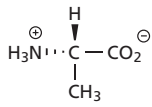


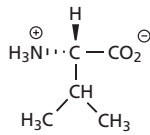
# Appendix 1

## Essential amino acids

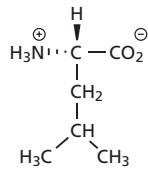
### NON POLAR (hydrophobic)



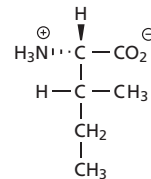
Alanine  
(Ala or A)



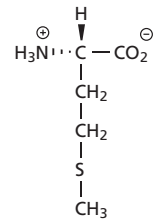
Valine  
(Val or V)



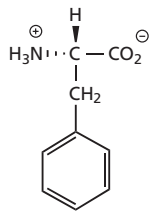
Leucine  
(Leu or L)



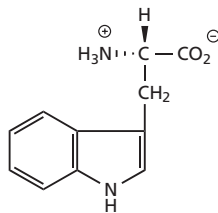
Isoleucine  
(Ile or I)



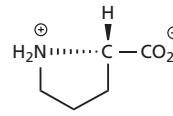
Methionine  
(Met or M)



Phenylalanine  
(Phe or F)

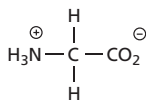


Tryptophan  
(Trp or W)

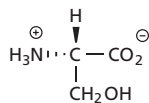


Proline  
(Pro or P)

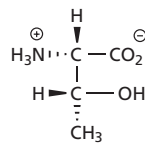
### POLAR



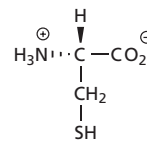
Glycine  
(Gly or G)



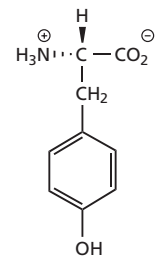
Serine  
(Ser or S)



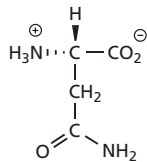
Threonine  
(Thr or T)



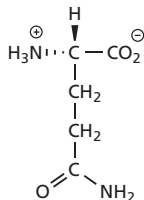
Cysteine  
(Cys or C)



Tyrosine  
(Tyr or Y)

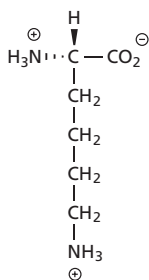


Asparagine  
(Asn or N)

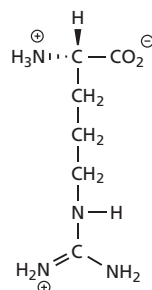


Glutamine  
(Gln or Q)

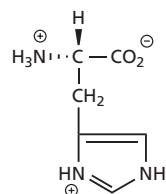
### IONIZED



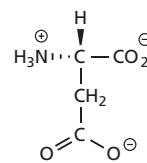
Lysine  
(Lys or K)



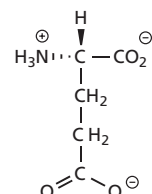
Arginine  
(Arg or R)



Histidine  
(His or H)



Aspartate  
(Asp or D)



Glutamate  
(Glu or E)