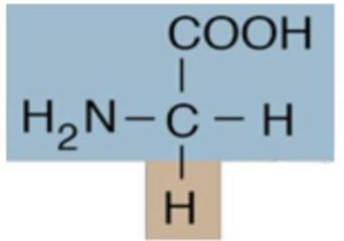
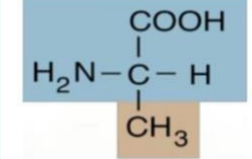
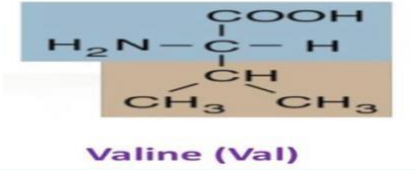
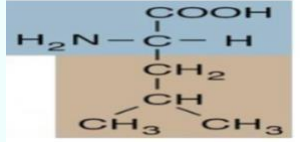
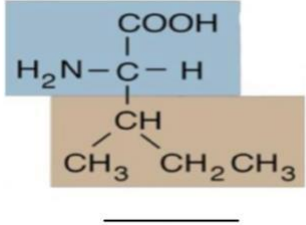
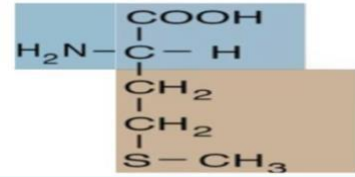
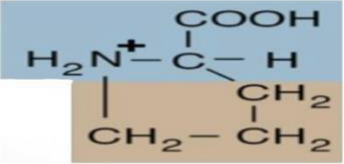
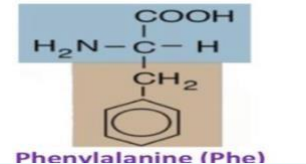
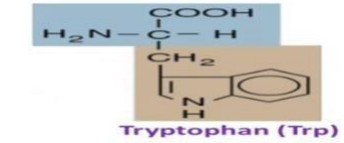
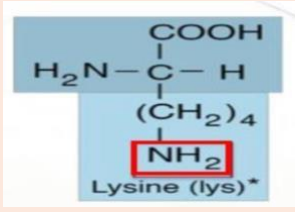
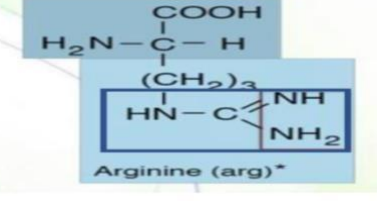
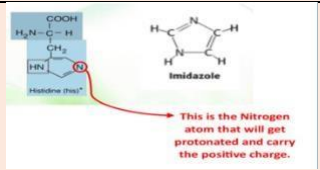
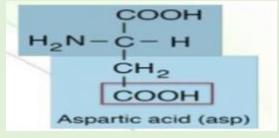
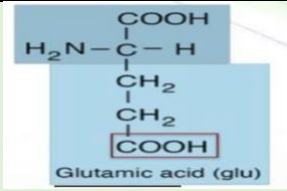
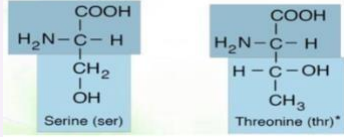


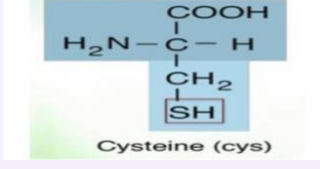
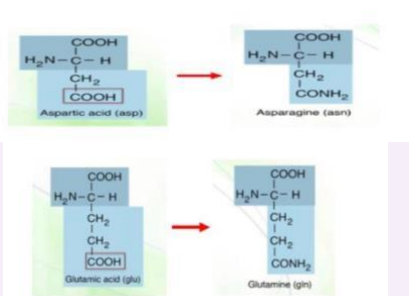


## Amino Acids

Name		Structure
<b>Glycine (Gly)</b>	* R chain= <b>Hydrogen</b> "Non polar" * Achiral Amino acid * Polar amino acid * the simplest and smallest amino acid * derivative of acetic acid; it can also be considered a derivative of amino ethane	
<b>Non-polar</b>		
<b>Alanine(Ala)</b>	R chain= <b>CH3</b> *Aliphatic *second simplest amino acid	
<b>Valine(Val)</b>	*Baranched,aliphatic *Nonpolar amino acids.	 <p style="text-align: center; color: purple;"><b>Valine (Val)</b></p>
<b>Leucine (Leu)</b>	* Baranched ,aliphatic nonpolar amino acids. *branching occurs in its R group at gamma-carbon	

<p><b>Isoleucine(Ile)</b></p>	<p>* Branched aliphatic nonpolar amino acids.</p> <p>*branching occurs at betacarbon</p>	
<p><b>Methionine (Met)</b></p>	<p>*thioether (RSR)</p> <p>*Methionine can react to form S-Adenosyl-L- Methionine (SAM), which serves as a methyl donor in reactions</p>	
<p><b>Proline (Pro)</b></p>	<p>*only cyclic amino acid</p> <p>*rigid molecule</p> <p>*nitrogen in the amino group within the backbone is a secondary nitrogen</p>	
<p><b>Phenylalanine (Phe)</b></p>	<p>*basically an alanine amino acid with its R group attached to a phenyl group (benzene ring).</p> <p>* highly hydrophobic</p>	 <p>Phenylalanine (Phe)</p>
<p><b>Tryptophan (Trp)</b></p>	<p>*Tryptophan is the most hydrophobic amino acid residue</p> <p>*Tryptophan contains a double ring structure which contains nitrogen.</p> <p>*The largest amino acid</p> <p>*R group: <b>indole group</b></p>	 <p>Tryptophan (Trp)</p>
	<p><b>Positively charged(Basic)</b></p>	

<p><b>Lysine (Lys)</b></p>	<p>*have relatively long side chains that terminate with groups that are positively charged</p> <p>*terminal group is an amino group</p>	
<p><b>Arginine (Arg)</b></p>	<p>**have relatively long side chains that terminate with groups that are positively charged</p> <p>*the terminal group is called a Guanidinium group</p>	
<p><b>Histidine (His)</b></p>	<p>*R group: contains imidazole</p>	
	<p><b>Negatively charged (Acidic)</b></p>	<p><b>**These amino acids are often called Aspartate and Glutamate when they are charged/ionized.</b></p>
<p><b>Aspartic Acid (Asp)</b></p>	<p>* contain a carboxyl group</p>	
<p><b>Glutamic acid (Glu)</b></p>	<p>* contain a carboxyl group</p> <p>*Glutamic acid has a larger size because its terminal (R) group is a longer chain.</p>	
	<p><b>Polar, hydrophilic, neutral amino acids</b></p> <p><b>* reactive *</b></p>	
<p><b>Serine (Ser)</b> <b>Threonine (Thr)</b></p>	<p>*Their R groups contain a hydroxyl group (polar group)</p>	

<p><b>Cysteine (Cys)</b></p>	<p>*It contains a sulfhydryl (thiol because it is terminal) group which is also a polar reactive group.</p>	 <p>Cysteine (cys)</p>
<p><b>Glutamine (Gln) Asparagine (Asn)</b></p>	<p>* They are uncharged polar derivatives of Glutamate and Aspartate, which are negatively charged amino acids</p> <p>*Each contains a terminal Carboxamide group in place of a Carboxyl group.</p>	
<p><b>Tyrosine (Tyr)</b></p>	<p>It is derived from phenylalanine, which is hydrophobic.</p> <ul style="list-style-type: none"> <li>• It has a polar and a reactive aromatic ring (with a hydroxyl group attached)</li> </ul>	