CHAPTER 9

Many molecules which are biologically important are chiral including sugars (carbohydrates), amino acids, and nucleic acids.

- Alanine
- Proline
- Glucose

If a molecule possesses more than one stereogenic center, the possibility for another type of stereoisomer exists. Note that the number of stereoisomers that are possible for a molecule is dependant on the number of stereogenic centers. If \( n \) is the number of stereogenic centers, there are \( 2^n \) possible number of stereoisomers.

Diastereomers - stereoisomers which are not mirror images of each other. Configurational diastereomers occurs when there are 2 or more stereogenic centers and one or more is the same, while one or more are different. Note that cis/trans isomers are a type of diastereomer.

Meso Compounds - Molecules which have stereogenic centers, but are achiral (they are identical with their mirror image). These molecules have a plane of symmetry which bisects the molecule somewhere.
All isomers fit into one of the following categories:

**ISOMERS**
(same number and kind of atoms, but are different molecules)

- **Constitutional**
  (bonded differently)

- **Stereoisomers**
  (Only different in 3-dimensional arrangement)
  - **Enantiomers**
    (mirror images)
  - **Diastereomers**
    (not mirror images)

- **Configurational**
- **cis/trans**