

TABLE 12.3 Some Important Alcohols				
Condensed Formula	b.p. (°C)	Systematic Name	Common Name	Use
CH ₃ OH	65.0	Methanol	Methyl alcohol	Fuel, gasoline additive, making formaldehyde
CH ₃ CH ₂ OH	78.5	Ethanol	Ethyl alcohol	Beverages, gasoline additive, solvent
CH ₃ CH ₂ CH ₂ OH	97.4	1-propanol	Propyl alcohol	Industrial solvent
CH ₃ CH(OH)CH ₃	82.4	2-propanol	Isopropyl alcohol	Rubbing alcohol
CH ₂ (OH)CH ₂ (OH)	198	1,2-ethanediol	Ethylene glycol	Antifreeze
CH ₂ (OH)CH ₂ (OH)CH ₂ (OH)	290	1,2,3-propanetriol	Glycerol (glycerin)	Moisturizer in foods

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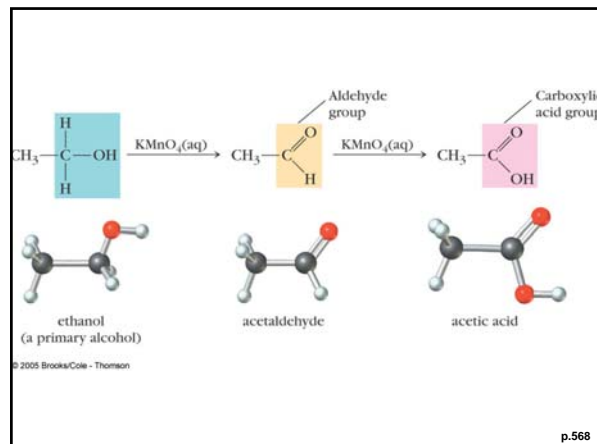
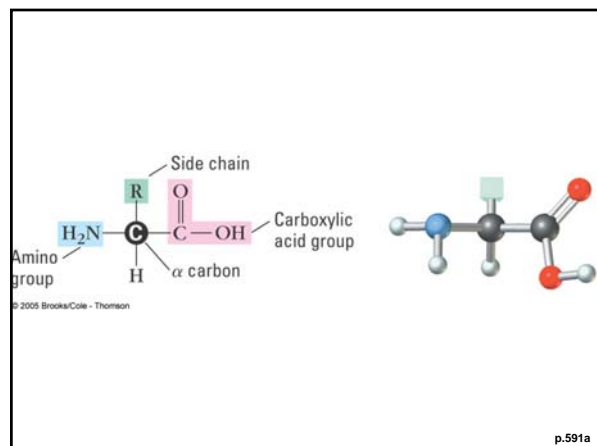
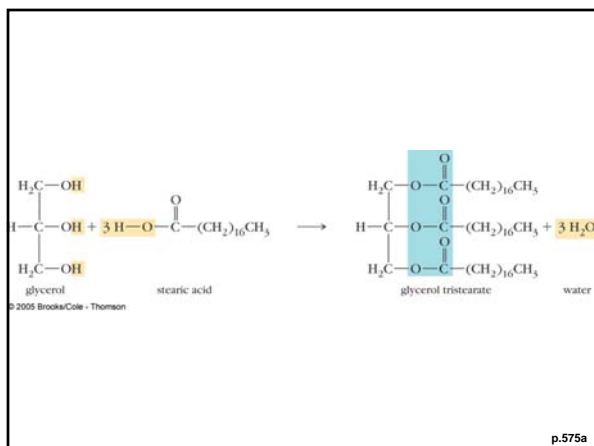
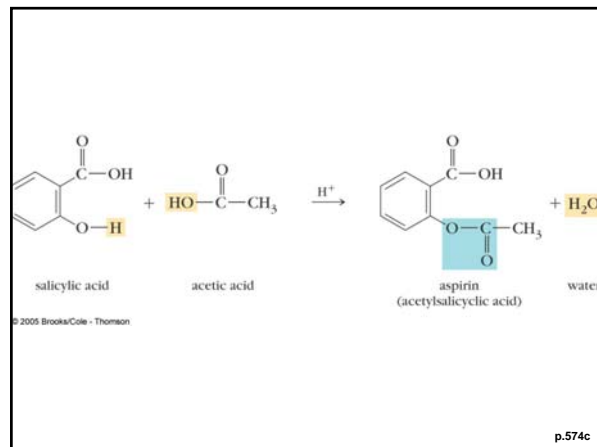


TABLE 12.5 Some Naturally Occurring Carboxylic Acids				
Structure	Common Name	b.p. (°C)	Natural Source	
	Formic acid	101	Ants	
	Acetic acid	118	Fermented fruit	
	Propionic acid	141	Dairy products	
	Benzoic acid	250	Berries	
m.p. (°C)				
	Citric acid	153	Citrus fruits	
	Malic acid	151	Apples	
	Tartaric acid	168-170	Grape juice, wine	

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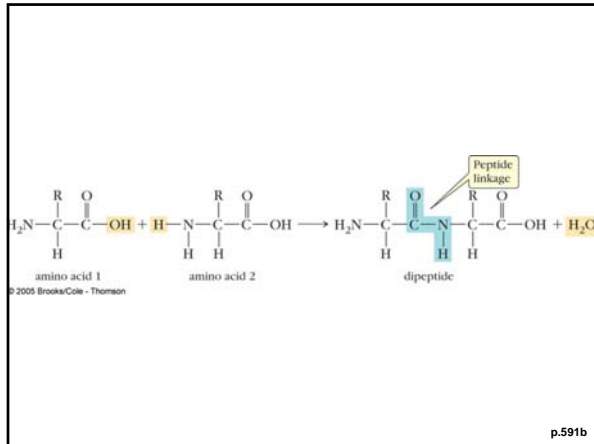


TABLE 12.8 Common L-Amino Acids Found in Proteins

Amino Acid	Abbreviation	Structure	Amino Acid	Abbreviation	Structure
Nonpolar R groups					
Glycine	Gly	$\text{H}-\text{CH}-\text{COOH}$ NH_2	*Isoleucine	Ile	$\text{CH}_3-\text{CH}_2-\text{CH}-\text{CH}-\text{COOH}$ CH_2 NH_2
Alanine	Ala	$\text{CH}_3-\text{CH}-\text{COOH}$ NH_2	Proline	Pro	$\text{H}_2\text{C}-\text{CH}_2$ H_2C $\text{CH}-\text{COOH}$ H
*Valine	Val	$\text{CH}_3-\text{CH}-\text{CH}-\text{COOH}$ CH_3 NH_2	*Phenylalanine	Phe	$\text{C}_6\text{H}_5-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2
*Leucine	Leu	$\text{CH}_3-\text{CH}-\text{CH}_2-\text{CH}-\text{COOH}$ CH_3 NH_2	*Methionine	Met	$\text{CH}_3-\text{S}-\text{CH}_2-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2
			*Tryptophan	Trp	$\text{C}_6\text{H}_4-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2

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Polar but neutral R groups					
Serine	Ser	$\text{HO}-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2	Asparagine	Asn	$\text{H}_2\text{N}-\text{C}(\text{O})-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2
*Threonine	Thr	$\text{CH}_3-\text{CH}-\text{CH}-\text{COOH}$ OH NH_2	Glutamine	Gln	$\text{H}_2\text{N}-\text{C}(\text{O})-\text{CH}_2-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2
Cysteine	Cys	$\text{HS}-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2	Tyrosine	Tyr	$\text{HO}-\text{C}_6\text{H}_4-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2
Acidic R groups		Basic R groups			
Glutamic acid	Glu	$\text{HO}-\text{C}(\text{O})-\text{CH}_2-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2	*Lysine	Lys	$\text{H}_2\text{N}-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{CH}-\text{COOH}$ NH_2
Aspartic acid	Asp	$\text{HO}-\text{C}(\text{O})-\text{CH}_2-\text{CH}-\text{COOH}$ NH_2	*Arginine	Arg	$\text{H}_2\text{N}-\text{C}(\text{NH}_2)-\text{NH}-\text{CH}_2\text{CH}_2\text{CH}_2-\text{CH}-\text{COOH}$ NH_2
			Histidine	His	$\text{CH}_2-\text{CH}-\text{COOH}$ NH_2

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