



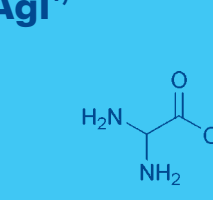
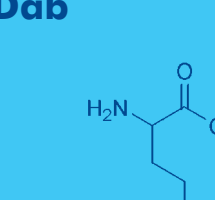

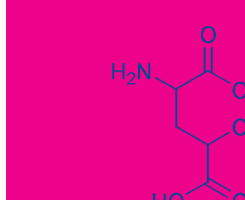
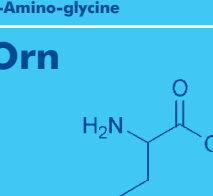
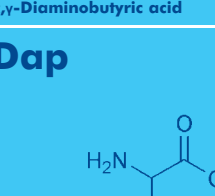
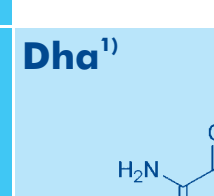
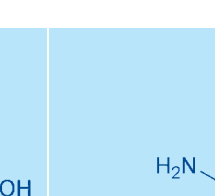
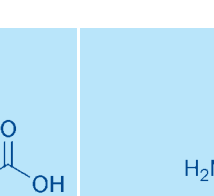
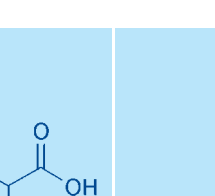
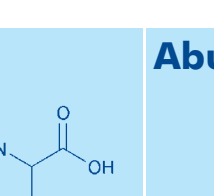
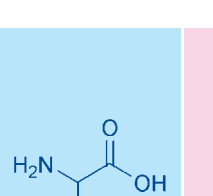
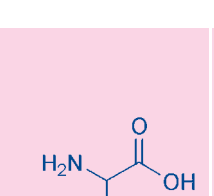
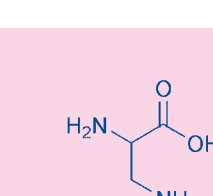
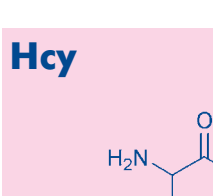
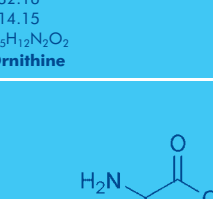
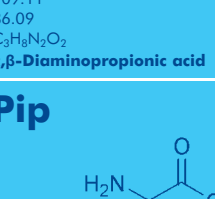
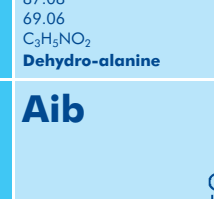
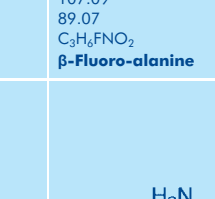

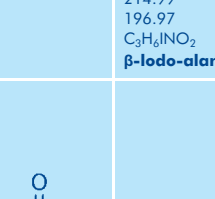
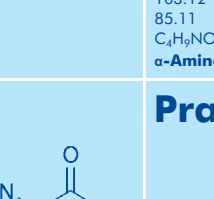

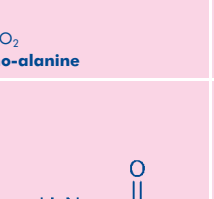
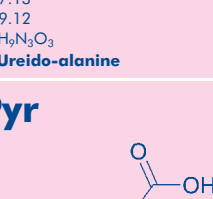
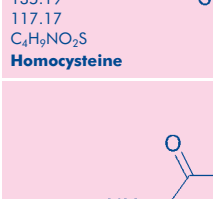
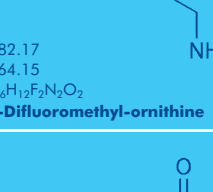
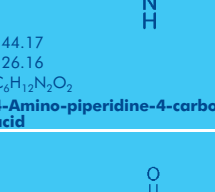
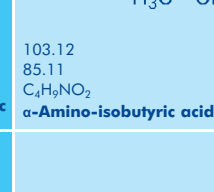
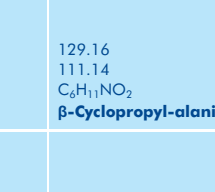
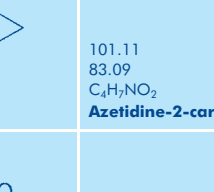
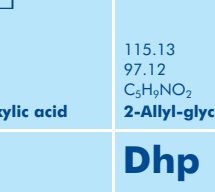
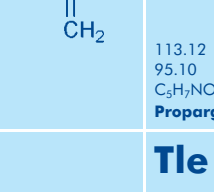
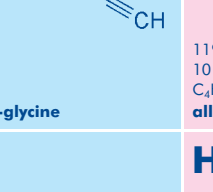
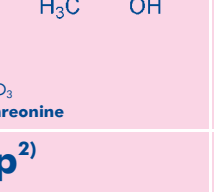
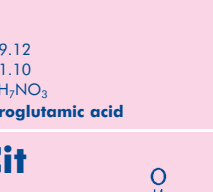
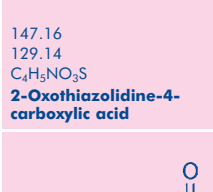
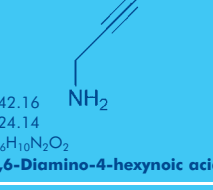
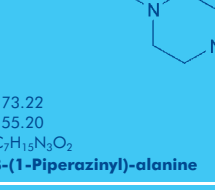
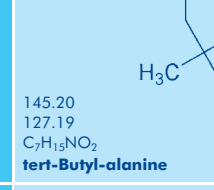
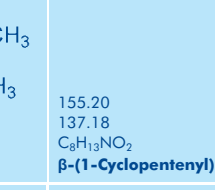
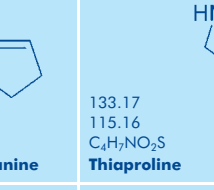
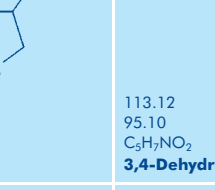
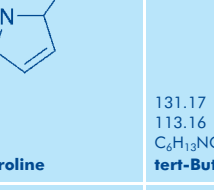
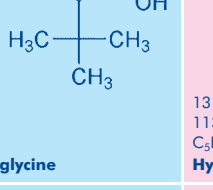
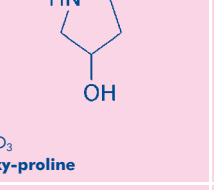
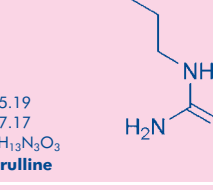
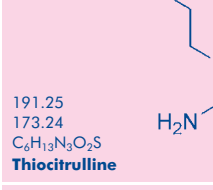
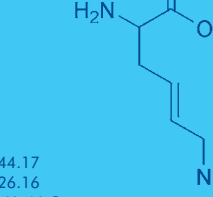
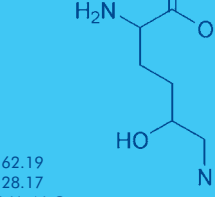
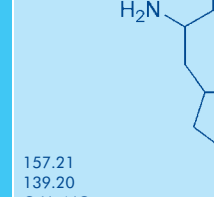
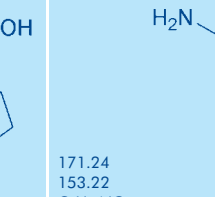
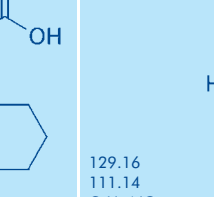
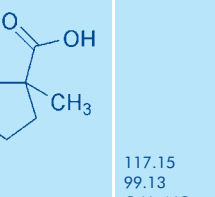
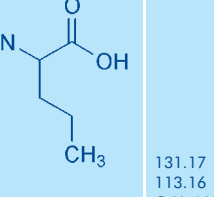
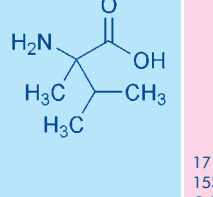
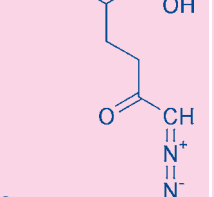
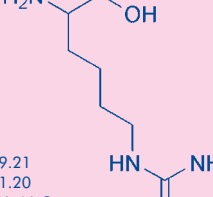
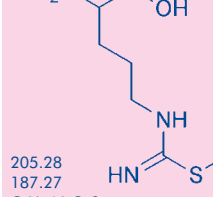
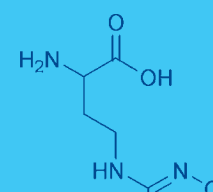
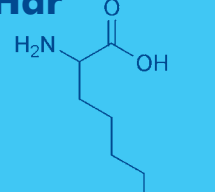
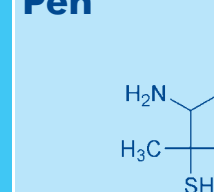
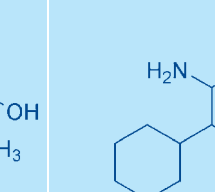
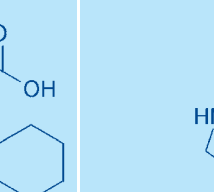
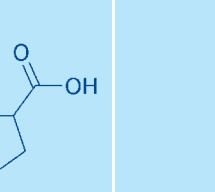
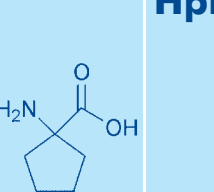
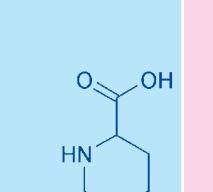
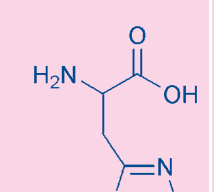
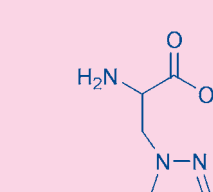
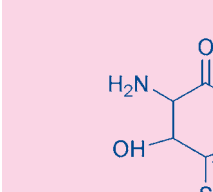
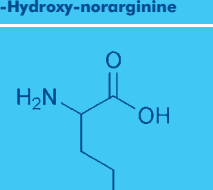
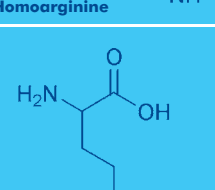
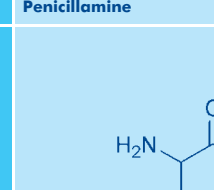
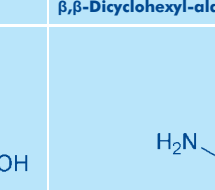
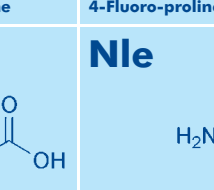
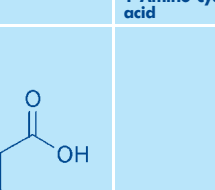
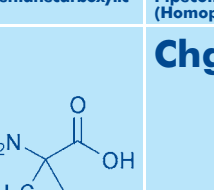
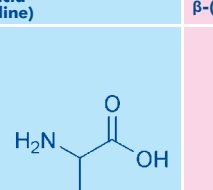
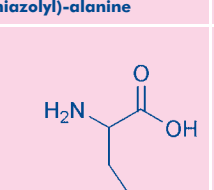
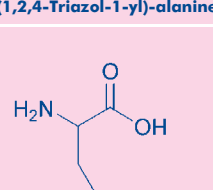
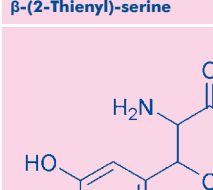
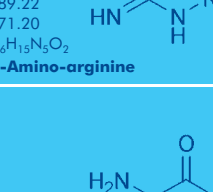
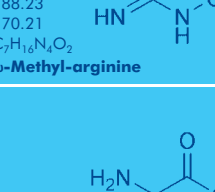
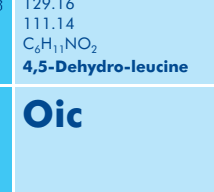
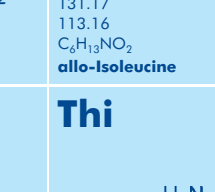
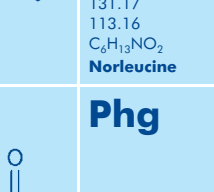
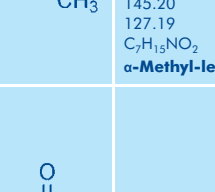
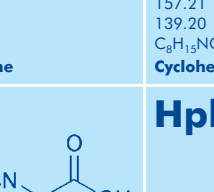
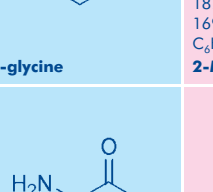
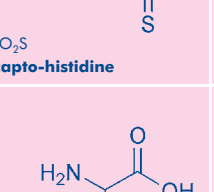
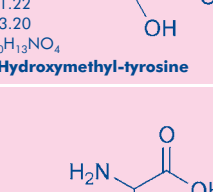
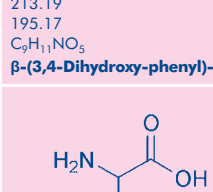
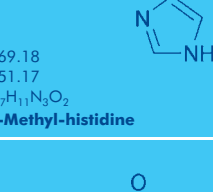
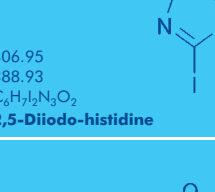
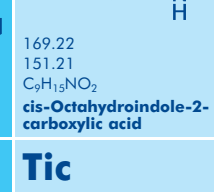
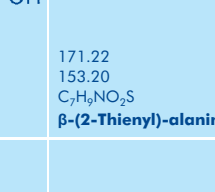
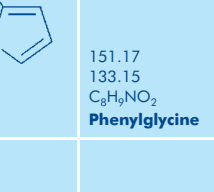
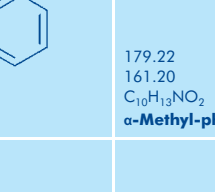
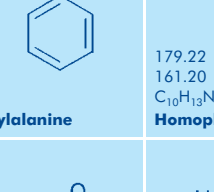
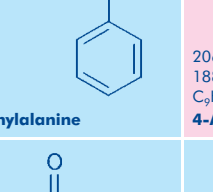
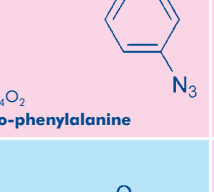
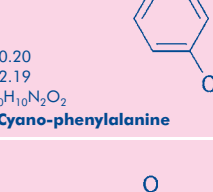

## Periodic Chart of Unusual $\alpha$ -Amino Acids, Poster

Interest in any of the products,  
request or order them at Bio-Connect.



unusual  
✓  $\alpha$ -Amin

**www.bachem.com**

<p><b>Ag1<sup>1)</sup></b></p> <div>  <p>90.08 72.06 C<sub>2</sub>H<sub>5</sub>N<sub>2</sub>O<sub>2</sub> <b>α-Amino-glycine</b></p> </div>	<p><b>Dab</b></p> <div>  <p>118.14 100.12 C<sub>4</sub>H<sub>10</sub>N<sub>2</sub>O<sub>2</sub> <b>α,γ-Diaminobutyric acid</b></p> </div>	<div>  <h1>Periodic Chart of α-Amino Acids</h1> <p>www.bachem.com</p> </div>																<div>  <p>163.13 145.11 C<sub>5</sub>H<sub>9</sub>NO<sub>3</sub> <b>γ-Hydroxy-glutamic acid</b></p> </div>
<p><b>Orn</b></p> <div>  <p>132.16 114.15 C<sub>3</sub>H<sub>12</sub>N<sub>2</sub>O<sub>2</sub> <b>Ornithine</b></p> </div>	<p><b>Dap</b></p> <div>  <p>109.11 86.09 C<sub>3</sub>H<sub>8</sub>N<sub>2</sub>O<sub>2</sub> <b>α,β-Diaminopropionic acid</b></p> </div>	<p><b>Dha<sup>1)</sup></b></p> <div>  <p>87.08 69.06 C<sub>3</sub>H<sub>5</sub>NO<sub>2</sub> <b>Dehydro-alanine</b></p> </div>	<div>  <p>107.09 89.07 C<sub>3</sub>H<sub>6</sub>FN<sub>2</sub>O<sub>2</sub> <b>β-Fluoro-alanine</b></p> </div>	<div>  <p>123.54 105.52 C<sub>3</sub>H<sub>5</sub>ClNO<sub>2</sub> <b>β-Chloro-alanine</b></p> </div>	<div>  <p>214.99 196.97 C<sub>3</sub>H<sub>5</sub>INO<sub>2</sub> <b>β-Iodo-alanine</b></p> </div>	<p><b>Abu</b></p> <div>  <p>103.12 85.11 C<sub>4</sub>H<sub>9</sub>NO<sub>2</sub> <b>α-Aminobutyric acid</b></p> </div>	<div>  <p>114.10 96.09 C<sub>4</sub>H<sub>8</sub>N<sub>2</sub>O<sub>2</sub> <b>β-Cyano-alanine</b></p> </div>	<div>  <p>147.13 129.12 C<sub>4</sub>H<sub>9</sub>N<sub>3</sub>O<sub>3</sub> <b>β-Ureido-alanine</b></p> </div>	<p><b>Hcy</b></p> <div>  <p>135.19 117.17 C<sub>4</sub>H<sub>9</sub>NO<sub>2</sub>S <b>Homocysteine</b></p> </div>	<div>  <p>159.14 141.12 C<sub>6</sub>H<sub>10</sub>NO<sub>4</sub> <b>γ-Methylene-glutamic acid</b></p> </div>								
<div>  <p>182.17 164.15 C<sub>5</sub>H<sub>12</sub>F<sub>2</sub>N<sub>2</sub>O<sub>2</sub> <b>α-Difluoromethyl-ornithine</b></p> </div>	<p><b>Pip</b></p> <div>  <p>144.17 126.16 C<sub>6</sub>H<sub>12</sub>N<sub>2</sub>O<sub>2</sub> <b>4-Amino-piperidine-4-carboxylic acid</b></p> </div>	<p><b>Aib</b></p> <div>  <p>103.12 85.11 C<sub>4</sub>H<sub>9</sub>NO<sub>2</sub> <b>α-Amino-isobutyric acid</b></p> </div>	<div>  <p>129.16 111.14 C<sub>6</sub>H<sub>11</sub>NO<sub>2</sub> <b>β-Cyclopropyl-alanine</b></p> </div>	<p><b>Aze</b></p> <div>  <p>101.11 83.09 C<sub>3</sub>H<sub>5</sub>NO<sub>2</sub> <b>Azetidine-2-carboxylic acid</b></p> </div>	<div>  <p>115.13 97.12 C<sub>5</sub>H<sub>9</sub>NO<sub>2</sub> <b>2-Allyl-glycine</b></p> </div>	<p><b>Pra</b></p> <div>  <p>113.12 95.10 C<sub>4</sub>H<sub>7</sub>NO<sub>2</sub> <b>Propargyl-glycine</b></p> </div>	<div>  <p>119.12 111.11 C<sub>4</sub>H<sub>9</sub>NO<sub>3</sub> <b>allo-Threonine</b></p> </div>	<p><b>Pyr</b></p> <div>  <p>129.12 129.10 C<sub>5</sub>H<sub>7</sub>NO<sub>3</sub> <b>Pyroglutamic acid</b></p> </div>	<div>  <p>147.16 129.14 C<sub>4</sub>H<sub>5</sub>NO<sub>2</sub>S <b>2-Oxothiazolidine-4-carboxylic acid</b></p> </div>	<p><b>Gla</b></p> <div>  <p>191.14 173.13 C<sub>7</sub>H<sub>11</sub>NO<sub>4</sub> <b>γ-Carboxy-glutamic acid</b></p> </div>								
<div>  <p>142.16 124.14 C<sub>6</sub>H<sub>12</sub>N<sub>2</sub>O<sub>2</sub> <b>2,6-Diamino-4-hexynoic acid</b></p> </div>	<div>  <p>173.22 155.20 C<sub>7</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub> <b>β-(1-Piperaziny)-alanine</b></p> </div>	<div>  <p>145.20 127.19 C<sub>7</sub>H<sub>15</sub>NO<sub>2</sub> <b>tert-Butyl-alanine</b></p> </div>	<div>  <p>155.20 137.18 C<sub>8</sub>H<sub>13</sub>NO<sub>2</sub> <b>β-(1-Cyclopentenyl)-alanine</b></p> </div>	<p><b>Aze</b></p> <div>  <p>133.17 115.16 C<sub>4</sub>H<sub>7</sub>NO<sub>2</sub>S <b>Thiaproline</b></p> </div>	<p><b>Dhp</b></p> <div>  <p>113.12 95.10 C<sub>5</sub>H<sub>7</sub>NO<sub>2</sub> <b>3,4-Dehydro-proline</b></p> </div>	<p><b>Tle</b></p> <div>  <p>131.17 113.16 C<sub>6</sub>H<sub>13</sub>NO<sub>2</sub> <b>tert-Butyl-glycine</b></p> </div>	<p><b>Hyp<sup>2)</sup></b></p> <div>  <p>131.13 113.12 C<sub>5</sub>H<sub>9</sub>NO<sub>3</sub> <b>Hydroxy-proline</b></p> </div>	<p><b>Cit</b></p> <div>  <p>175.19 157.17 C<sub>7</sub>H<sub>13</sub>N<sub>2</sub>O<sub>3</sub> <b>Citrulline</b></p> </div>	<div>  <p>187.22 169.20 C<sub>7</sub>H<sub>9</sub>NO<sub>2</sub>S <b>β-(2-Thienyl)-serine</b></p> </div>	<p><b>Aad</b></p> <div>  <p>161.16 143.14 C<sub>6</sub>H<sub>7</sub>NO<sub>4</sub> <b>α-Aminodipic acid</b></p> </div>								
<div>  <p>144.17 126.16 C<sub>6</sub>H<sub>12</sub>N<sub>2</sub>O<sub>2</sub> <b>4,5-Dehydro-lysine</b></p> </div>	<p><b>Hyl</b></p> <div>  <p>162.19 128.17 C<sub>6</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub> <b>5-Hydroxy-lysine</b></p> </div>	<div>  <p>157.21 131.20 C<sub>8</sub>H<sub>15</sub>NO<sub>2</sub> <b>β-Cyclopentyl-alanine</b></p> </div>	<p><b>Cha</b></p> <div>  <p>171.24 153.22 C<sub>9</sub>H<sub>17</sub>NO<sub>2</sub> <b>β-Cyclohexyl-alanine</b></p> </div>	<div>  <p>129.16 111.14 C<sub>6</sub>H<sub>11</sub>NO<sub>2</sub> <b>α-Methyl-proline</b></p> </div>	<p><b>Nva</b></p> <div>  <p>117.15 99.13 C<sub>5</sub>H<sub>11</sub>NO<sub>2</sub> <b>Norvaline</b></p> </div>	<div>  <p>131.17 113.16 C<sub>6</sub>H<sub>13</sub>NO<sub>2</sub> <b>α-Methyl-valine</b></p> </div>	<p><b>DON</b></p> <div>  <p>171.16 153.14 C<sub>5</sub>H<sub>9</sub>N<sub>3</sub>O<sub>2</sub> <b>6-Diazo-5-oxo-norleucine</b></p> </div>	<p><b>Hci</b></p> <div>  <p>189.21 171.20 C<sub>7</sub>H<sub>13</sub>N<sub>2</sub>O<sub>3</sub> <b>Homocitrulline</b></p> </div>	<div>  <p>205.28 187.27 C<sub>7</sub>H<sub>15</sub>N<sub>2</sub>O<sub>2</sub>S <b>5-Methyl-thiocitrulline</b></p> </div>	<p><b>Asu</b></p> <div>  <p>189.21 171.20 C<sub>6</sub>H<sub>9</sub>NO<sub>4</sub> <b>α-Aminosuberic acid</b></p> </div>								
<div>  <p>176.18 158.16 C<sub>5</sub>H<sub>13</sub>N<sub>4</sub>O<sub>2</sub> <b>ω-Hydroxy-norarginine</b></p> </div>	<p><b>Har</b></p> <div>  <p>188.23 170.21 C<sub>6</sub>H<sub>14</sub>N<sub>4</sub>O<sub>2</sub> <b>Homoarginine</b></p> </div>	<p><b>Pen</b></p> <div>  <p>149.21 120.21 C<sub>5</sub>H<sub>11</sub>N<sub>2</sub>O<sub>2</sub>S <b>Penicillamine</b></p> </div>	<div>  <p>253.38 235.37 C<sub>13</sub>H<sub>27</sub>NO<sub>2</sub> <b>β,β-Dicyclohexyl-alanine</b></p> </div>	<div>  <p>133.12 115.11 C<sub>5</sub>H<sub>8</sub>FN<sub>2</sub>O<sub>2</sub> <b>4-Fluoro-proline</b></p> </div>	<p><b>Nle</b></p> <div>  <p>145.20 127.19 C<sub>6</sub>H<sub>13</sub>NO<sub>2</sub> <b>α-Methyl-leucine</b></p> </div>	<p><b>Chg</b></p> <div>  <p>157.21 139.20 C<sub>6</sub>H<sub>13</sub>NO<sub>2</sub> <b>Cyclohexyl-glycine</b></p> </div>	<div>  <p>187.22 169.21 C<sub>6</sub>H<sub>9</sub>N<sub>2</sub>O<sub>2</sub>S <b>2-Mercapto-histidine</b></p> </div>	<div>  <p>211.22 193.20 C<sub>10</sub>H<sub>13</sub>NO<sub>4</sub> <b>3-Hydroxymethyl-tyrosine</b></p> </div>	<div>  <p>213.19 195.17 C<sub>9</sub>H<sub>9</sub>NO<sub>3</sub> <b>β-(3,4-Dihydroxy-phenyl)-serine</b></p> </div>	<p><b>Asu</b></p> <div>  <p>209.20 191.19 C<sub>9</sub>H<sub>7</sub>(NO<sub>2</sub>) <b>4-Carboxy-phenylalanine</b></p> </div>								
<div>  <p>189.22 171.20 C<sub>6</sub>H<sub>13</sub>N<sub>4</sub>O<sub>2</sub> <b>ω-Amino-arginine</b></p> </div>	<div>  <p>188.23 170.21 C<sub>6</sub>H<sub>14</sub>N<sub>4</sub>O<sub>2</sub> <b>ω-Methyl-arginine</b></p> </div>	<p><b>Oic</b></p> <div>  <p>169.22 151.21 C<sub>8</sub>H<sub>13</sub>NO<sub>2</sub> <b>cis-Octahydroindole-2-carboxylic acid</b></p> </div>	<p><b>Thi</b></p> <div>  <p>171.22 153.20 C<sub>7</sub>H<sub>9</sub>NO<sub>2</sub>S <b>β-(2-Thienyl)-alanine</b></p> </div>	<p><b>Phg</b></p> <div>  <p>151.17 133.15 C<sub>8</sub>H<sub>9</sub>NO<sub>2</sub> <b>Phenylglycine</b></p> </div>	<div>  <p>179.22 161.20 C<sub>9</sub>H<sub>11</sub>NO<sub>2</sub> <b>α-Methyl-phenylalanine</b></p> </div>	<p><b>Hph</b></p> <div>  <p>179.22 161.20 C<sub>10</sub>H<sub>13</sub>NO<sub>2</sub> <b>Homophenylalanine</b></p> </div>	<div>  <p>206.20 188.19 C<sub>9</sub>H<sub>9</sub>N<sub>3</sub>O<sub>2</sub> <b>4-Azido-phenylalanine</b></p> </div>	<div>  <p>190.20 172.19 C<sub>10</sub>H<sub>10</sub>N<sub>2</sub>O<sub>2</sub> <b>4-Cyano-phenylalanine</b></p> </div>	<div>  <p>271.19 253.17 C<sub>10</sub>H<sub>9</sub>N<sub>3</sub>O<sub>5</sub> <b>3,5-Dinitro-tyrosine</b></p> </div>	<div>  <p>338.98 320.97 C<sub>9</sub>H<sub>8</sub>Br<sub>2</sub>NO<sub>2</sub> <b>3,5-Dibromo-tyrosine</b></p> </div>								
<div>  <p>169.18 151.17 C<sub>7</sub>H<sub>11</sub>N<sub>3</sub>O<sub>2</sub> <b>α-Methyl-histidine</b></p> </div>	<div>  <p>406.95 388.93 C<sub>8</sub>H<sub>10</sub>I<sub>2</sub>N<sub>3</sub>O<sub>2</sub> <b>2,5-Diiodo-histidine</b></p> </div>	<p><b>Tic</b></p> <div>  <p>177.20 159.19 C<sub>10</sub>H<sub>11</sub>NO<sub>2</sub> <b>1,2,3,4-Tetrahydroisoquinoline-3-carboxylic acid</b></p> </div>	<div>  <p>221.28 203.26 C<sub>11</sub>H<sub>11</sub>NO<sub>2</sub>S <b>β-(3-Benzothienyl)-alanine</b></p> </div>	<div>  <p>210.19 192.17 C<sub>9</sub>H<sub>9</sub>NO<sub>3</sub> <b>4-Nitro-phenylalanine</b></p> </div>	<div>  <p>244.09 226.07 C<sub>9</sub>H<sub>9</sub>BrNO<sub>2</sub> <b>4-Bromo-phenylalanine</b></p> </div>	<div>  <p>221.30 203.28 C<sub>13</sub>H<sub>19</sub>NO<sub>2</sub> <b>4-tert-Butyl-phenylalanine</b></p> </div>	<div>  <p>218.26 200.24 C<sub>13</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub> <b>α-Methyl-tryptophan</b></p> </div>	<div>  <p>307.09 289.07 C<sub>9</sub>H<sub>9</sub>I(NO<sub>2</sub>)<sub>2</sub> <b>3-Iodo-tyrosine</b></p> </div>	<div>  <p>226.19 208.17 C<sub>9</sub>H<sub>9</sub>I(NO<sub>2</sub>)<sub>2</sub> <b>3-Nitro-tyrosine</b></p> </div>	<div>  <p>432.98 414.97 C<sub>9</sub>H<sub>8</sub>I<sub>2</sub>NO<sub>2</sub> <b>3,5-Diiodo-tyrosine</b></p> </div>								
<p><b>2Pal</b></p> <div>  <p>166.18 148.16 C<sub>8</sub>H<sub>10</sub>N<sub>2</sub>O<sub>2</sub> <b>β-(2-Pyridyl)-alanine</b></p> </div>	<p><b>3Pal</b></p> <div>  <p>166.18 148.16 C<sub>8</sub>H<sub>10</sub>N<sub>2</sub>O<sub>2</sub> <b>β-(3-Pyridyl)-alanine</b></p> </div>	<p><b>1Nal</b></p> <div>  <p>215.25 197.24 C<sub>11</sub>H<sub>13</sub>NO<sub>2</sub> <b>β-(1-Naphthyl)-alanine</b></p> </div>	<div>  <p>291.09 273.07 C<sub>9</sub>H<sub>9</sub>INO<sub>2</sub> <b>4-Iodo-phenylalanine</b></p> </div>	<div>  <p>183.18 165.17 C<sub>9</sub>H<sub>9</sub>FN<sub>2</sub>O<sub>2</sub> <b>3-Fluoro-phenylalanine</b></p> </div>	<div>  <p>183.18 165.17 C<sub>9</sub>H<sub>9</sub>FN<sub>2</sub>O<sub>2</sub> <b>4-Fluoro-phenylalanine</b></p> </div>	<div>  <p>218.26 200.24 C<sub>13</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub> <b>4-Methyl-tryptophan</b></p> </div>	<div>  <p>218.26 200.24 C<sub>13</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub> <b>5-Methyl-tryptophan</b></p> </div>	<div>  <p>220.23 202.21 C<sub>11</sub>H<sub>11</sub>N<sub>2</sub>O<sub>3</sub> <b>5-Hydroxy-tryptophan</b></p> </div>	<div>  <p>193.20 175.19 C<sub>13</sub>H<sub>11</sub>NO<sub>3</sub> <b>7-Hydroxy-1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid</b></p> </div>	<div>  <p>193.20 175.19 C<sub>13</sub>H<sub>11</sub>NO<sub>3</sub> <b>7-Hydroxy-1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid</b></p> </div>								
<div>  <p>216.24 198.22 C<sub>12</sub>H<sub>12</sub>N<sub>2</sub>O<sub>2</sub> <b>β-(2-Quinolyl)-alanine</b></p> </div>	<div>  <p>196.21 178.19 C<sub>9</sub>H<sub>12</sub>N<sub>2</sub>O<sub>3</sub> <b>3-Amino-tyrosine</b></p> </div>	<div>  <p>180.21 162.19 C<sub>9</sub>H<sub>12</sub>N<sub>2</sub>O<sub>2</sub> <b>4-Amino-phenylalanine</b></p> </div>	<p><b>2Nal</b></p> <div>  <p>215.25 197.24 C<sub>13</sub>H<sub>13</sub>NO<sub>2</sub> <b>β-(2-Naphthyl)-alanine</b></p> </div>	<div>  <p>199.64 181.62 C<sub>9</sub>H<sub>9</sub>ClNO<sub>2</sub> <b>4-Chloro-phenylalanine</b></p> </div>	<div>  <p>234.08 216.07 C<sub>14</sub>H<sub>15</sub>ClNO<sub>2</sub> <b>4-Phenyl-phenylalanine</b></p> </div>	<div>  <p>201.17 183.15 C<sub>9</sub>H<sub>8</sub>F<sub>2</sub>NO<sub>2</sub> <b>2,6-Difluoro-phenylalanine</b></p> </div>	<div>  <p>218.26 200.24 C<sub>13</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub> <b>N-in-Methyl-tryptophan</b></p> </div>	<p><b>Tpi</b></p> <div>  <p>216.24 198.22 C<sub>12</sub>H<sub>12</sub>N<sub>2</sub>O<sub>2</sub> <b>1,2,3,4-Tetrahydronorharmans-3-carboxylic acid</b></p> </div>	<div>  <p>263.25 245.23 C<sub>13</sub>H<sub>13</sub>NO<sub>3</sub> <b>β-(7-Methoxy-coumarin-4-yl)-alanine</b></p> </div>	<div>  <p>273.29 255.27 C<sub>9</sub>H<sub>9</sub>I(NO<sub>2</sub>)<sub>2</sub> <b>Thyrosine</b></p> </div>								

Basic

Nonpolar (hydrophobic)

Polar, uncharged

Acidic

3-Letter Amino Acid Code

Relative Molecular Mass

M<sub>r</sub>-H<sub>2</sub>O

Molecular Formula

Chemical Structure

Chemical Name

Aib

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## Bachem. Leading beyond peptides

