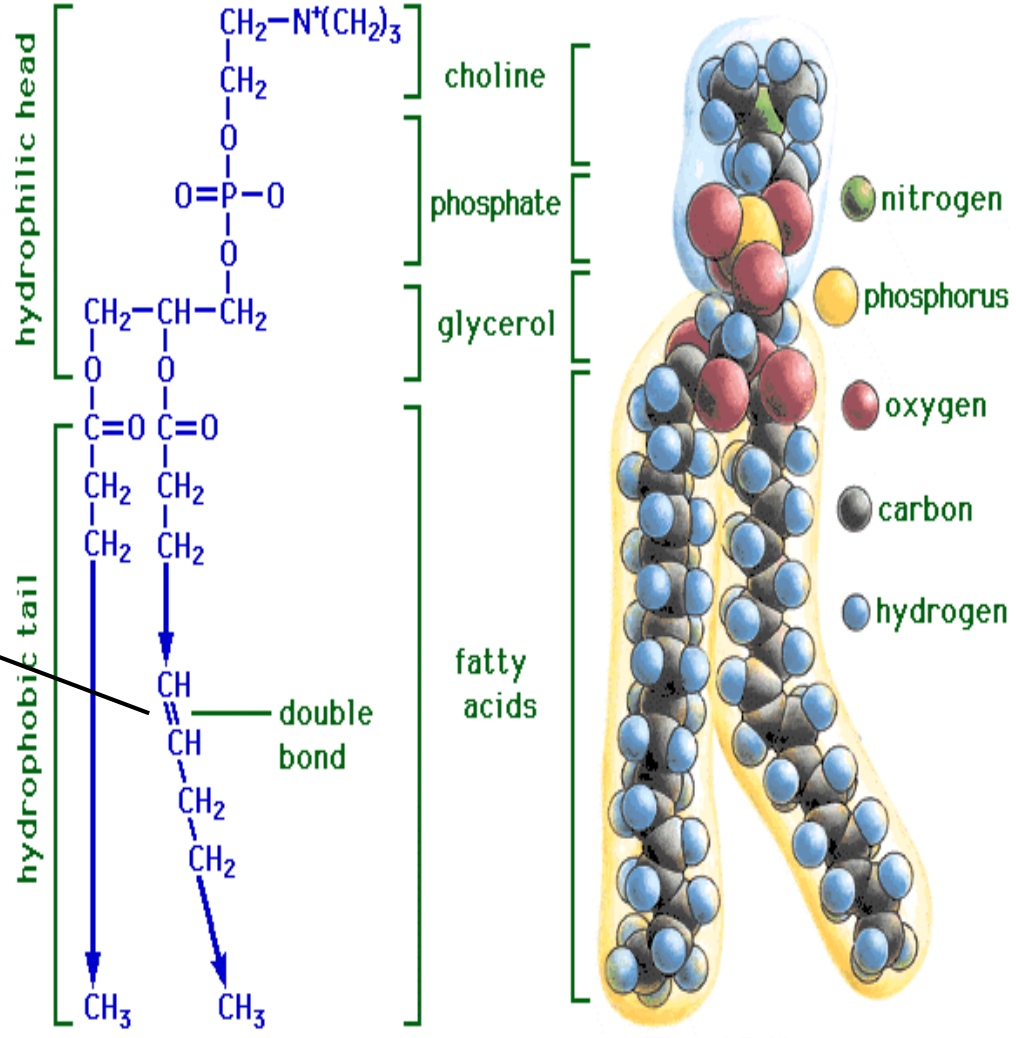
Like fats, composed of fatty acid chains attached to a glycerol backbone



- Terms saturated fats and unsaturated fats are commonly used in the context of nutrition
- These refer to the structure of the hydrocarbon chains of the fatty acids
- saturated with hydrogen (saturated fats)
- one or more double bonds (unsaturated fats)

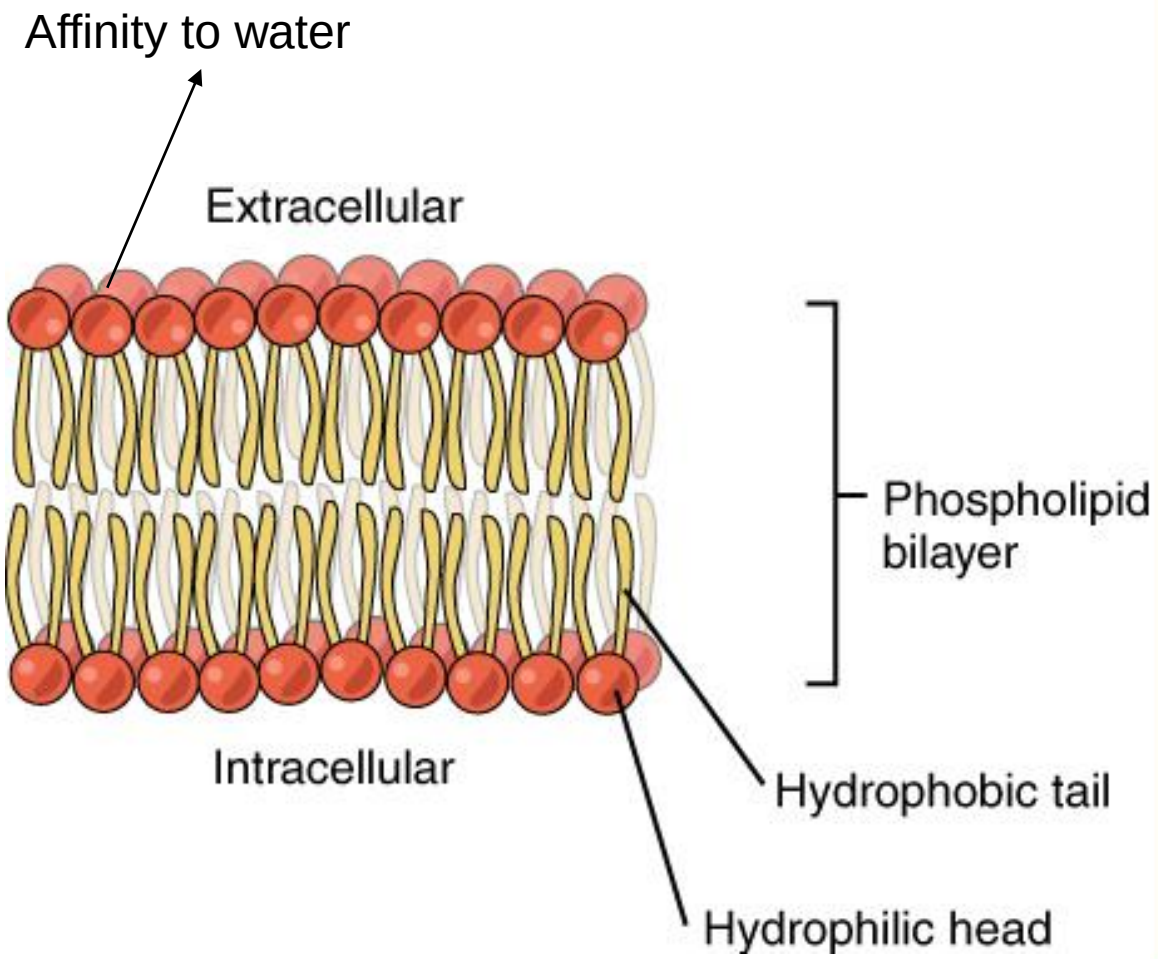
cis double bonds

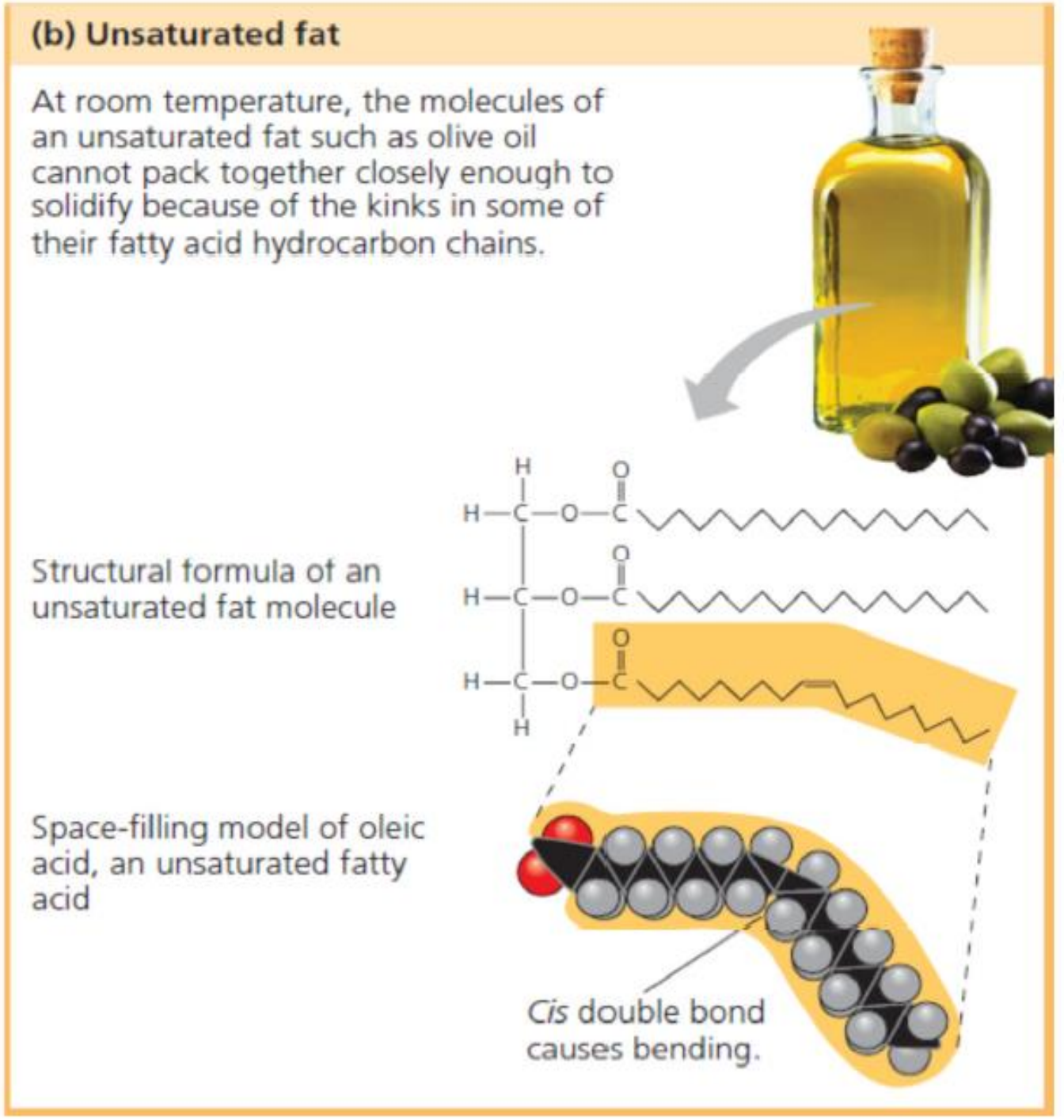


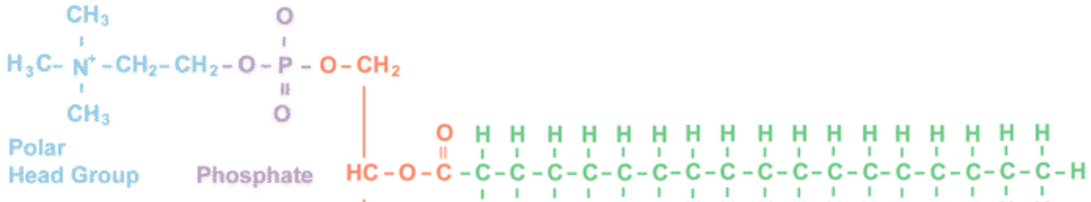


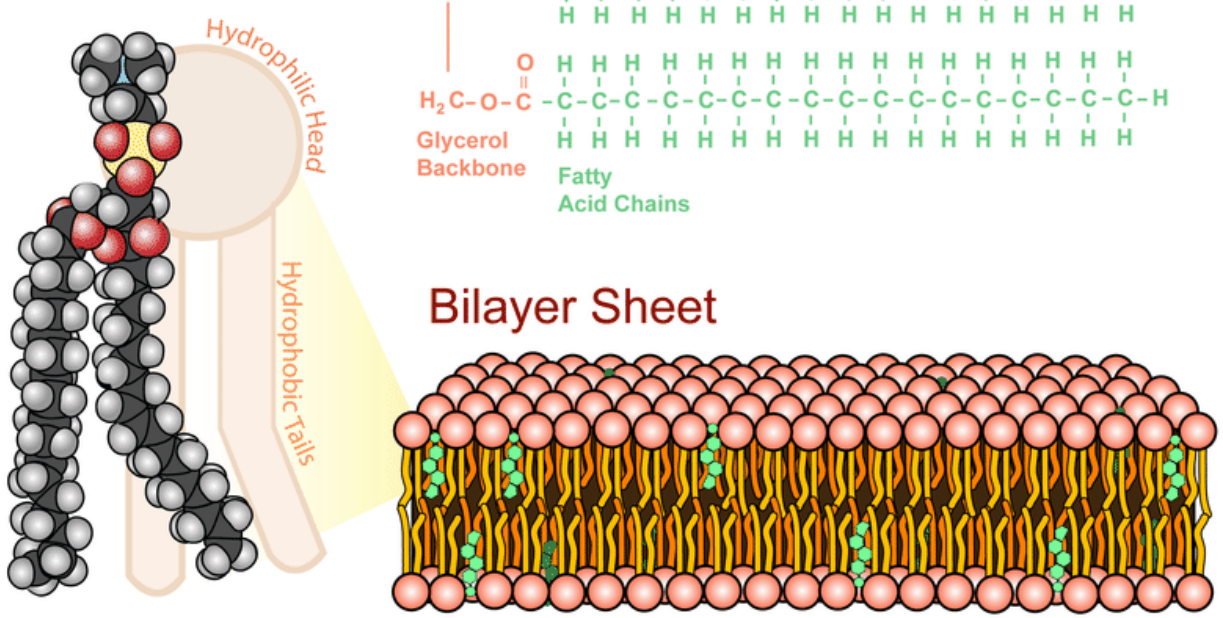
Phospholipids are essential for cells because they make up cell membranes

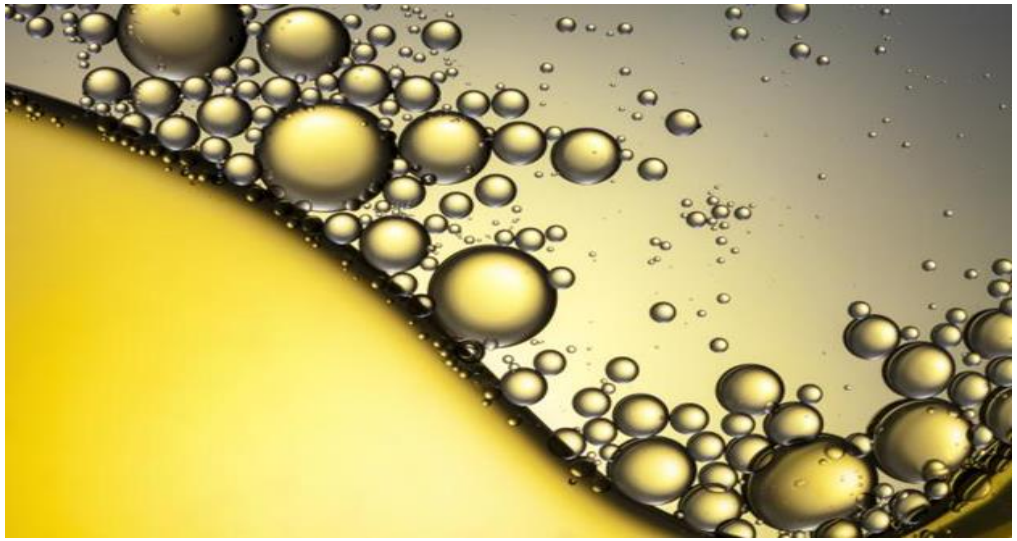
strange behavior molecules are called amphipathic molecules



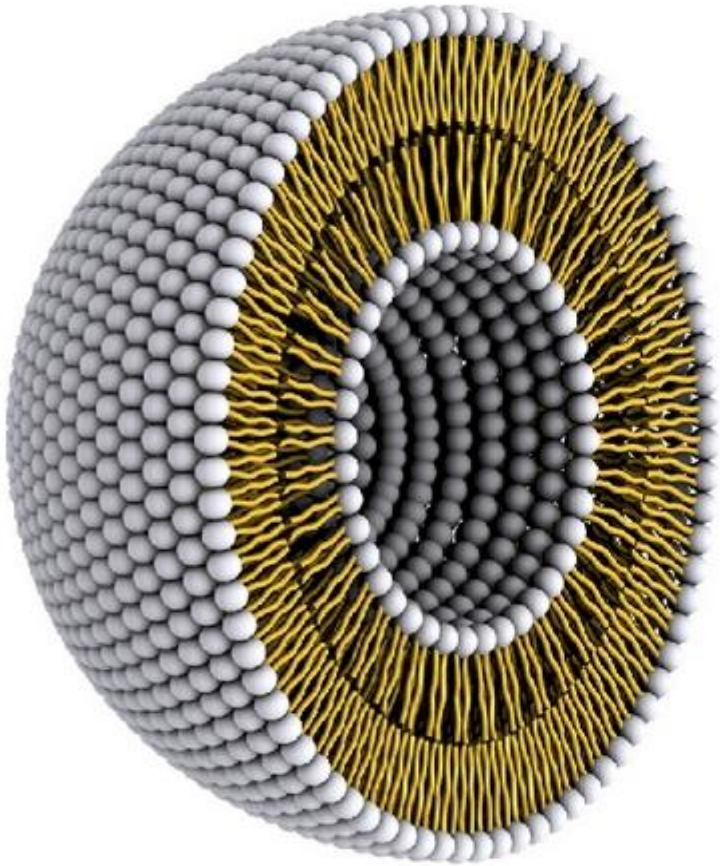








Liposome



Micelle