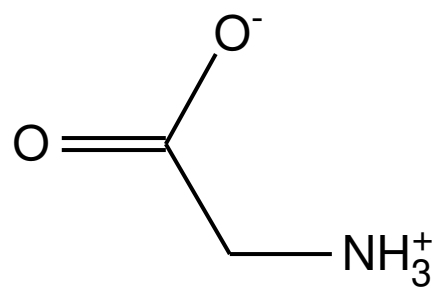


# Amino Acids

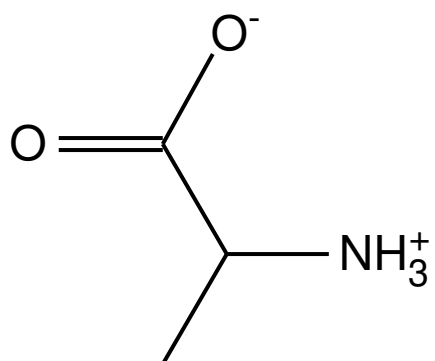
## Key Points

Phosphorylated: S, T, Y  
Branched: L, I, V  
Ketogenic: L, K (2 Ls)  
Glucogenic: Rest  
Keto + Gluco: P, I, T, Y, W  
Phosphate: pKa = 2, 7

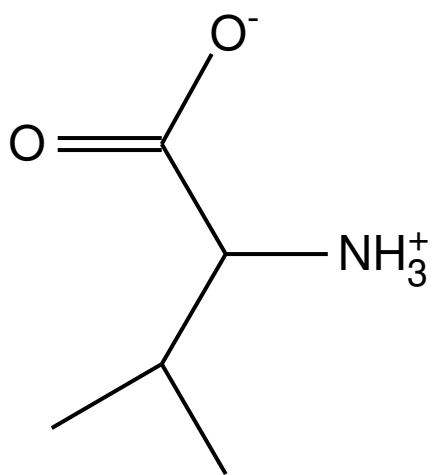
C-terminus: pKa = 2  
N-terminus: pKa = 9  
K pKa = 10.5  
R pKa = 12.5  
H pKa = 6  
D pKa = 4  
E pKa = 4  
C pKa = 8  
Y pKa = 11



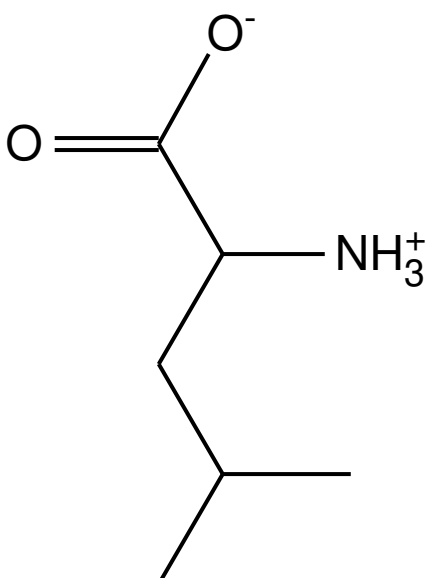
Glycine  
Gly  
G



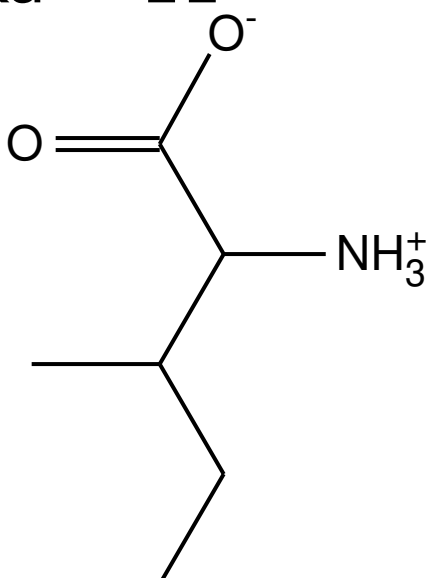
Alanine  
Ala  
A



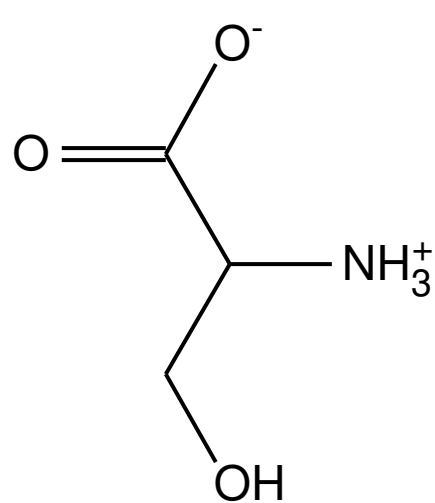
Valine  
Val  
V



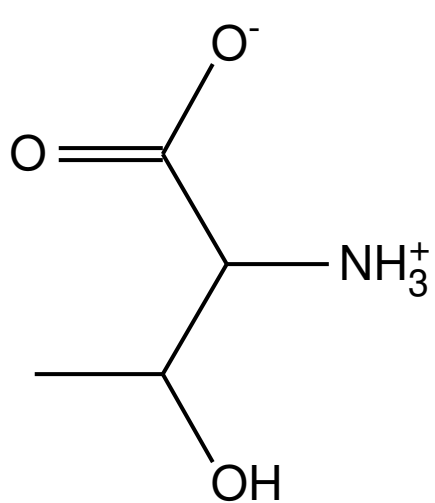
Leucine  
Leu  
L



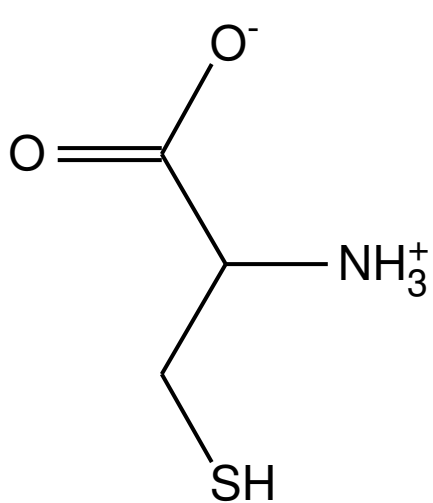
Isoleucine  
Ile  
I



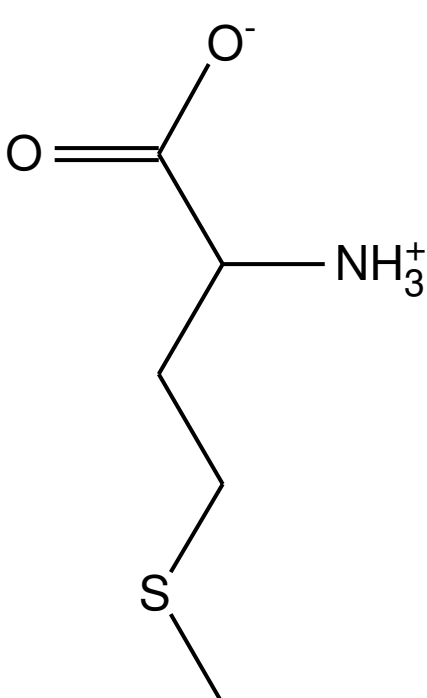
Serine  
Ser  
S



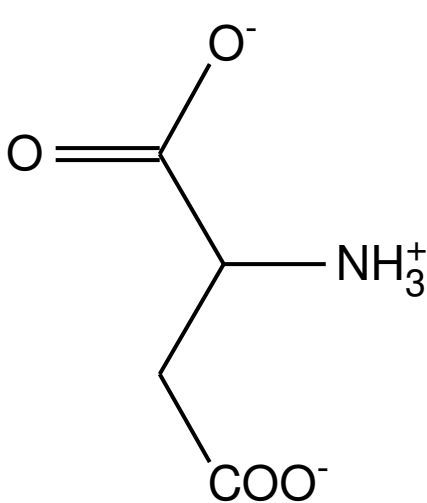
Threonine  
Thr  
T



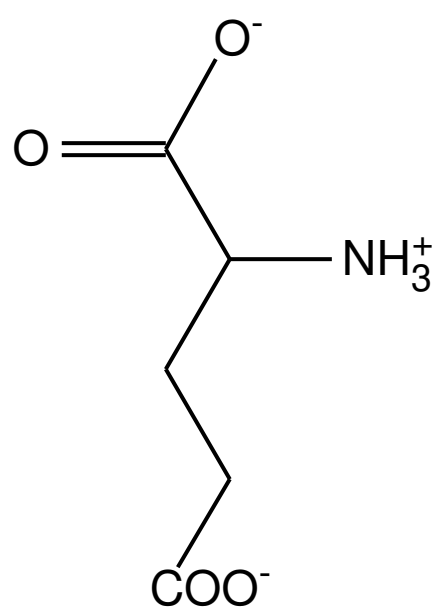
Cysteine  
Cys  
C



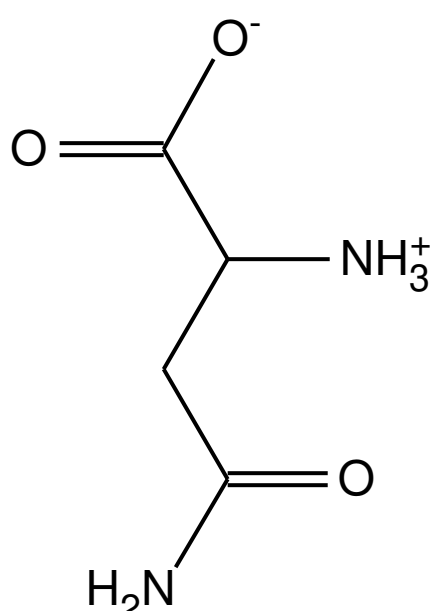
Methionine  
Met  
M



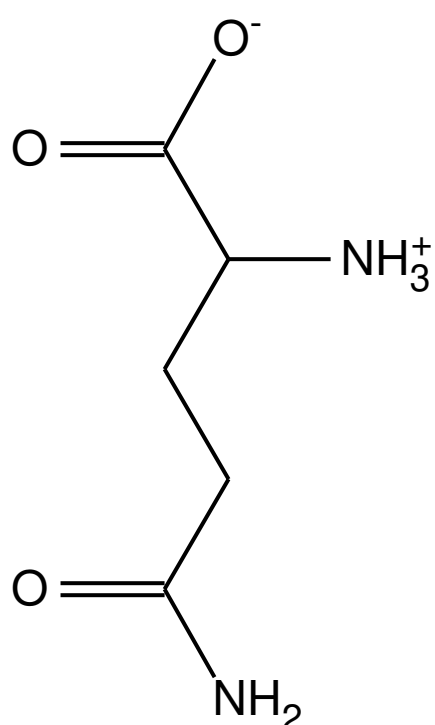
Aspartate  
Asp  
D



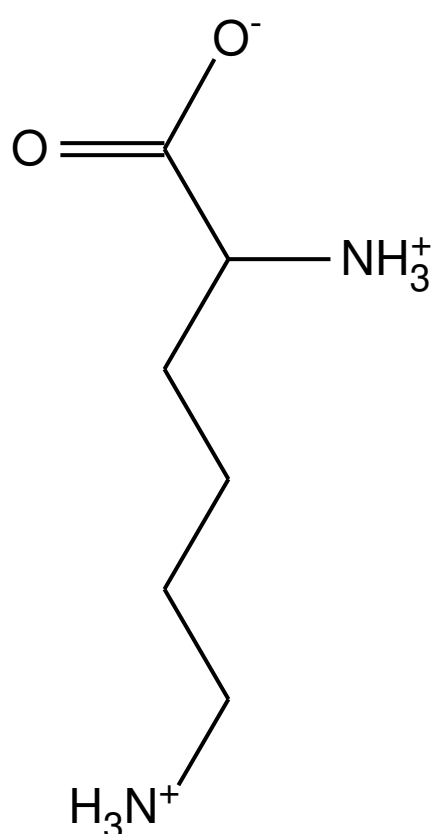
Glutamate  
Glu  
E



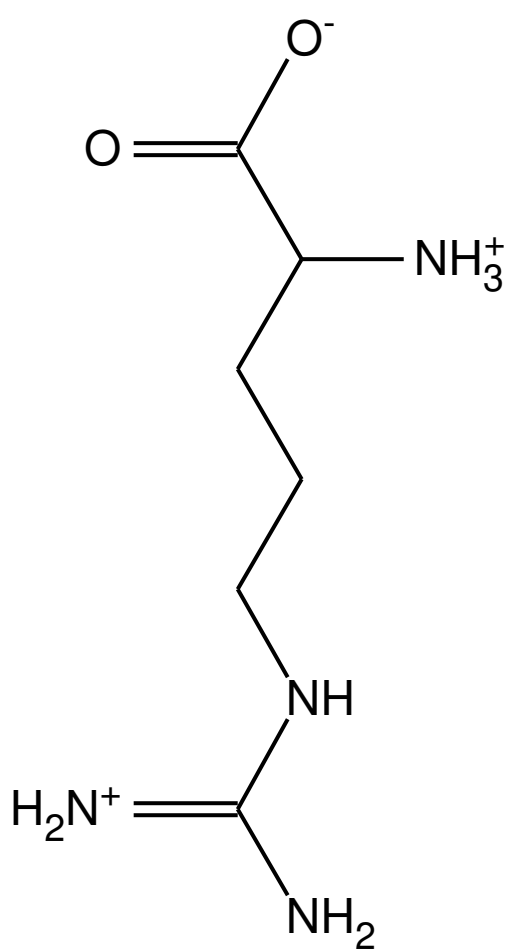
Asparagine  
Asn  
N



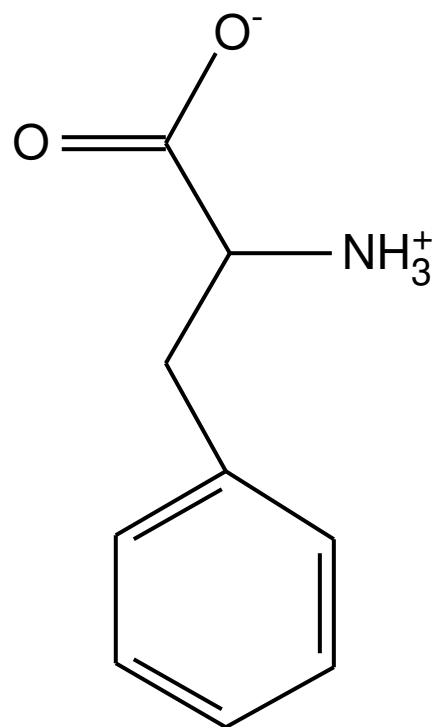
Glutamine  
Gln  
Q



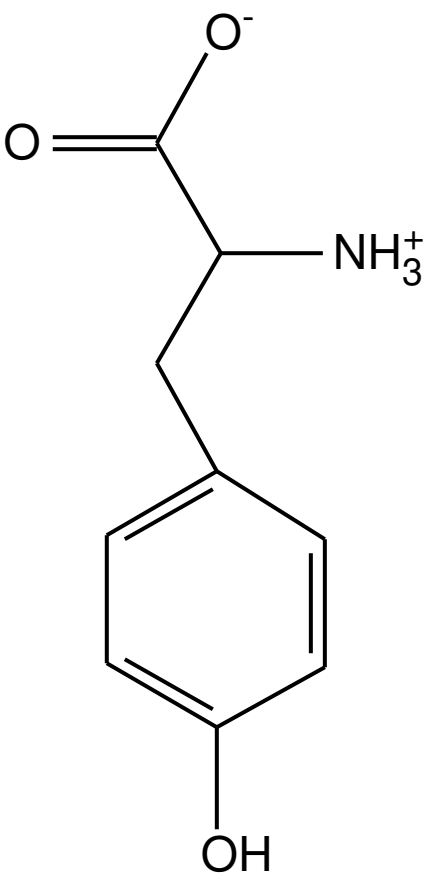
Lysine  
Lys  
K



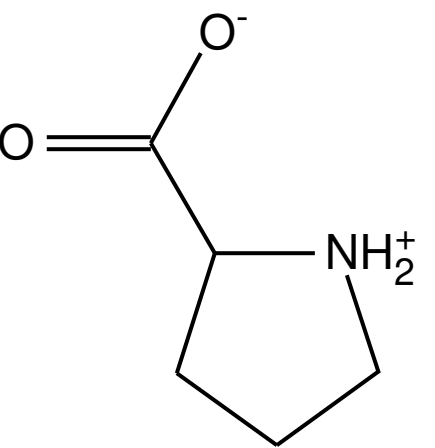
Arginine  
Arg  
R



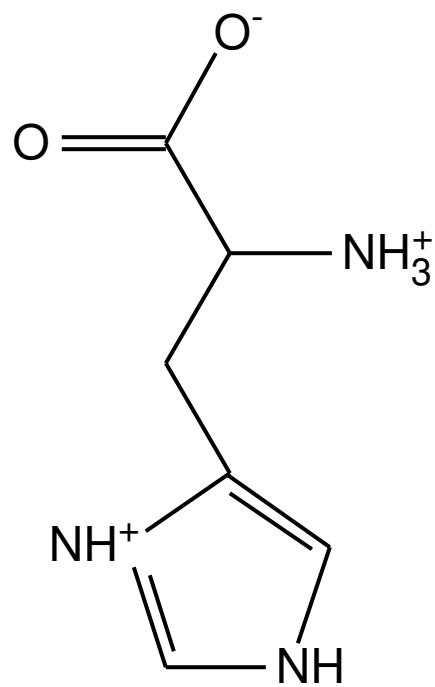
Phenylalanine  
Phe  
F



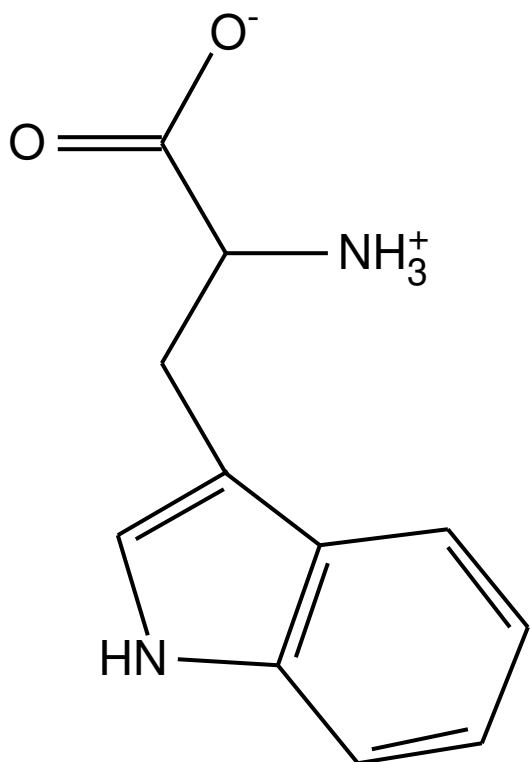
Tyrosine  
Tyr  
Y



Proline  
Pro  
P



Histidine  
His  
H



Tryptophan  
Trp  
W