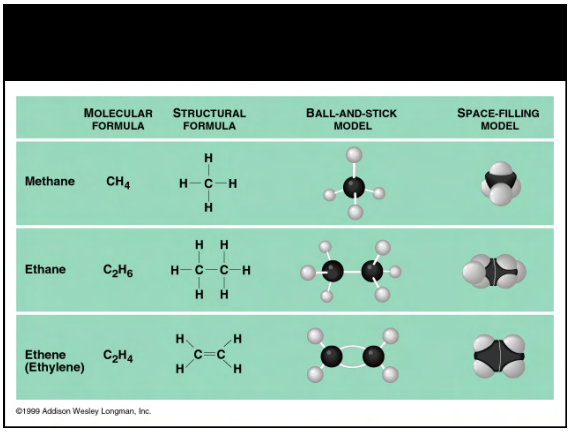
Carbon Chemistry

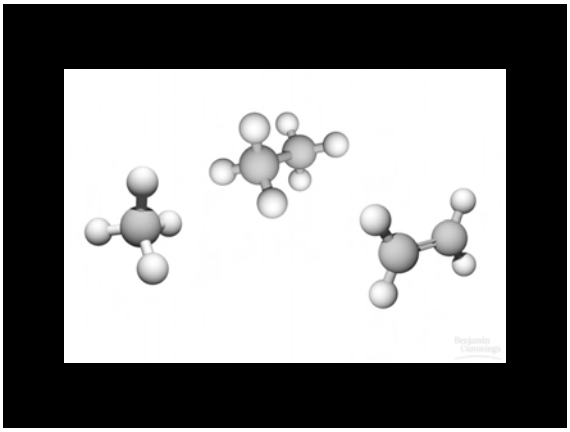
Chemical compounds containing carbon are called "organic" compounds.

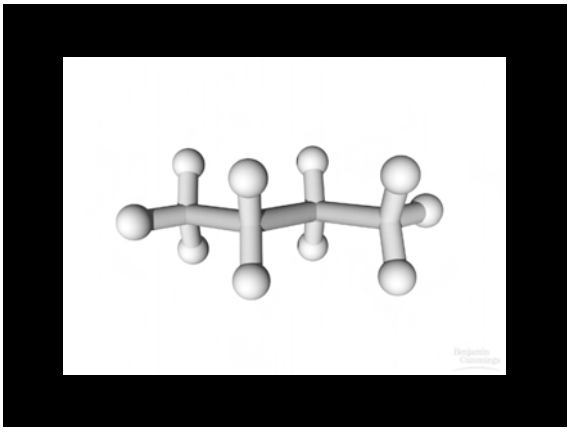
All life on earth is based on molecules built around carbon

Important Properties of Carbon

- Readily forms covalent bonds
- Single, double or triple bonds
- Tetravalent - it forms four covalent bonds, so it can build build complex shapes.





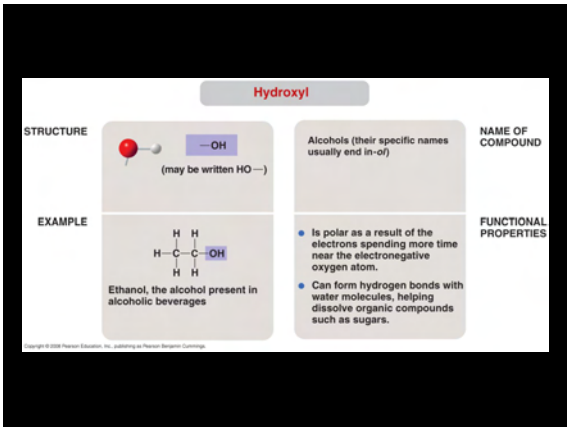


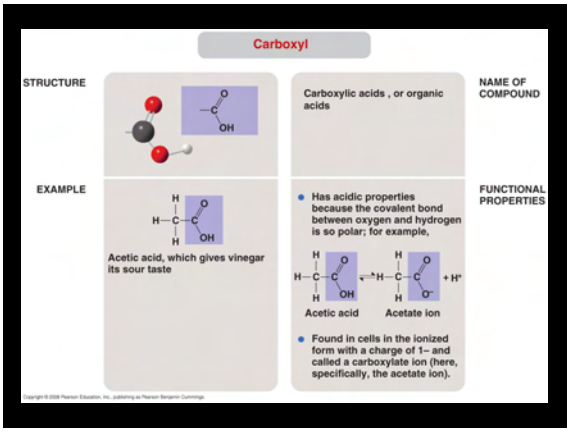
Functional Groups…

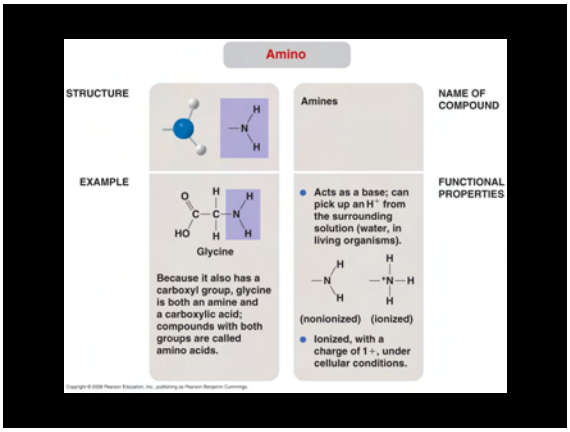
- Attach to carbon backbone
- Each group has distinctive properties

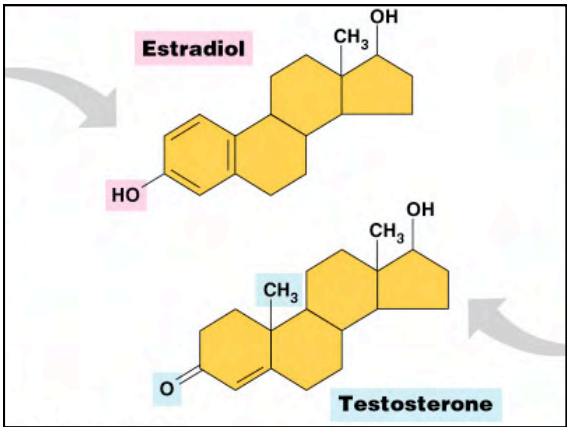
Functional Groups

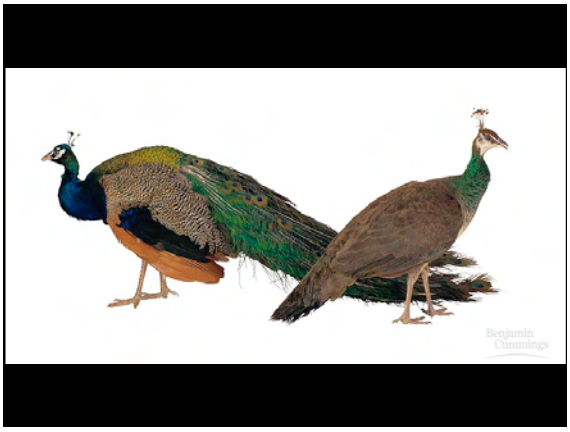
- Know these groups from table 4.10: Hydroxyl, Carboxyl, Amino, Phosphate. Know their structure and their properties.
- Properties means: do they make a molecule acidic? Basic? Polar? Ionic?





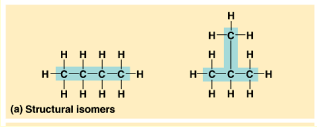






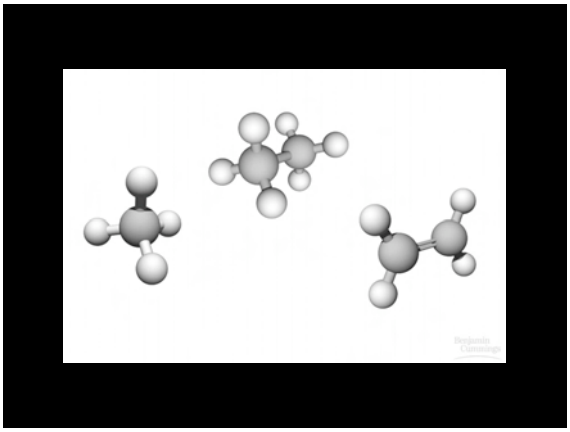
- Isomers have the same formula, but different shapes.

Structural isomers have atoms bonded in different orders: C_4H_{10}



- Geometric isomers have different arrangements around a double bond

- $C_2X_2H_2$



- Geometric isomers have different arrangements around a double bond

- $C_2X_2H_2$

cis trans

- Enantiomers are mirror images of each other
  - Note central carbon bonded to four different things.

- Alanine