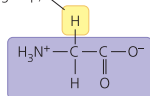
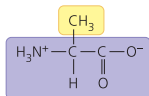


## Nonpolar side chains; hydrophobic

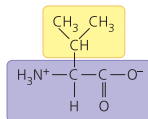
Side chain  
(R group)



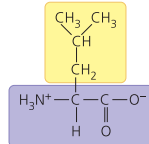
Glycine  
(Gly or G)



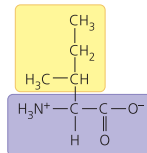
Alanine  
(Ala or A)



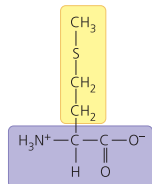
Valine  
(Val or V)



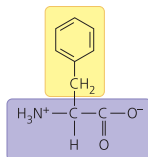
Leucine  
(Leu or L)



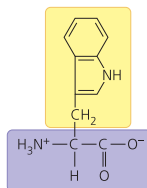
Isoleucine  
(Ile or I)



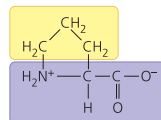
Methionine  
(Met or M)



Phenylalanine  
(Phe or F)



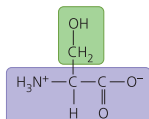
Tryptophan  
(Trp or W)



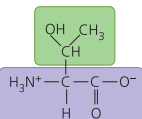
Proline  
(Pro or P)

## Polar side chains; hydrophilic

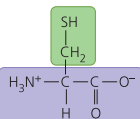
Since cysteine is only weakly polar, it is sometimes classified as a nonpolar amino acid.



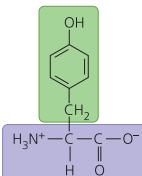
Serine  
(Ser or S)



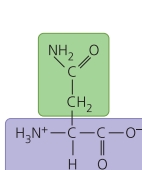
Threonine  
(Thr or T)



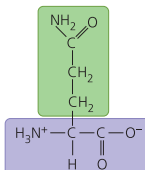
Cysteine  
(Cys or C)



Tyrosine  
(Tyr or Y)



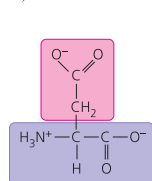
Asparagine  
(Asn or N)



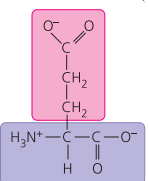
Glutamine  
(Gln or Q)

## Electrically charged side chains; hydrophilic

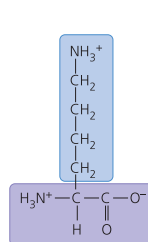
### Acidic (negatively charged)



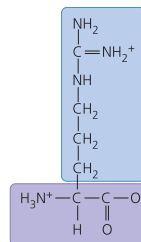
Aspartic acid  
(Asp or D)



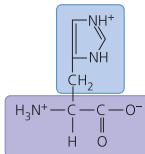
Glutamic acid  
(Glu or E)



Lysine  
(Lys or K)



Arginine  
(Arg or R)



Histidine  
(His or H)

### Basic (positively charged)