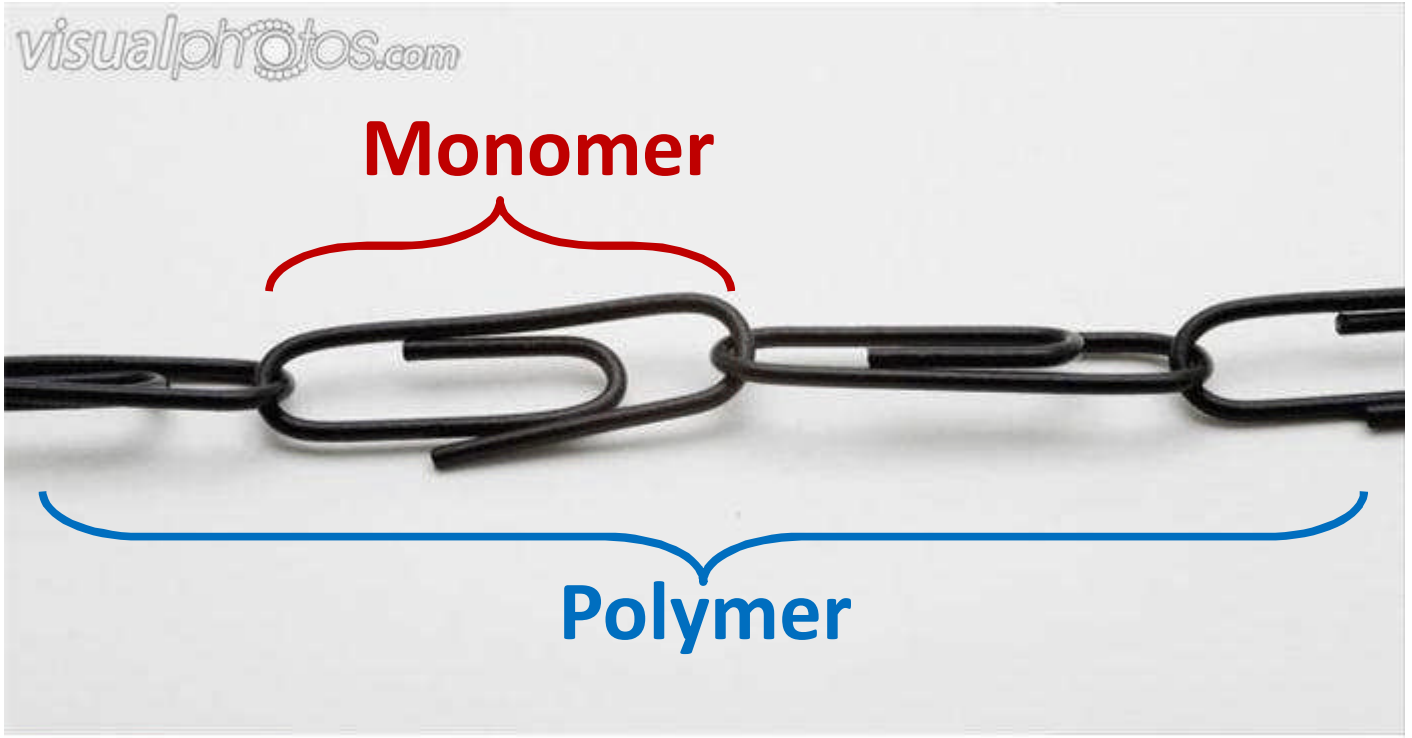

POLYMERIZATION
Reese's
MILK CHOCOLATE
PEANUT BUTTER CUP
Tootsie
FRUIT ROLLS
Cherry Flavored
Almond Joy
Peter Paul
MILK CHOCOLATE
Kit Kat
Crisp Wafers

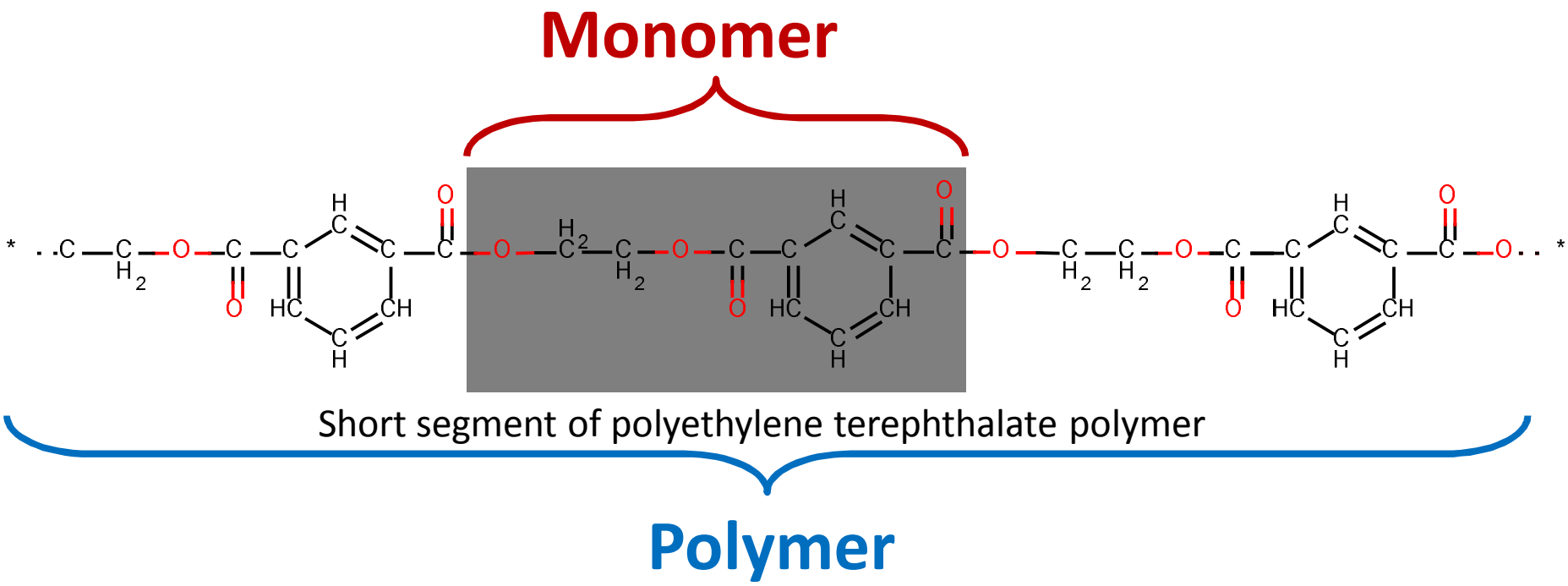
What are polymers?

- **Polymer**: very long molecules made by linking together smaller molecules called **monomers**



What are polymers?

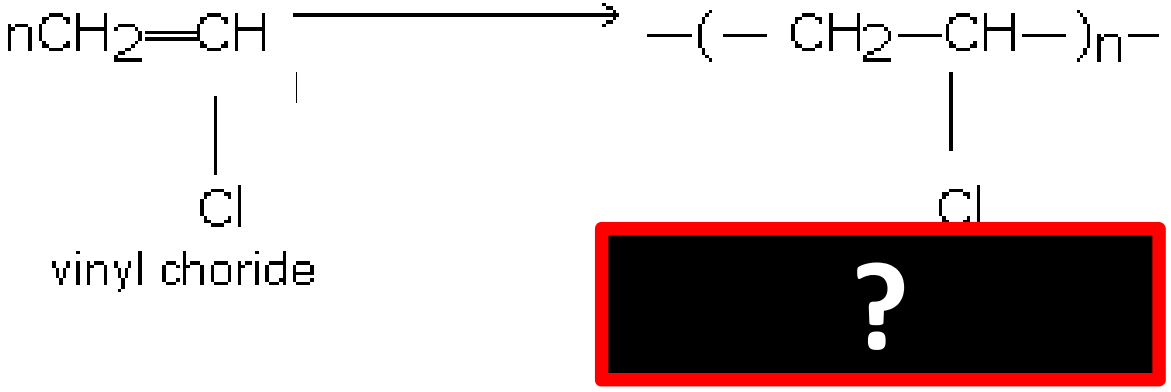
- **Polymer**: very long molecules made by linking together smaller molecules called **monomers**
  - Plastics and nylons are examples of polymers



Naming polymers

- Polymers are named as follows:
  - Write **"poly"** which means "*many*"
  - Follow this with the **name of the monomer**
  - We often use the **common name** instead of the IUPAC name

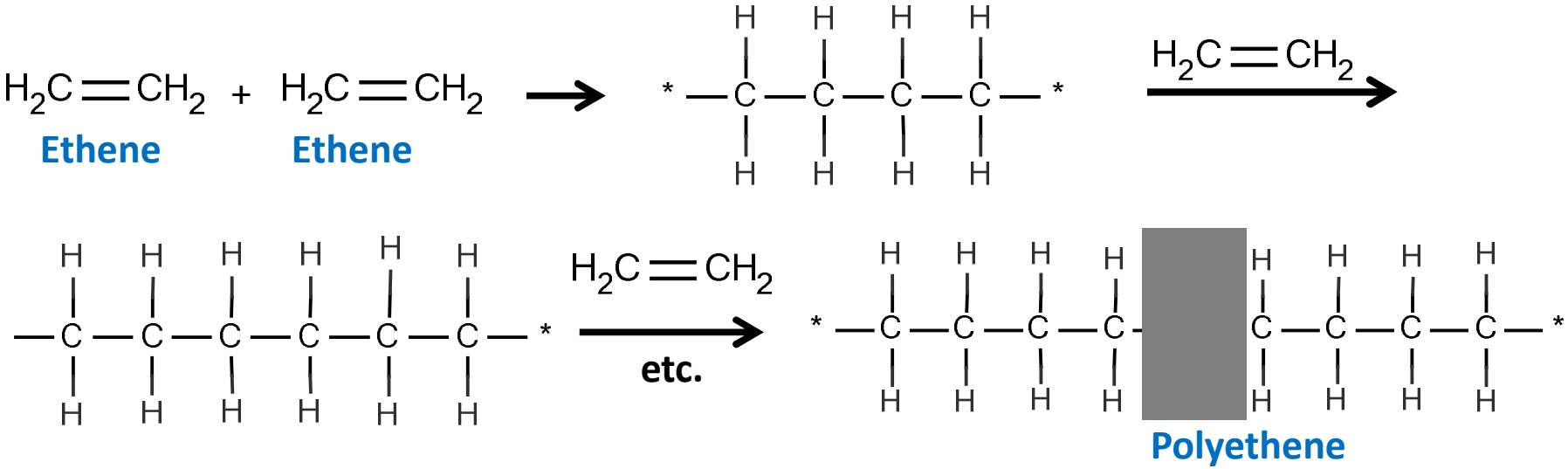
  - Example: Consider the monomer 1-chloroethene. The common name for this is "vinyl chloride". What would the polymer name be?



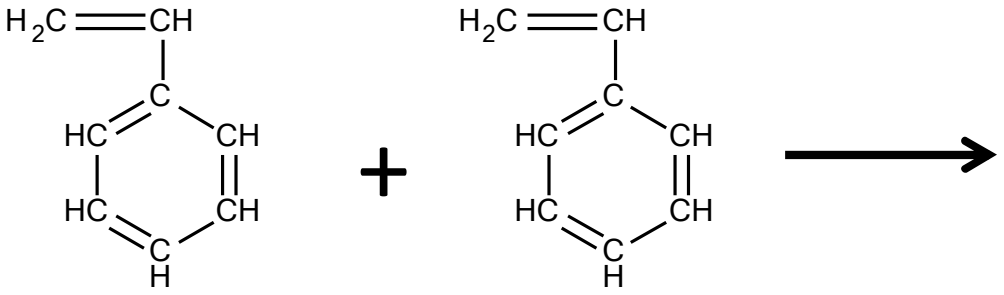
Addition Polymerization Reactions

- Synthetic polymers can be formed by **Addition Polymerization**, or **Condensation Polymerization**

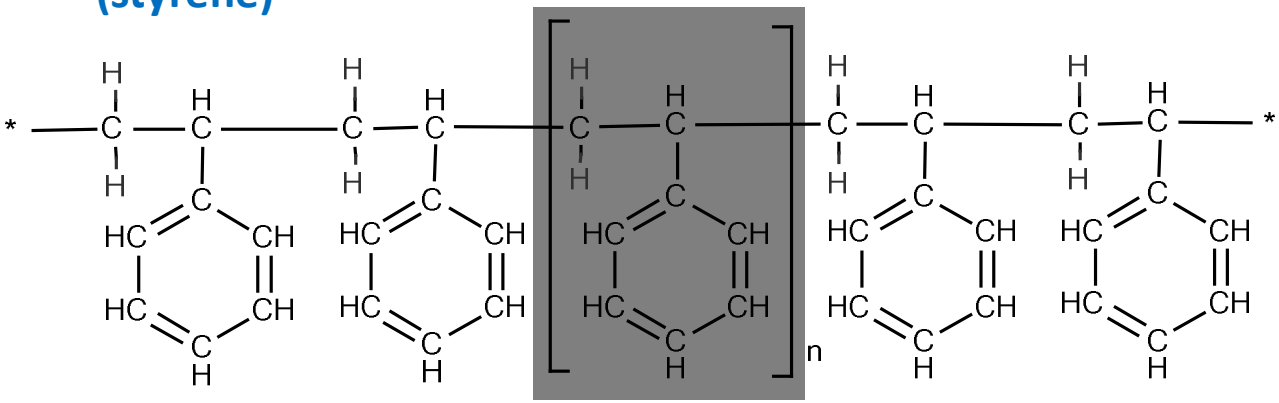
- **Addition Polymerization**
  - Monomers with double bonds join together through multiple addition reactions
  - **Look for:** alkenes in the monomer, single bonds in polymer



Addition Polymerization Reactions



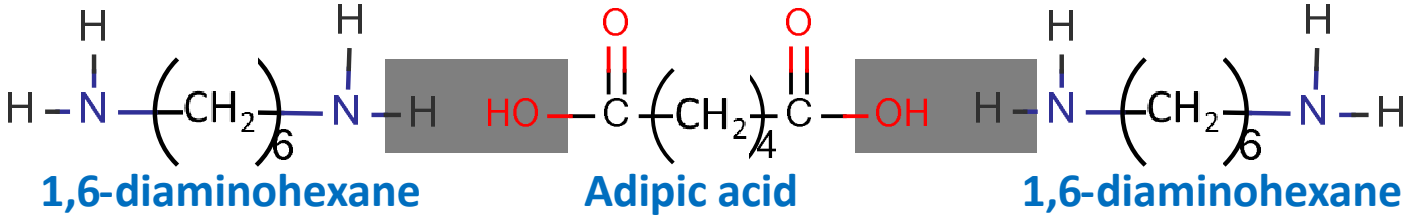
ethenylbenzene (styrene)

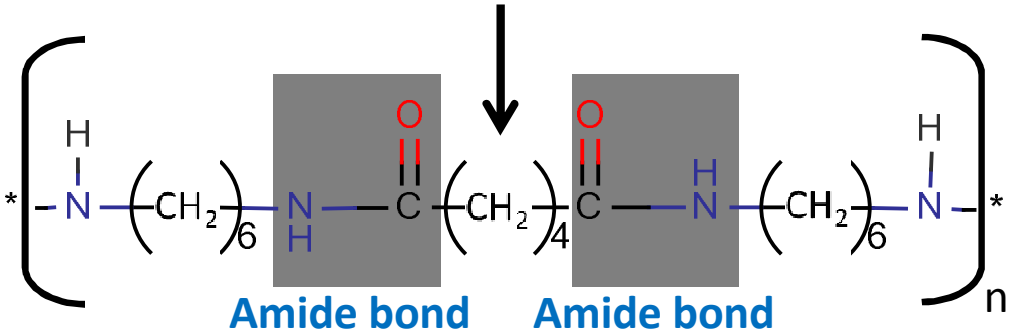


Polystyrene “Styrofoam”

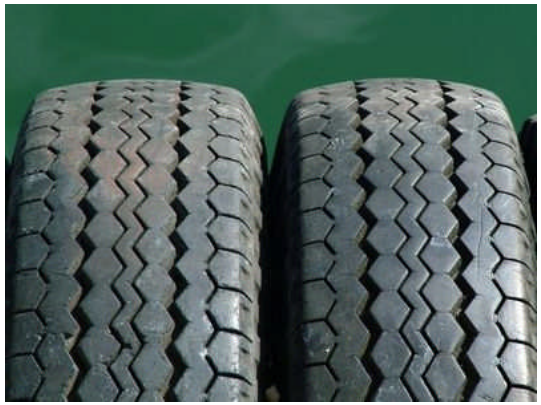
Condensation Polymerization Reactions

- Condensation reactions
  - Monomers are joined together by the formation of **ester** or **amide** bonds
  - **Look for:** reactions between a carboxylic acid and an alcohol (ester bonds), or reactions between a carboxylic acid and an amine (amide bond)
  - **Look for:** the release of water molecules during the reaction



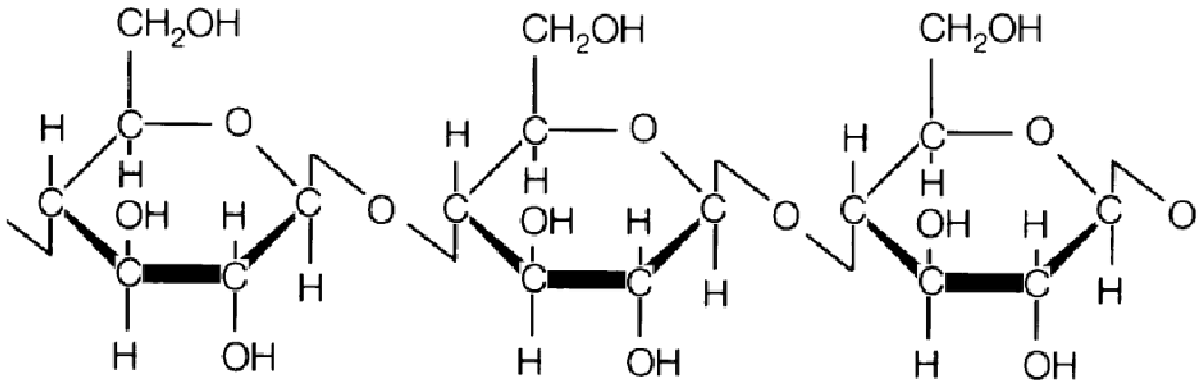


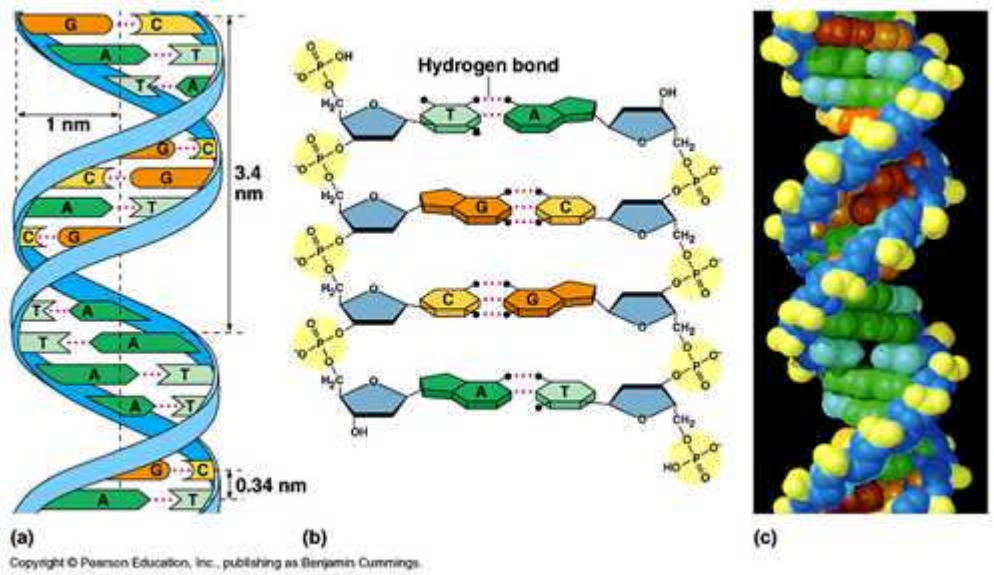
Nylon 66



Biopolymers

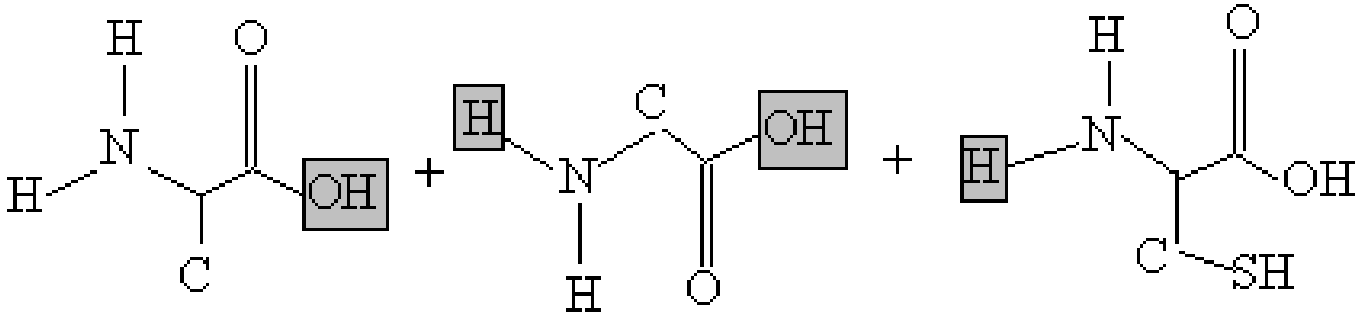
Cellulose



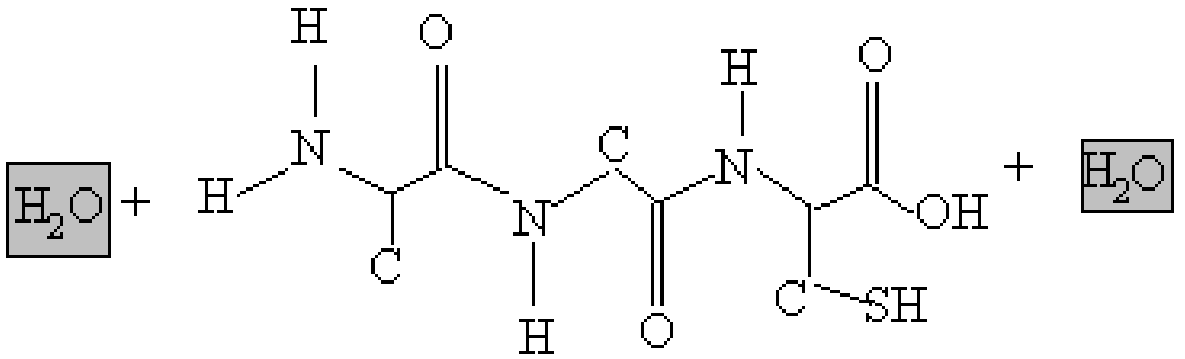


DNA

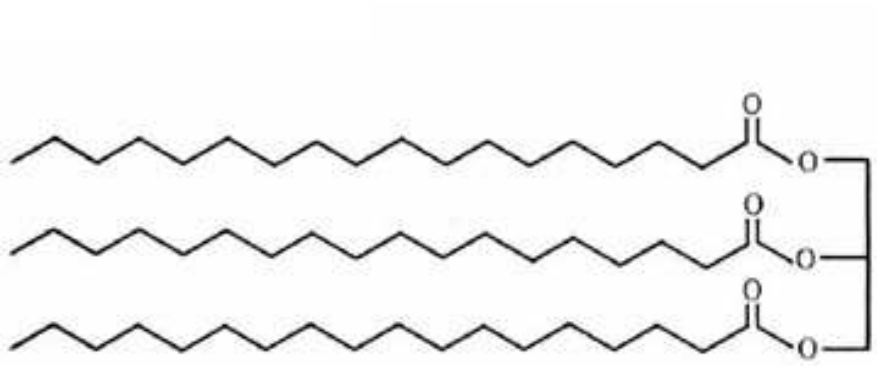
Biopolymers



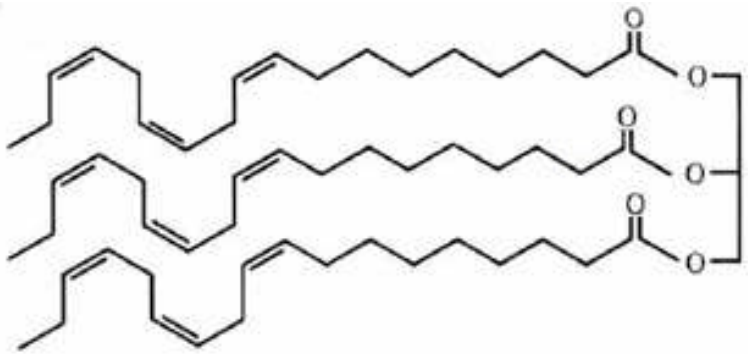
Proteins



Biopolymers

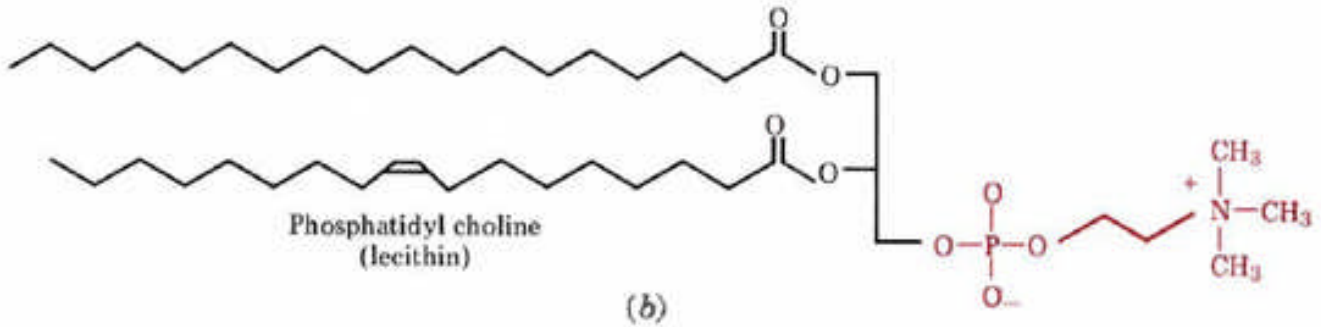


Glycerol tristearate (tristearin), a saturated fat



Glycerol trillinolenate, an unsaturated fat

(a)



Phosphatidyl choline
(lecithin)

(b)

Lipids