Dylan's Chem217 Notes

Week 1

Lecture 1: *Intros & basic concepts*

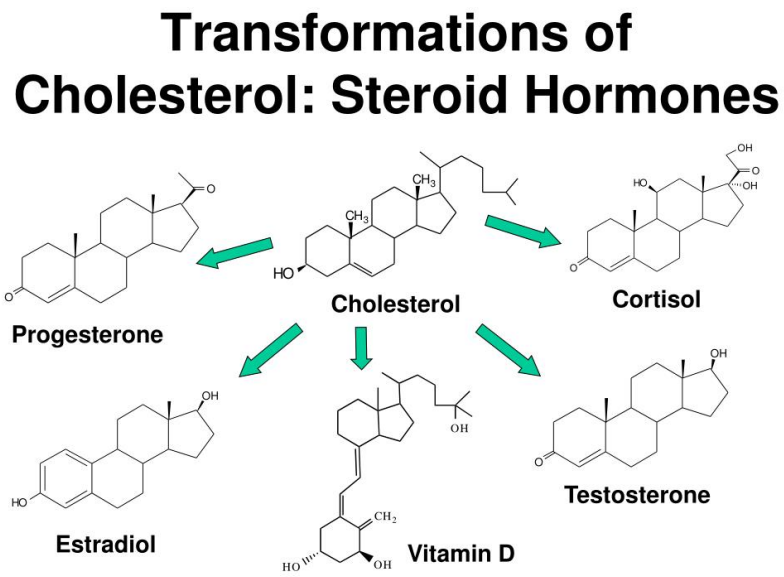

Figure 1: Examples of Steroid Hormones

- Cholesterol : Lipid synthesized by the liver
- Cortisol : Hormone associated with stress, synthesized in the adrenal gland.
- Testosterone : Sex hormone associated with males
- Estrogen : Sex hormone associated with females
- Vitamin D : Synthesized in the skin by pre-cholesterol.

The main commonality between all of these structures is the sterol structure. This is the 4 carbon ring system. While they all have different functional groups, they all have entirely different functional groups, which changes their behaviors and properties.

Lecture 2: *Lewis Structure and History*

A simplified history of organic chemistry :

- 1820's, vitalism was dominant, the belief that there was something unique to live matter.
- 1828, Wohler synthesized urea by heating cyanide and ammonia in a vat of water. This was the first synthesis of an organic molecule from two inorganic molecules.
- 1858, Perkin as an 18 year old tries to oxidizes coal tar to quinine. Instead he creates mauveine, which is a purple dye that was much more vibrant and long lasting and

stable when compared to natural dyes.

- 1897, The electron is discovered.

Chemical Bonds

Atoms → molecules for the sake of stability and energy minimization. When stability increases, the energy will decrease. This happens for the sake of fulfilling the octet rule.

There are two primary bond types :

Ionic bonds : This situation creates two ions. It only happens between metals and nonmetals. This can only happen because of the large difference in electronegativity. Most well known example of this is with salt, or NaCl

Covalent bonds : Sharing of electrons because of a similar electronegativity. This is best observed in diatomic bonds like

Polar covalent bonds : This lies between the fully covalent or ionic bonds. This results in a dipole moment. The dipole points towards the more electronegative group, so in water, the dipole moment is a sum of the two hydrogen dipoles, resulting in a net upwards moment towards the

So creating a small continuum from Ionic to Covalent Work done for the lewis structure sheet was done on paper as my pen is currently dead. Batteries will be coming in any day though so hopefully I'll be able to go back to drawing here.

Lecture 3: