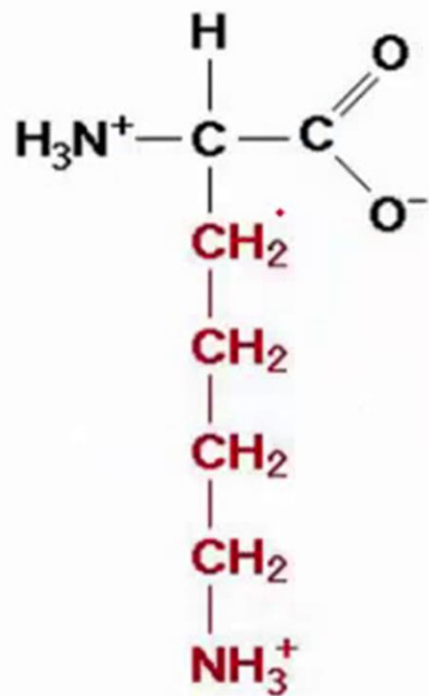
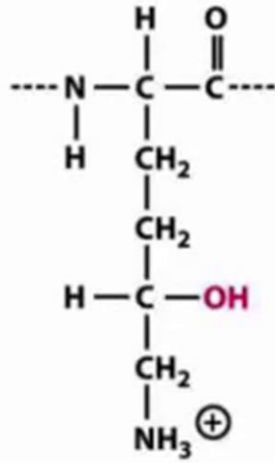


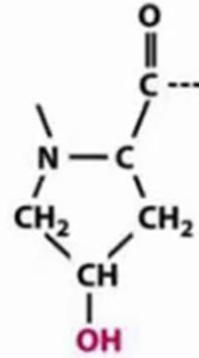
proline



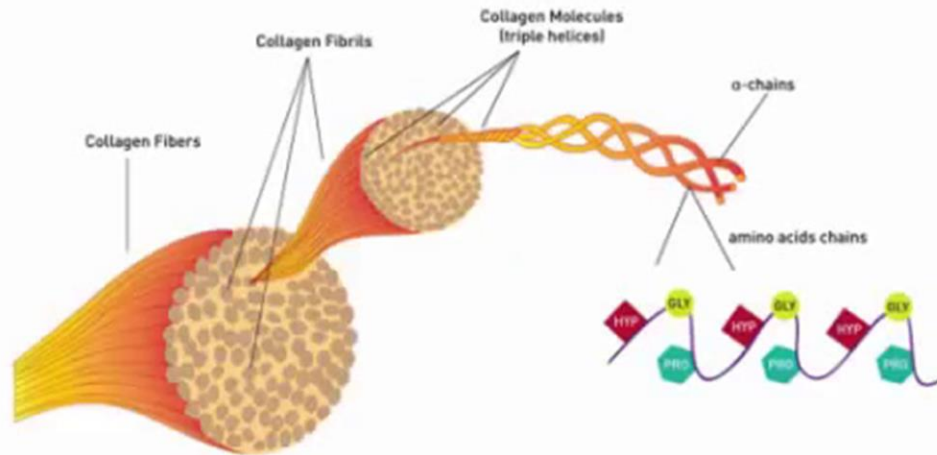
lysine

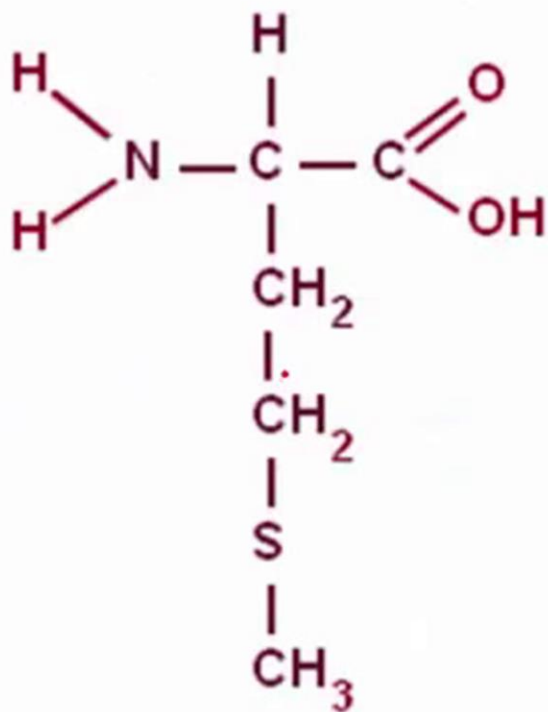


hydroxylysine
in protein

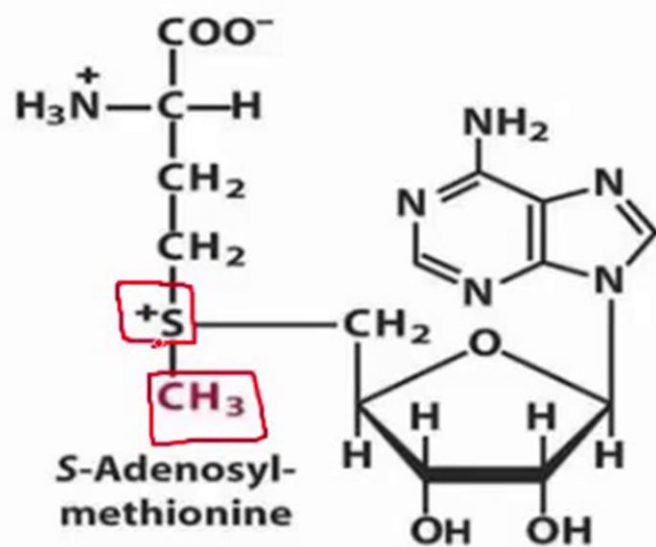


hydroxyproline
in protein

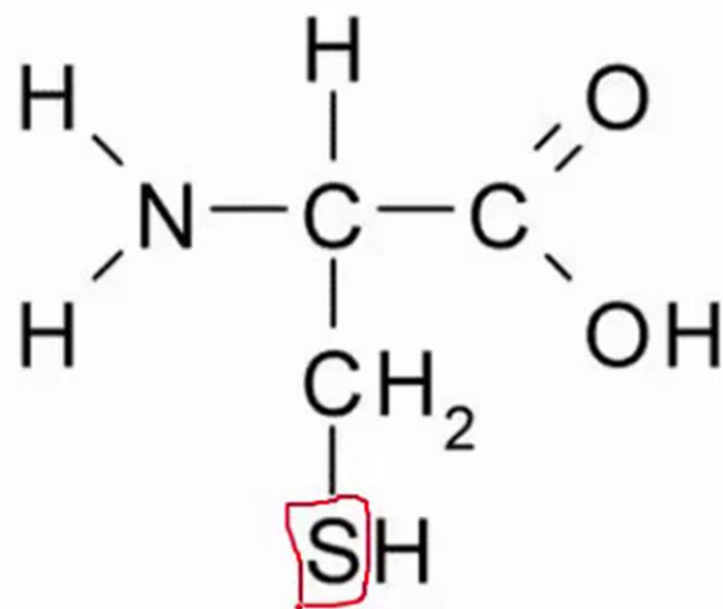




methionine

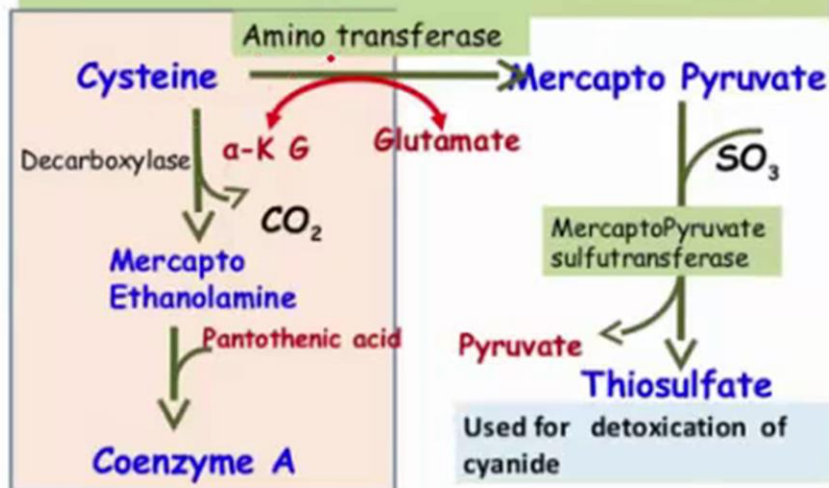


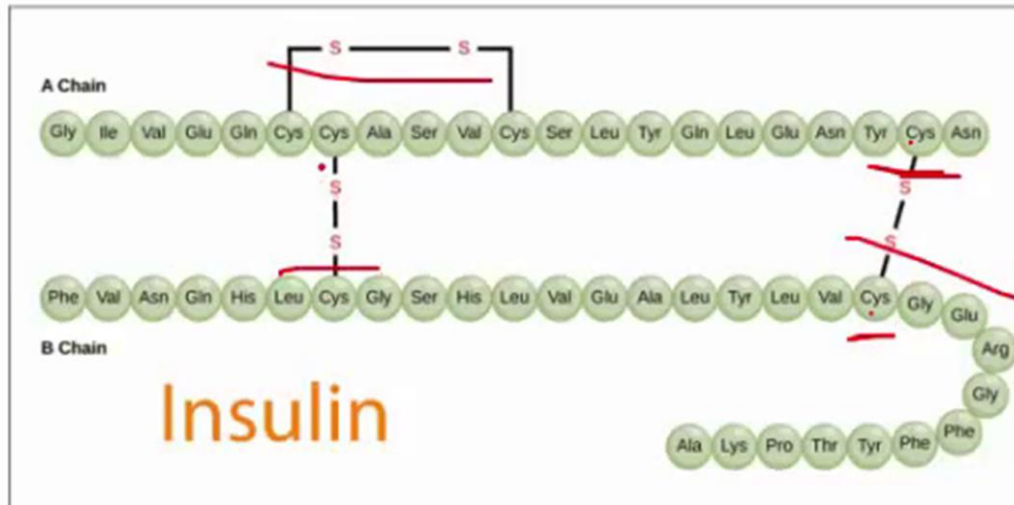
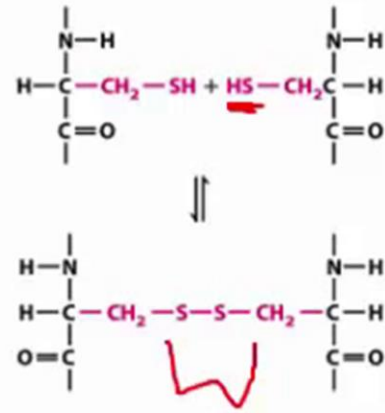
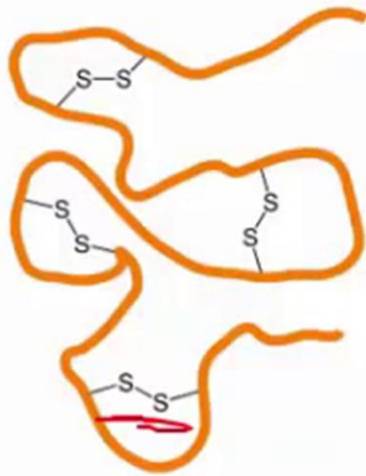




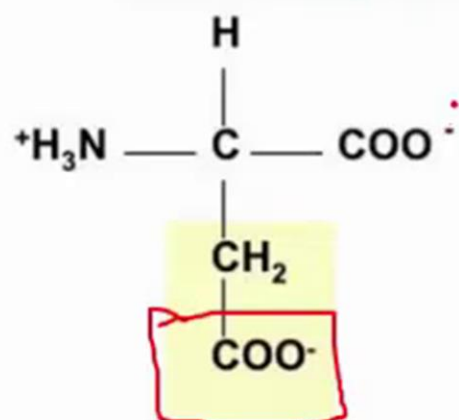
cysteine

Cysteine to Thiosulfate & CoA

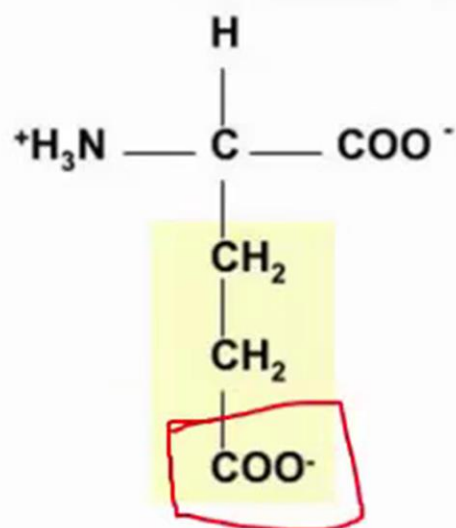


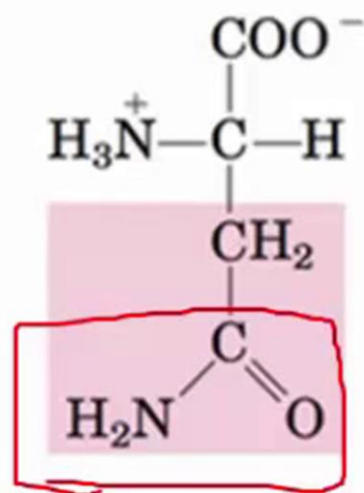


Aspartate (D) (Asp)

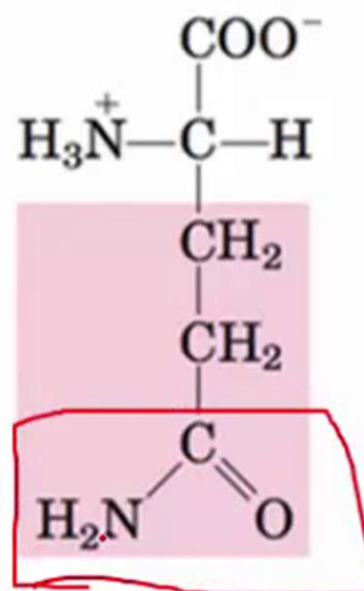


Glutamate (E) (Glu)

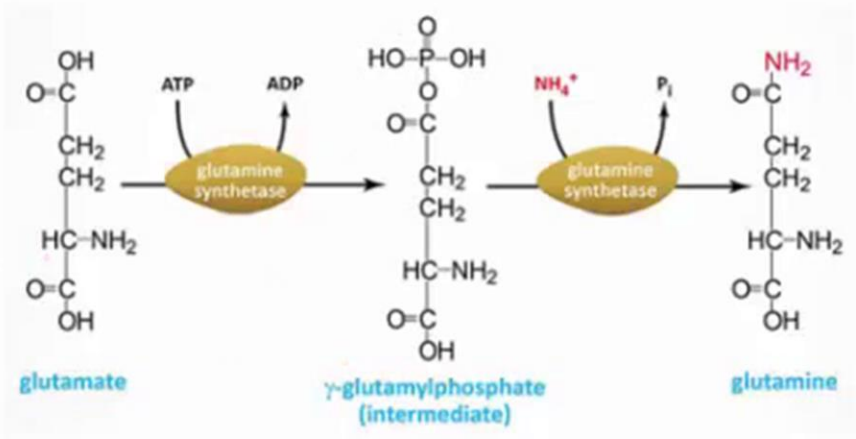
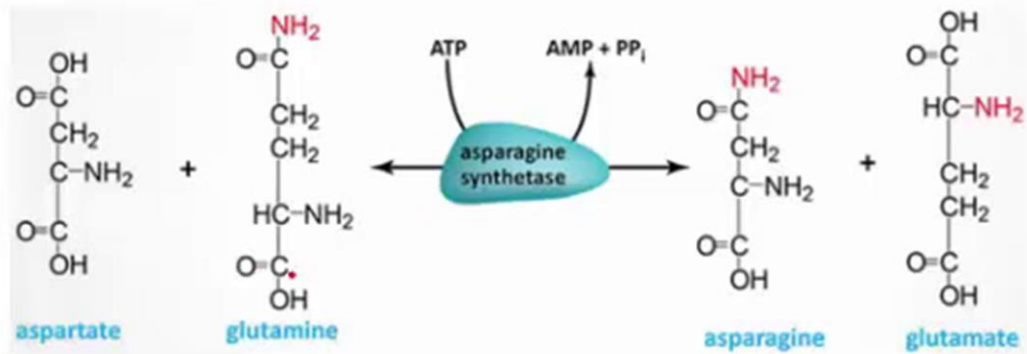


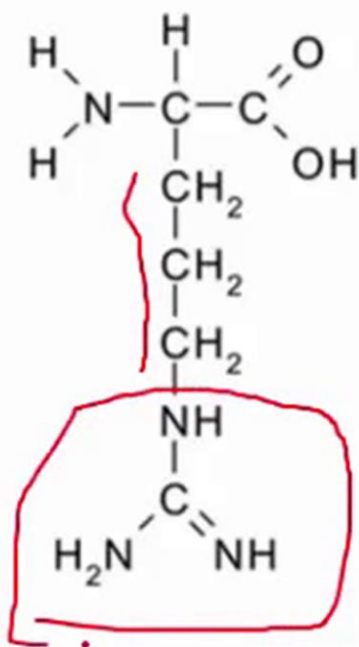


Asparagine

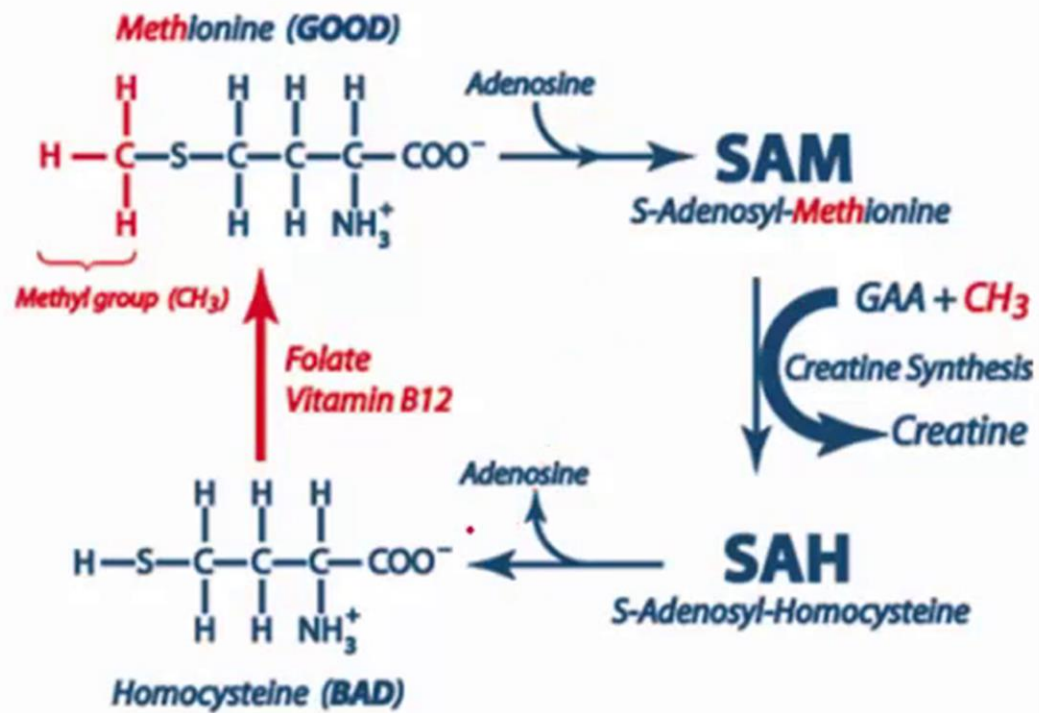


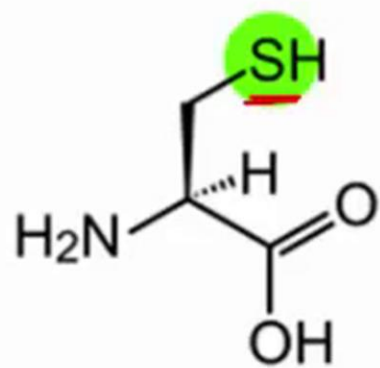
Glutamine



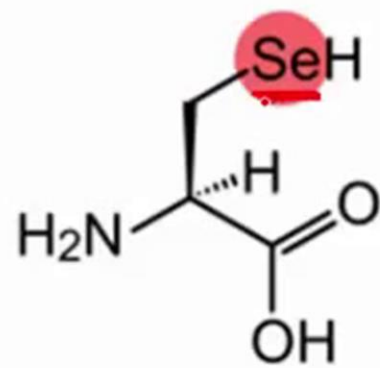


arginine

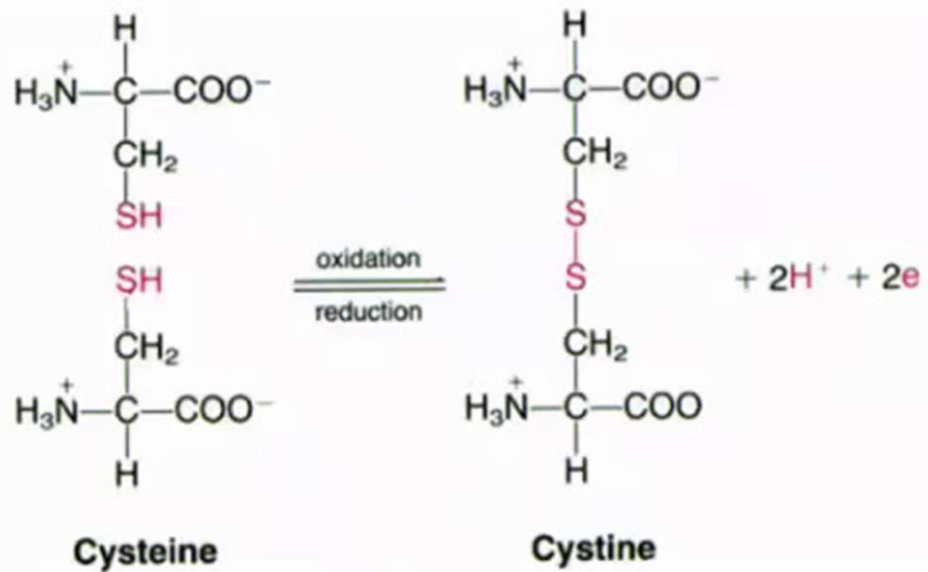




Cysteine (Cys)



Selenocysteine (Sec)



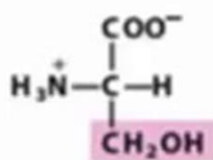
Classifications:

Chemically:

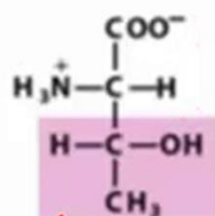
aliphatic



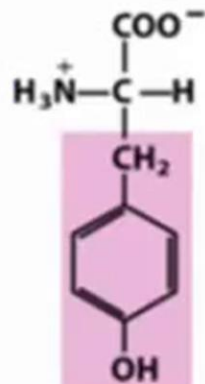
hydroxyl containing



Serine



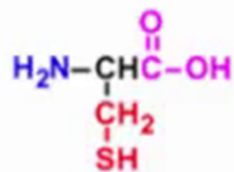
Threonine



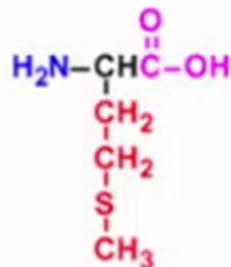
Tyrosine

sulfur containing

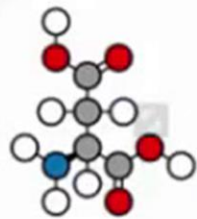
L-Cysteine



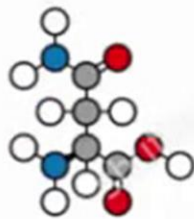
L-Methionine



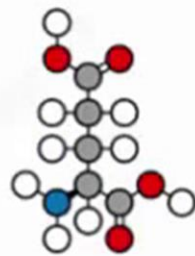
carboxyl or amide containing



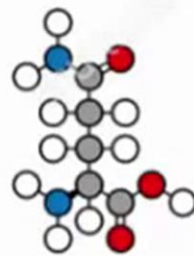
aspartic acid (Asp)



asparagine (asn)



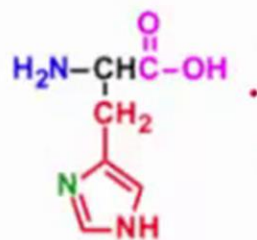
glutamic acid (Glu)



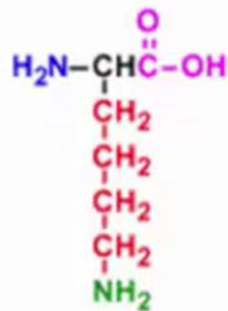
glutamine (Gln)

basic amino acids

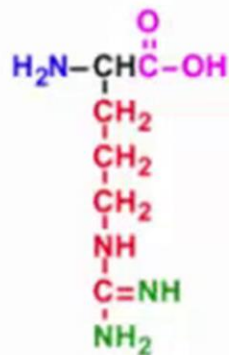
L-Histidine



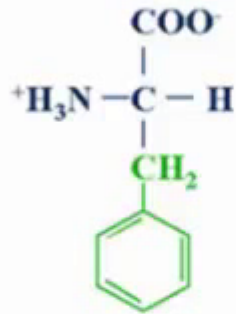
L-Lysine



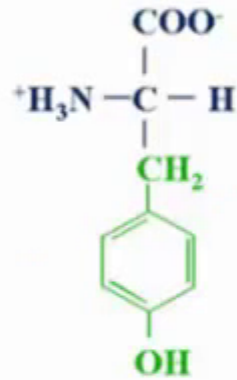
L-Arginine



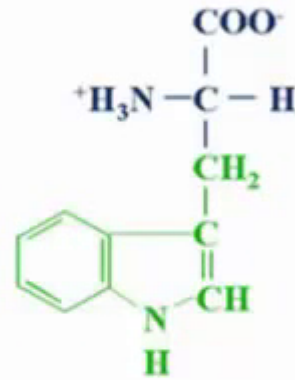
aromatic



Phenylalanine



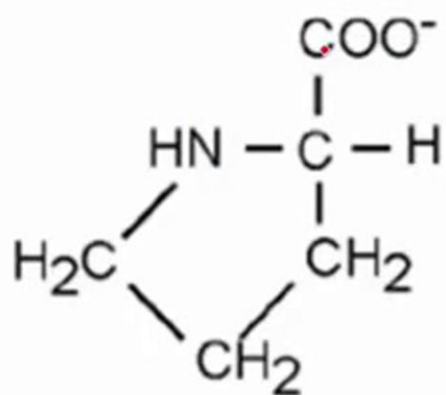
Tyrosine



Tryptophan

imino acid

Proline
(P, Pro)



·
Metabolic factor:

essential

Phenylalanine

Valine

Tryptophan

Threonine

Isoleusine

Methionine

Histidine

Argenine

Leusine

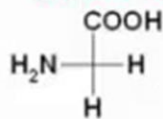
Lysine

Metabolic factor:

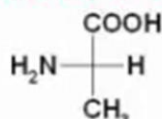
	Glucogenic	Glucogenic and Ketogenic	Ketogenic
Nonessential	Alanine Arginine* Asparagine Aspartate Cysteine Glutamate Glutamine Glycine Histidine* Proline Serine	Tyrosine	
Essential	Methionine Threonine Valine	Isoleucine Phenylalanine Tryptophan	Leucine Lysine

Polarity factor:

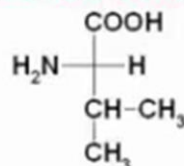
THE 9 NON-POLAR AMINO ACIDS



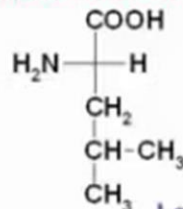
Glycine
Gly



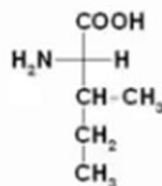
Alanine
Ala



Valine*
Val



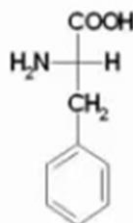
Leucine*
Leu



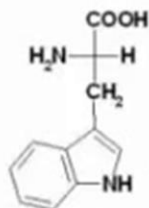
Isoleucine*
Ile



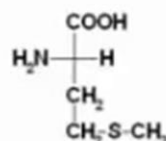
Proline
Pro



Phenylalanine*
Phe



Tryptophan*
Trp



Methionine*
Met

* Essential amino acids

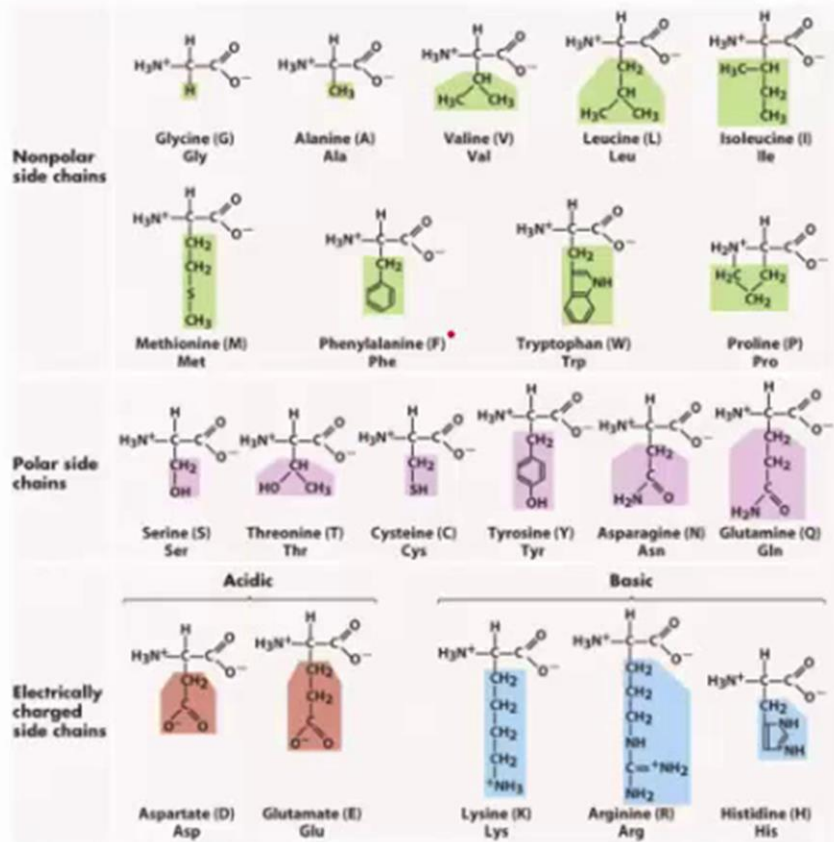


Figure 3-5 Biological Science, 2/e

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