Lipids (fats, oils, wax, cholesterol, etc.)

Hydrophobic macromolecules

- Lipid molecules are composed almost entirely of carbon and hydrogen atoms (with few oxygen or nitrogen atoms)
  - √ This is what makes them hydrophobic
- Major functions: Energy storage, insulation, cell membranes
- Fatty acid and glycerol are the building block molecules of most lipids
- Fatty acid = A molecule containing a long hydrophobic "tail" of only carbon and hydrogen atoms and a carboxylic acid at one end
  - √ Unsaturated fatty acids have a double bond in the tail, saturated fatty acids do not
- Glycerol = A three-carbon molecule
  - √ Each carbon has an OH

Fig 5.11

Triglycerides (fats and oils)

Three fatty acids joined to a glycerol molecule

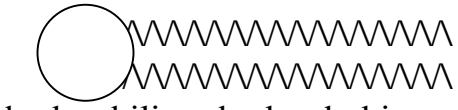
- Fats and oils are used for energy storage and insulation

Fig 5.11

Phospholipid

Two fatty acids and a phosphate-containing hydrophilic group joined to a glycerol molecule

- The phosphate portion is called the hydrophilic "head"
- The two fatty acids are called the hydrophobic "tails"



- Cell membranes are phospholipid bilayers
- The hydrophobic inside of the cell membrane stops most substances from passing through

Fig 5.13 and 5.14

Steroids

Lipids with a backbone of 4 fused rings

- Steroids differ in the number and type of functional groups on the steroid backbone.

- Examples: cholesterol, steroid hormones (estrogen, testosterone, progesterone, corticosterone), vitamin D

Fig 5.15