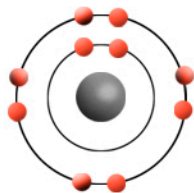


Fun With Electrons

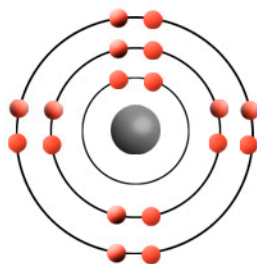
Electrons are organized in cloud-like "shells" around the nucleus of an atom. Each **VALENCE SHELL** (the outer shell) wants to be stable - the way to accomplish this is to have the maximum number of electrons allowed in the shell.



Two electrons will make the first valence shell stable - this is Helium.



Eight electrons make the second valence shell stable - This is Neon.



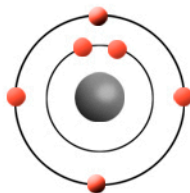
Eight in the third shell - Argon.

Notice anything about these three atoms? They are all Noble gases, and are all "inert" - unreactive - because their outer valence shells are complete.

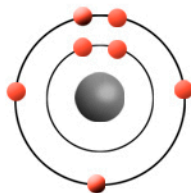
Now let's look at some atoms we will run into A LOT when studying proteins:



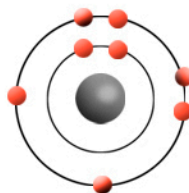
Hydrogen (H)



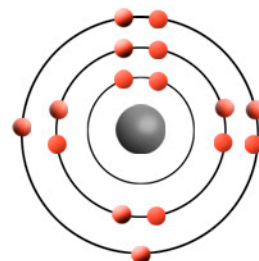
Carbon (C)



Nitrogen (N)



Oxygen (O)



Sulfur (S)

The chemical behavior of each of these atoms is determined mostly by the electrons in the outermost shell, which isn't full.

How do they fill in those last missing electrons? By creating **COVALENT BONDS** with other atoms. Valence electrons are shared by two different atoms (count the outer valence electrons in these three examples - they should all add up to 2 for Hydrogen and 8 for Carbon or Oxygen).

