BIOLOGICAL BUILDING BLOCKS: AMINO ACIDS

One of the most important classes of biological chiral compounds is the amino acids. Amino acids are building blocks that are used to make peptides and proteins. Peptides can be used as hormones, carrying messages throughout the body. Proteins can be used as factories to carry out transformations, such as the formation of a neurotransmitter or the degradation of a toxin. The structure of peptides and proteins depend on the structures of the amino acids that make them. In turn, these shapes determine into what receptors peptide-based hormones can fit, and also what substrates protein-based enzymes can accept.

- Almost all of the naturally-occurring amino acids are chiral. In general, these compounds all have the same L-configuration.

- Amino acids get their name from two "functional groups" or groups of atoms common to all these compounds.
- One of these groups is a carboxylic acid, the (C=O)OH on each amino acid.
- Later, we will look at how carboxylic acids can donate protons.
- The other common group is an amine, the NH_2 group connected to a tetrahedral carbon in most of these compounds.
- Later, we will see how amines can accept protons. In general, amines are bases.

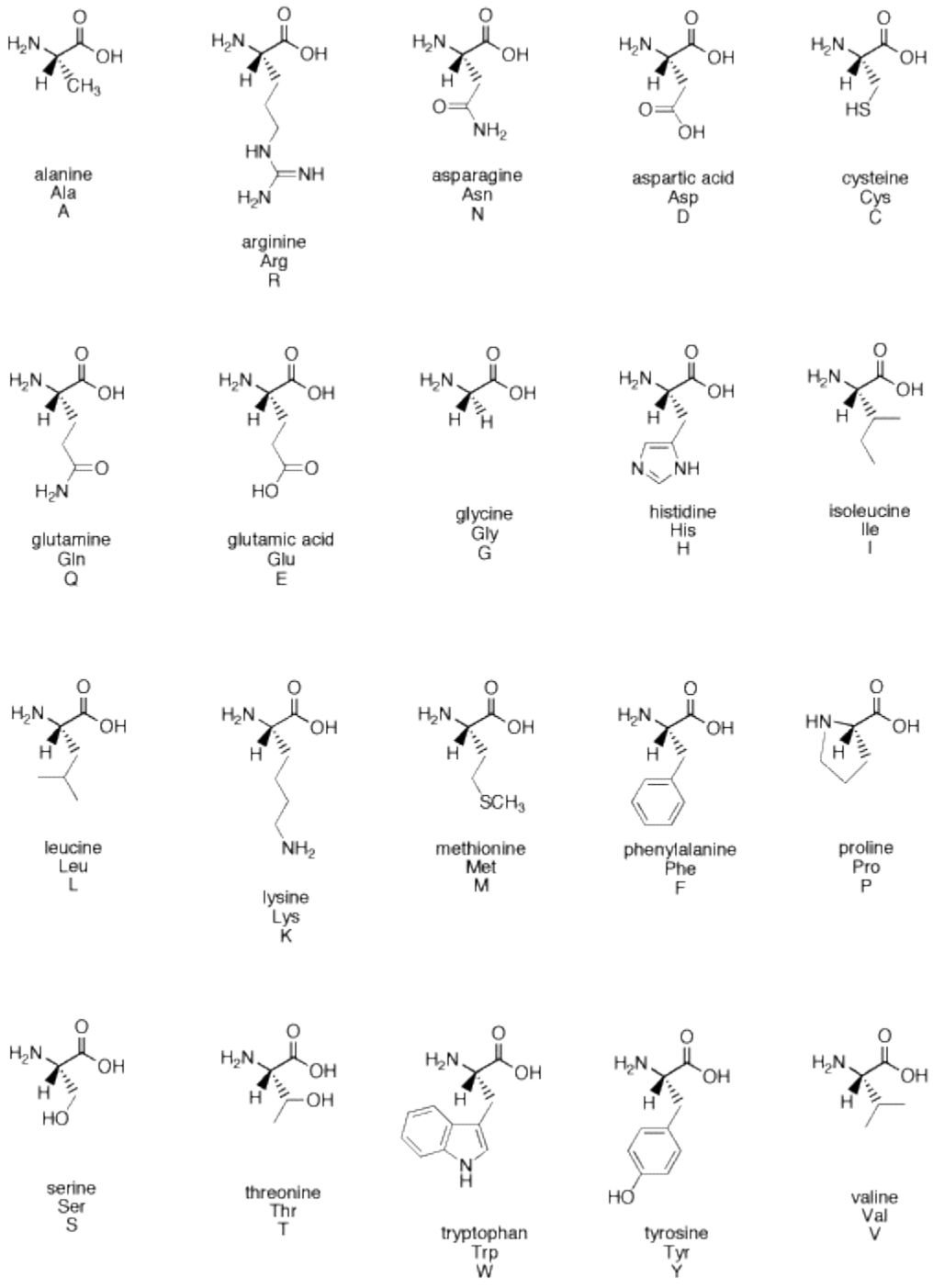

Figure SC12. The common biological amino acids.

Source : http://employees.csbsju.edu/cschaller/Principles%20Chem/stereochem/stereo_aas.htm