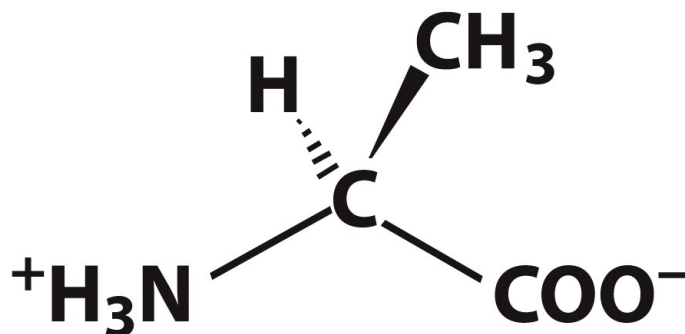


Fischer projection of alanine

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1



Stereochemical rendering of alanine

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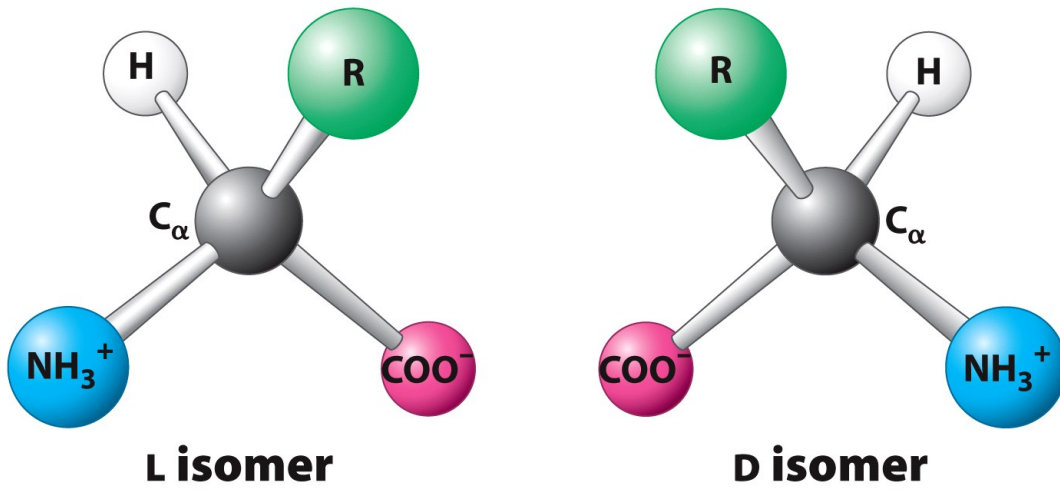


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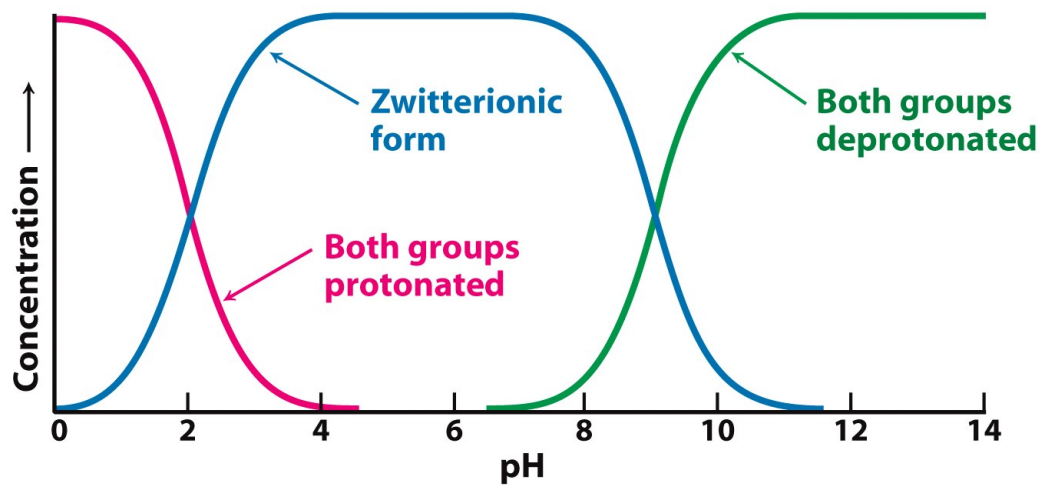
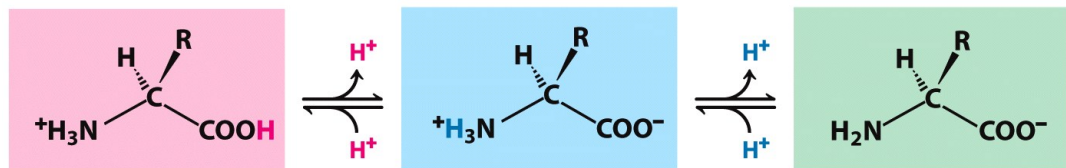


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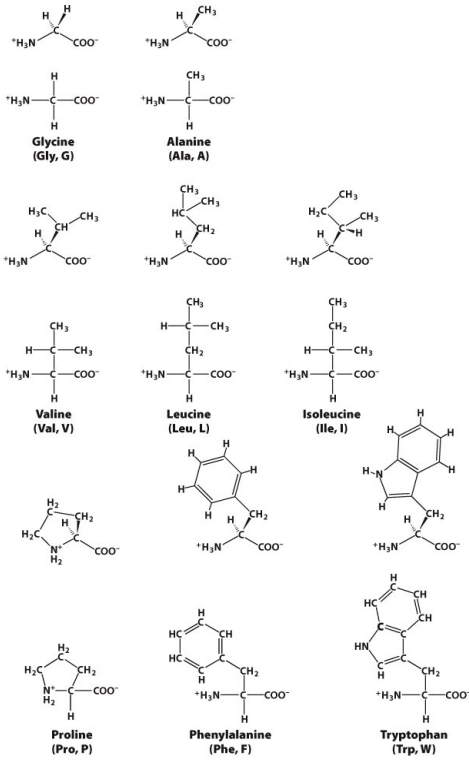


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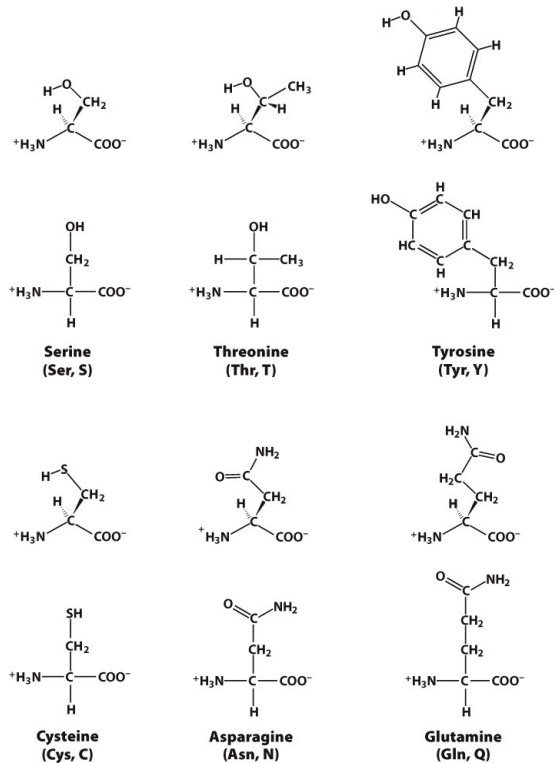


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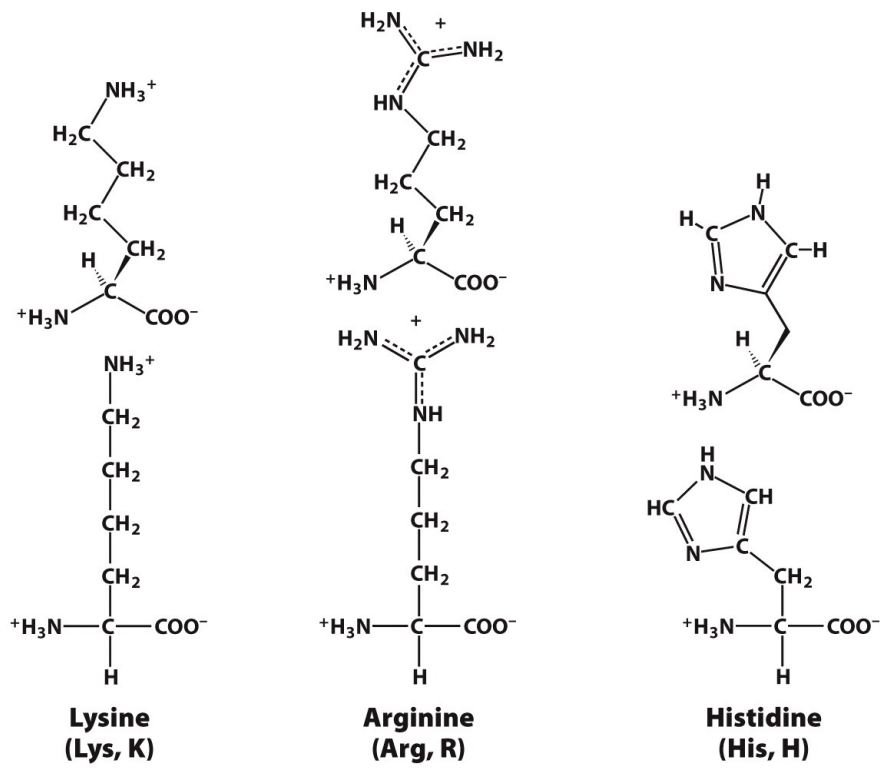


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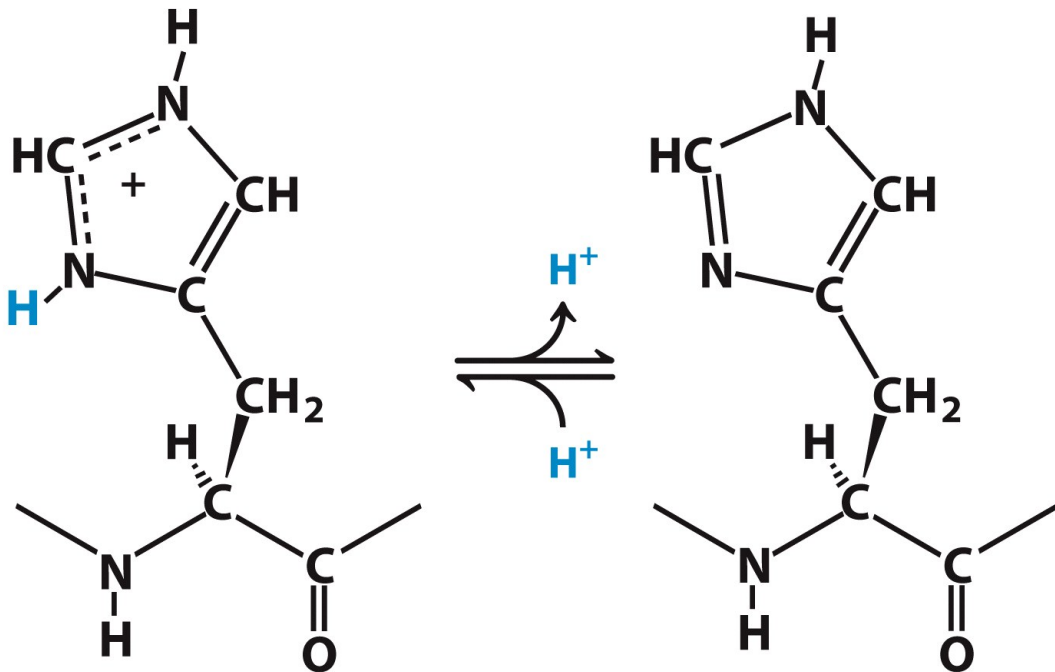


Figure 3.6
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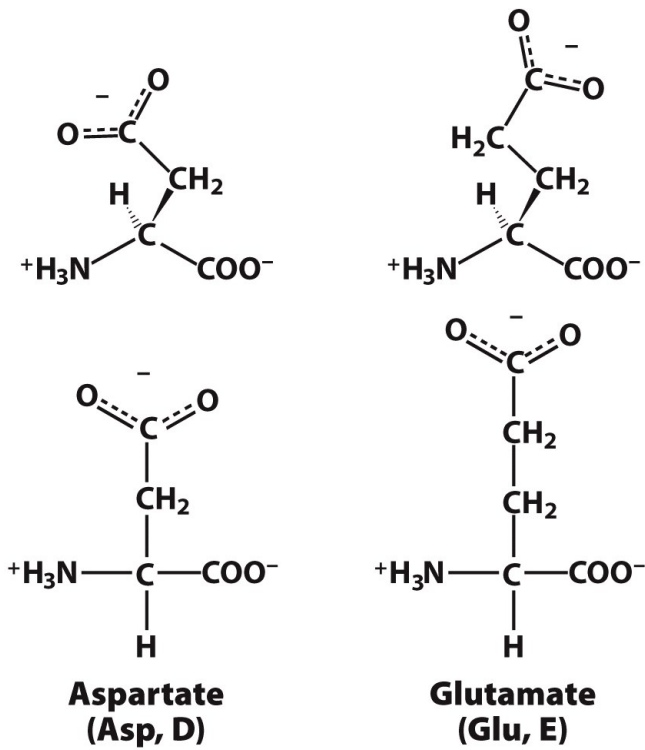


Figure 3.7
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Table 3.1 Typical pK_a values of ionizable groups in proteins

Group	Acid	Base	Typical pK_a
Terminal α -carboxyl group			3.1
Aspartic acid Glutamic acid			4.1
Histidine			6.0
Terminal α -amino group			8.0
Cysteine			8.3
Tyrosine			10.9
Lysine			10.8
Arginine			12.5

Note: Values of pK_a depend on temperature, ionic strength, and the microenvironment of the ionizable group.

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Table 3.2 Basic set of 20 amino acids

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

Table 3.2
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