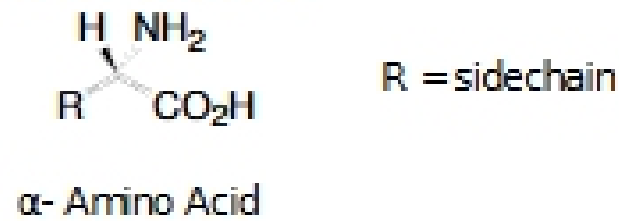
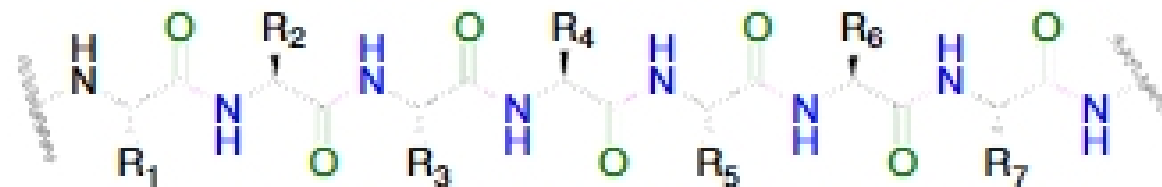
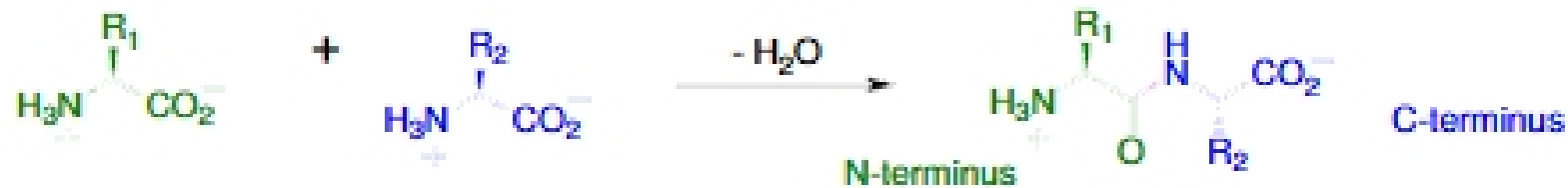


Chapter 27: Amino Acids, Peptides, and Proteins.

monomer unit: α -amino acids



Biopolymer: the monomeric amino acids are linked through an amide bond (the carboxylic acids of one AA with the α -amino group of a second)

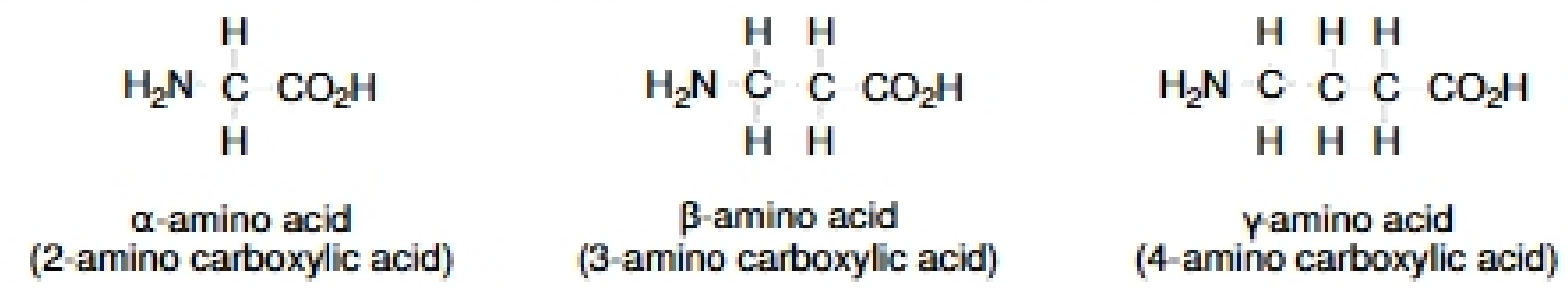


Peptide or protein (polypeptide)

peptide (< 50 amino acids)

protein (> 50 amino acids)

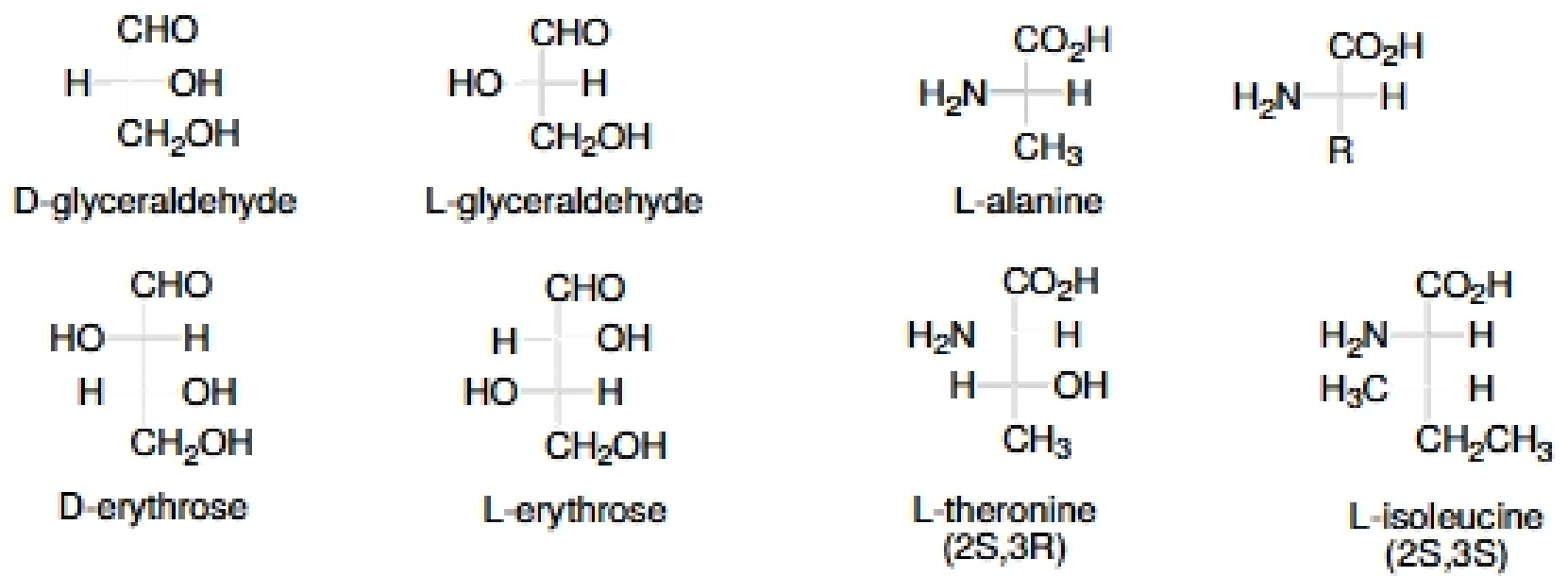
27.1: Classification of Amino Acids. AA's are classified according to the location of the amino group.



There are 20 genetically encoded α -amino acids found in peptides and proteins

19 are primary amines, 1 (proline) is a secondary amine

19 are "chiral", 1 (glycine) is achiral; the natural configuration of the α -carbon is L.

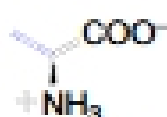


α -Amino acids are classified by the properties of their sidechains.

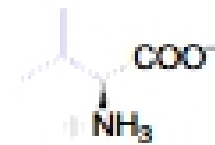
Nonpolar:



Glycine (Gly, G)



(S)-(+)-Alanine (Ala, A)



(S)-(+)-Valine (Val, V)



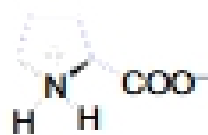
(S)-(-)-Leucine (Leu, L)



(2S,3S)-(+)-Isoleucine (Ile, I)



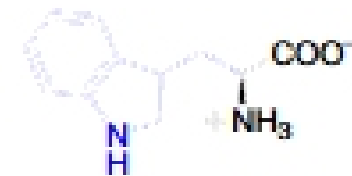
(S)-(-)-Methionine (Met, M)



(S)-(-)-Proline (Pro, P)



(S)-(-)-Phenylalanine (Phe, F)



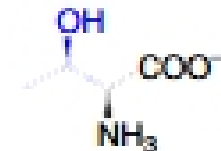
(S)-(-)-Tryptophan (Trp, W)

Polar but non-ionizable:



(S)-(-)-Serine (Ser, S)

pKa - 13



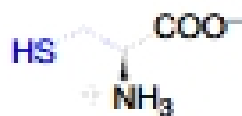
(2S,3R)-(-)-Threonine (Thr, T)

pKa - 13



(S)-(-)-Tyrosine (Tyr, Y)

pKa - 10.1



(R)-(-)-Cysteine (Cys, C)

pKa - 8.2



(S)-(-)-Asparagine (Asn, N)



(S)-(+)-Glutamine (Gln, Q)