

EDITION 2016



# DIAMINES & POLYAMINES

including Spermidines, Spermines and other Biogenic Polyamines

Starting Materials for  
Drug Discovery & Drug Delivery & Diagnostics  
FROM GRAMS TO MULTI-TON LOTS

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We have distributors on non-exclusive basis in the following countries:

**China, Japan, Korea**

Please contact us, if you require local contact.

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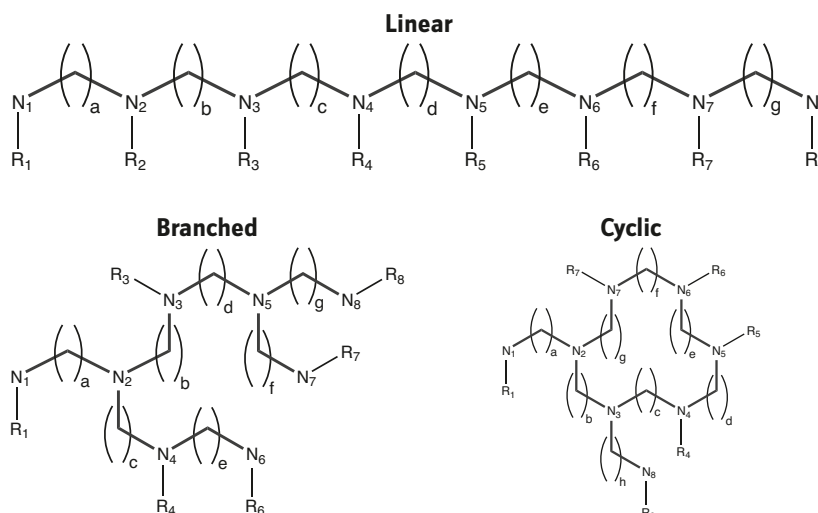
## 1. Custom Synthesis of Polyamines

Polyamines such as ethylene diamine and its higher homologues are important feedstocks for the chemical industry. Compounds like putrescine, spermidine, and spermine play important roles in both eukaryotic and prokaryotic cells and show many other different biological functions. Most eukaryotic cells have a polyamine transporter system on their cell membrane that facilitates the internalization of exogenous polyamines. This system is highly active in rapidly proliferating cells and is the target of many sophisticated chemotherapeutics currently under development. They also have been found to act as promoters of programmed ribosomal frame shifting during translation. Cells synthesize them via highly regulated pathways. As cations they bind to DNA, and, in structure, they represent compounds with multiple positive charges with well-defined spaced intervals.

If cellular polyamine synthesis is inhibited, cell growth is stopped or severely retarded. The provision of exogenous polyamines restores the growth of these cells. Polyamines are also important modulators of a variety of ion channels, including NMDA receptors and AMPA receptors. They block inward-rectifier potassium channels, thereby conserving the cellular energy, i.e.  $K^+$  ion gradient across the cell membrane. In addition, polyamines participate in initiating the expression of SOS response of Colicin E7 operon and down-regulate proteins that are essential for colicin E7 uptake, thus conferring a survival advantage on colicin-producing *E. coli* under stress conditions. Polyamines also can enhance the permeability of the blood-brain barrier and they are involved in modulating senescence of organs in plants and are therefore considered as a plant hormone.

**We have technology available to custom manufacture any type of Polyamine with the following parameters:**

- ✓ Polyamines containing any number from 2 to 8 Nitrogens
- ✓ Spacers with different numbers of Carbons (a to h)
- ✓ Bearing additional residues or protecting groups at any Nitrogen (R1 to R8)
- ✓ Linear or branched structures of your choice
- ✓ Any cyclic structures



### References:

- ▶ Rato C, Amirova S.R, Bates D.G, Stansfield I, Wallace H.M. "Translational recoding as a feedback controller: systems approaches reveal polyamine-specific effects on the antizyme ribosomal frameshift". *Nucleic Acid Res.* 2011; **39(11)**: 4587-4597. doi:10.1093/nar/gkq1349.
- ▶ Wang C, Delcros JG, Cannon L et al.. "Defining the molecular requirements for the selective delivery of polyamine conjugates into cells containing active polyamine transporters". *J. Med. Chem.* 2003; **46(24)**: 5129-38. doi:10.1021/jm030223a.
- ▶ Pan YH, Liao CC. "The critical roles of polyamines regulating ColE7 production and restricting ColE7 uptake of the colicin-producing *Escherichia coli*". *JBC* 2006; **281**: 13083-13091.
- ▶ Zhang L, Lee HK, Pruess TH, White HS, Bulaj G. "Synthesis and applications of polyamine amino acid residues: improving the bioactivity of an analgesic neuropeptide, neurotensin". *J. Med. Chem.* 2009; **52(6)**: 1514-7. doi:10.1021/jm801481y.
- ▶ Pandey S, Ranade SA, Nagar PK, Kumar N. "Role of polyamines and ethylene as modulators of plant senescence". *J. Biosci.* 2000; **25(3)**: 291-9. doi:10.1007/BF02703938.

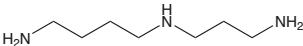
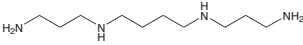
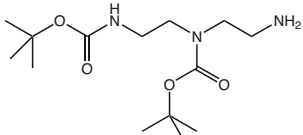
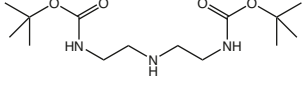
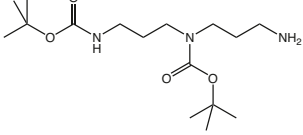
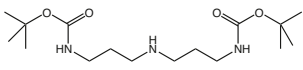
Please send us your inquiry of the structure of your interest!

## 2. Spermidines, Spermines and other Biogenic Polyamines Interact with DNA

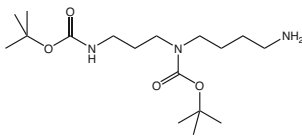
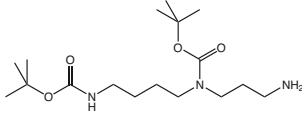
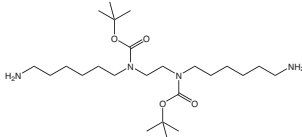
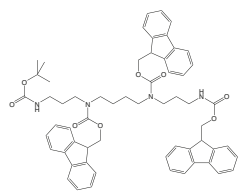
Polyamines stabilise nucleic acids against chemical and enzymatic degradation, facilitate the formation of secondary and tertiary structures and enhance cellular uptake. Biogenic polyamines, such as putrescine and spermidine are involved in numerous diverse biological processes. Due to their binding to DNA and RNA they play an important role in nucleic acid function and cause DNA condensation and aggregation inducing DNA conformational changes.

### References:

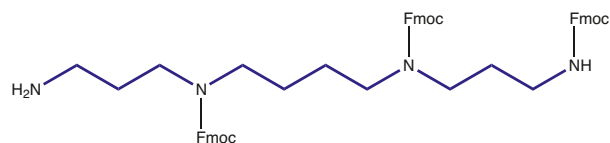
- ▶ Marsh AJ, Williams DM, Grasby JA. "The synthesis and properties of oligoribonucleotide-spermine conjugates". *Organic & Biomolecular Chemistry* 2004; **2**: 2103-2112.
- ▶ Hosford ME, Muller JG, Burrows CJ. "Spermine participates in oxidative damage of guanosine and 8-oxoguanosine leading to deoxyribosylurea formation". *J. Am. Chem. Soc.* 2004; **126**: 9540-9541.
- ▶ Ouameur AA, Tajmir-Riahi HA. "Structural analysis of DNA interactions with biogenic polyamines and cobalt(III)hexamine studied by Fourier transform infrared and capillary electrophoresis". *J. Biol. Chem.* 2004; **279(40)**: 42041-42054.
- ▶ Keniry MA. "Quadruplex structures in nucleic acids". *Biopolymers* 2001; **56**: 123-146.

		Article No.	Quantity	Price
<b>LS-1208</b>	<b>Spermidine</b>	please inquire!		
<b>1,8-Diamino-4-azaoctane</b> CAS-NO: 124-20-9 FORMULA: C <sub>7</sub> H <sub>19</sub> N <sub>3</sub> MOLECULAR WEIGHT: 145,25 g/mol				
<b>LS-1216</b>	<b>Spermine</b>	LS-1216.0010	10 g	€ 290,00
<b>N,N'-Bis(3-aminopropyl)-1,4-diaminobutane</b> CAS-NO: 71-44-3 FORMULA: C <sub>10</sub> H <sub>26</sub> N <sub>4</sub> MOLECULAR WEIGHT: 202,34 g/mol		LS-1216.0050	50 g	€ 850,00
		LS-1216.0100	100 g	€ 1540,00
				
<b>BNN1080</b>	<b>1,4-Bis-Boc-1,4,7-triazaheptane</b>	BNN1080.0001	1 g	€ 150,00
<b>1,4-Bis-t-butyloxycarbonyl-1,4,7-triazaheptane</b> CAS-NO: 120131-72-8 FORMULA: C <sub>14</sub> H <sub>29</sub> N <sub>3</sub> O <sub>4</sub> MOLECULAR WEIGHT: 303,4 g/mol		BNN1080.0005	5 g	€ 600,00
		BNN1080.0025	25 g	€ 2250,00
				
<b>BNN1090</b>	<b>1,7-Bis-Boc-1,4,7-triazaheptane</b>	BNN1090.0001	1 g	€ 150,00
<b>1,7-Bis-t-butyloxycarbonyl-1,4,7-triazaheptane</b> CAS-NO: 117499-16-8 FORMULA: C <sub>14</sub> H <sub>29</sub> N <sub>3</sub> O <sub>4</sub> MOLECULAR WEIGHT: 303,4 g/mol		BNN1090.0005	5 g	€ 600,00
				
<b>BNN1100</b>	<b>1,5-Bis-Boc-1,5,9-triazanonane</b>	BNN1100.0001	1 g	€ 300,00
<b>1,5-Bis-t-butyloxycarbonyl-1,5,9-triazanonane</b> CAS-NO: 122248-82-2 FORMULA: C <sub>16</sub> H <sub>33</sub> N <sub>3</sub> O <sub>4</sub> MOLECULAR WEIGHT: 331,45 g/mol		BNN1100.0005	5 g	€ 1200,00
				
<b>BNN1110</b>	<b>1,9-Bis-Boc-1,5,9-triazanonane</b>	BNN1110.0001	1 g	€ 150,00
<b>1,9-Bis-t-butyloxycarbonyl-1,5,9-triazanonane</b> CAS-NO: 82409-02-7 FORMULA: C <sub>16</sub> H <sub>33</sub> N <sub>3</sub> O <sub>4</sub> MOLECULAR WEIGHT: 331,45 g/mol		BNN1110.0005	5 g	€ 600,00
				

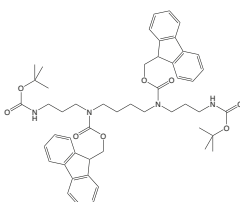
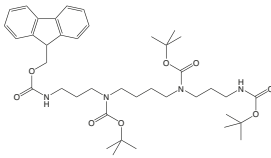
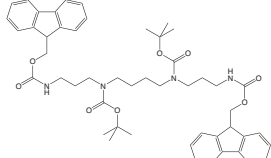
Prices are in EUR, net, exw Germany

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<b>BNN1120</b> <b>1,5-Bis-Boc-1,5,10-triazadecane</b> 1,5-Bis-t-butyloxycarbonyl-1,5,10-triazadecane FORMULA: C <sub>17</sub> H <sub>35</sub> N <sub>3</sub> O <sub>4</sub> MOLECULAR WEIGHT: 345,48 g/mol		BNN1120.0001	1 g	€ 350,00
		BNN1120.0005	5 g	€ 1200,00
<b>BNN1130</b> <b>1,6-Bis-Boc-1,6,10-triazadecane</b> 1,6-Bis-t-butyloxycarbonyl-1,6,10-triazadecane CAS-NO: 68076-39-1 FORMULA: C <sub>17</sub> H <sub>35</sub> N <sub>3</sub> O <sub>4</sub> MOLECULAR WEIGHT: 345,48 g/mol		BNN1130.0001	1 g	€ 350,00
		BNN1130.0005	5 g	€ 1400,00
<b>BNN1160</b> <b>8,11-bis(Boc)-1,8,11,18-tetraaza-oktadecane</b> tert-butyl ethane-1,2-diylbis(6-aminohexylcarbamate) FORMULA: C <sub>24</sub> H <sub>50</sub> N <sub>4</sub> O <sub>4</sub> MOLECULAR WEIGHT: 458,68 g/mol		BNN1160.0250	250 mg	€ 250,00
		BNN1160.1000	1 g	€ 750,00
		BNN1160.5000	5 g	€ 2950,00
<b>SNN1000</b> <b>Spermine(BFFF)</b> N <sup>1</sup> -(t-Butyloxycarbonyl)-N <sup>2</sup> ,N <sup>3</sup> ,N <sup>4</sup> -tris(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatrodecan FORMULA: C <sub>60</sub> H <sub>64</sub> N <sub>4</sub> O <sub>8</sub> MOLECULAR WEIGHT: 969,2 g/mol		SNN1000.0500	500 mg	€ 750,00
		SNN1000.0001	1 g	€ 1200,00

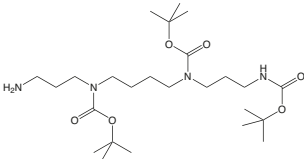
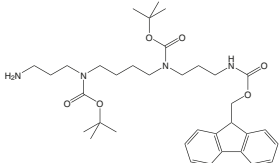
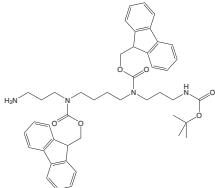
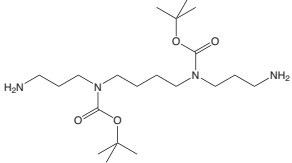
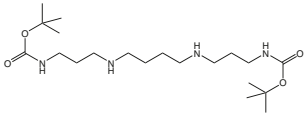
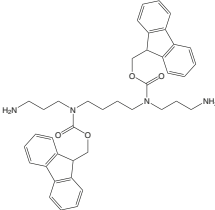
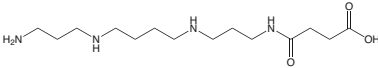
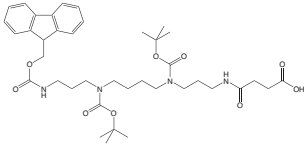
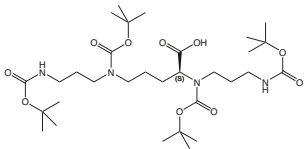
A **Spermine(FFFH)** (N<sup>2</sup>,N<sup>3</sup>,N<sup>4</sup>-Tris-Fmoc-1,5,10,14-tetra-aza-quatrodecan) is not stable, because the free amino group will cleave the Fmoc protecting groups within the same molecule. As this process is rather slow, Spermine(FFFH) can be produced *in situ* by using Spermine(FFFB) (product code SNN1000) and removing Boc according to the following procedure:



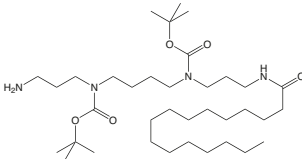
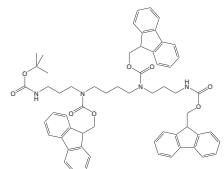
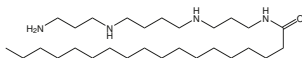
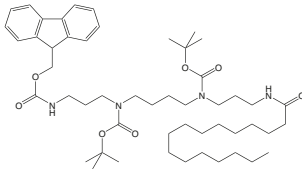
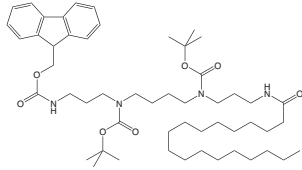
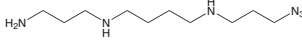
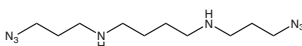
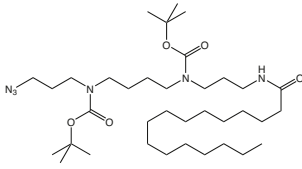
Dissolve 2,65 g (3,1mmol) N<sup>1</sup>-Boc-N<sup>2</sup>,N<sup>3</sup>,N<sup>4</sup>-tri-Fmoc-spermine in 80 ml 1M HCl/MeOH. Stir the mixture at 25 °C for 6 h. The progress of the deprotection can be monitored by TLC (Toluene:EtOH:AcOH 40:10:1). After completion evaporate the solution under vacuum by rotavapor to dryness. Re-dissolve with ca. 50 ml methylene chloride and evaporate again to dryness. The remaining sticky, glassy oil should be immediately dissolved in the solvent for the next chemical transformation and used without keeping to next day. In case this is not possible, the product can be stored for some days at +4 °C in toluene, which is adjusted to pH 4 with a few drops of AcOH.

		Article No.	Quantity	Price
<b>SNN1010</b> <b>Spermine(BFFB)</b> N <sup>1</sup> ,N <sup>4</sup> -Bis-(t-butyloxycarbonyl)-N <sup>2</sup> ,N <sup>3</sup> -bis-(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatrodecan FORMULA: C <sub>50</sub> H <sub>62</sub> N <sub>4</sub> O <sub>8</sub> MOLECULAR WEIGHT: 847,07 g/mol		SNN1010.0500	500 mg	€ 750,00
		SNN1010.0001	1 g	€ 1200,00
<b>SNN1020</b> <b>Spermine(BBBF)</b> N <sup>1</sup> ,N <sup>2</sup> ,N <sup>3</sup> -Tris-(t-butyloxycarbonyl)-N <sup>4</sup> -(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatrodecan FORMULA: C <sub>40</sub> H <sub>50</sub> N <sub>4</sub> O <sub>8</sub> MOLECULAR WEIGHT: 724,95 g/mol		SNN1020.0500	500 mg	€ 750,00
		SNN1020.0001	1 g	€ 1200,00
<b>SNN1030</b> <b>Spermine(FBBF)</b> N <sup>2</sup> ,N <sup>3</sup> -Bis-(t-butyloxycarbonyl)-N <sup>1</sup> ,N <sup>4</sup> -bis-(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatrodecan FORMULA: C <sub>50</sub> H <sub>62</sub> N <sub>4</sub> O <sub>8</sub> MOLECULAR WEIGHT: 847,07 g/mol		SNN1030.0500	500 mg	€ 750,00
		SNN1030.0001	1 g	€ 1200,00

Prices are in EUR, net, exw Germany

		Article No.	Quantity	Price
<b>SNN1040 Spermine(HBBB)</b> N <sup>2</sup> ,N <sup>3</sup> ,N <sup>4</sup> -Tris-(t-butyloxycarbonyl)-1,5,10,14-tetra-aza-quatodecan CAS-NO: 114459-62-0 FORMULA: C <sub>25</sub> H <sub>50</sub> N <sub>4</sub> O <sub>6</sub> MOLECULAR WEIGHT: 502,7 g/mol		SNN1040.0500	500 mg	€ 300,00
		SNN1040.0001	1 g	€ 500,00
		SNN1040.0005	5 g	€ 1900,00
<b>SNN1060 Spermine(HBBF)*HCl</b> N <sup>2</sup> ,N <sup>3</sup> -Bis-(t-butyloxycarbonyl)-N <sup>4</sup> -(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatodecan hydrochloride FORMULA: C <sub>35</sub> H <sub>52</sub> N <sub>4</sub> O <sub>6</sub> *HCl MOLECULAR WEIGHT: 624,83*36,45 g/mol		SNN1060.0500	500 mg	€ 750,00
		SNN1060.0001	1 g	€ 1200,00
<b>SNN1070 Spermine(HFFB)*HCl</b> N <sup>4</sup> -(t-Butyloxycarbonyl)-N <sup>2</sup> ,N <sup>3</sup> -bis-(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatodecan hydrochloride FORMULA: C <sub>45</sub> H <sub>54</sub> N <sub>4</sub> O <sub>6</sub> *HCl MOLECULAR WEIGHT: 746,96*36,45 g/mol		SNN1070.0500	500 mg	€ 750,00
		SNN1070.0001	1 g	€ 1200,00
<b>SNN1080 Spermine(HBBH)</b> N <sup>2</sup> ,N <sup>3</sup> -Bis-(t-butyloxycarbonyl)-1,5,10,14-tetra-aza-quatodecan CAS-NO: 177213-61-5 FORMULA: C <sub>20</sub> H <sub>42</sub> N <sub>4</sub> O <sub>4</sub> MOLECULAR WEIGHT: 402,58 g/mol		SNN1080.0500	500 mg	€ 275,00
		SNN1080.0001	1 g	€ 450,00
		SNN1080.0005	5 g	€ 1750,00
<b>SNN1200 Spermine(BHBB)</b> N <sup>1</sup> ,N <sup>4</sup> -Bis-(t-butyloxycarbonyl)-1,5,10,14-tetra-aza-tetradecan CAS-NO: 140652-55-7 FORMULA: C <sub>20</sub> H <sub>42</sub> N <sub>4</sub> O <sub>4</sub> MOLECULAR WEIGHT: 402,57 g/mol		SNN1200.0500	500 mg	€ 120,00
		SNN1200.1000	1 g	€ 200,00
		SNN1200.5000	5 g	€ 800,00
<b>SNN1090 Spermine(HFFH)*2HCl</b> N <sup>2</sup> ,N <sup>3</sup> -Bis-(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatodecan dihydrochloride FORMULA: C <sub>40</sub> H <sub>46</sub> N <sub>4</sub> O <sub>4</sub> *2HCl MOLECULAR WEIGHT: 646,84*72,90 g/mol		SNN1090.0500	500 mg	€ 750,00
		SNN1090.0001	1 g	€ 1200,00
<b>SNN1150 Spermine(HHHSuc-OH)</b> 1,5,10,14-Tetra-aza-quatodecan-N <sup>4</sup> -succinamic acid FORMULA: C <sub>14</sub> H <sub>30</sub> N <sub>4</sub> O <sub>3</sub> MOLECULAR WEIGHT: 302,42 g/mol		SNN1150.0500	500 mg	€ 750,00
		SNN1150.0001	1 g	€ 1200,00
<b>SNN1140 Spermine(FBBSuc-OH)</b> N <sup>2</sup> ,N <sup>3</sup> -Bis-(t-butyloxycarbonyl)-N <sup>1</sup> -(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatodecan-N <sup>4</sup> -succinamic acid CAS-NO: 1263046-90-7 FORMULA: C <sub>39</sub> H <sub>56</sub> N <sub>4</sub> O <sub>9</sub> MOLECULAR WEIGHT: 724,9 g/mol		SNN1140.0250	250 mg	€ 275,00
		SNN1140.0500	500 mg	€ 600,00
		SNN1140.0001	1 g	€ 1000,00
<b>SNN1190 Spermine(BBBB-CO<sub>2</sub>H) (S)</b> (S)-N <sup>1</sup> ,N <sup>2</sup> ,N <sup>10</sup> ,N <sup>14</sup> -Tetrakis-(t-butyloxycarbonyl)-1,5,10,14-tetraazatetradecan-9-carboxylic acid CAS-NO: 119798-08-2 FORMULA: C <sub>31</sub> H <sub>58</sub> N <sub>4</sub> O <sub>10</sub> MOLECULAR WEIGHT: 646,81 g/mol		SNN1190.0001	1 g	€ 300,00
		SNN1190.0005	5 g	€ 1200,00

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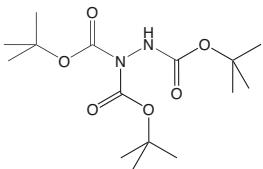
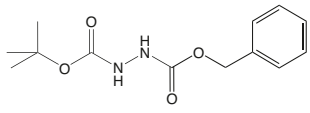
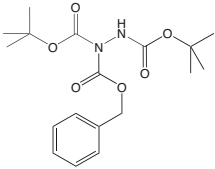
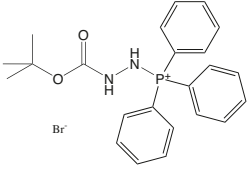
		Article No.	Quantity	Price
<b>SNN1160 Spermine(HBBPalm)</b>	<p><b>N<sup>2</sup>,N<sup>3</sup>-Bis-(t-butyloxycarbonyl)-N<sup>4</sup>-palmitoyl-1,5,10,14-tetra-aza-quatrodecan</b></p> <p>FORMULA: C<sub>36</sub>H<sub>72</sub>N<sub>4</sub>O<sub>5</sub></p> <p>MOLECULAR WEIGHT: 641 g/mol</p>		SNN1160.0500	500 mg € 750,00
		SNN1160.0001	1 g € 1200,00	
<b>SNN1000 Spermine(BFFF)</b>	<p><b>N<sup>1</sup>-(t-Butyloxycarbonyl)-N<sup>2</sup>,N<sup>3</sup>,N<sup>4</sup>-tris(9-fluorenylmethyloxycarbonyl)-1,5,10,14-tetra-aza-quatrodecan</b></p> <p>FORMULA: C<sub>60</sub>H<sub>54</sub>N<sub>4</sub>O<sub>8</sub></p> <p>MOLECULAR WEIGHT: 969,2 g/mol</p>		SNN1000.0500	500 mg € 750,00
		SNN1000.0001	1 g € 1200,00	
<b>SNN1130 Spermine(HHHStea)*3HCl</b>	<p><b>N<sup>1</sup>-Stearoyl-1,5,10,14-tetra-aza-quatrodecan trihydrochloride</b></p> <p>CAS-NO: 273935-54-9net</p> <p>FORMULA: C<sub>28</sub>H<sub>60</sub>N<sub>4</sub>O*3HCl</p> <p>MOLECULAR WEIGHT: 468,82*109,35 g/mol</p>		SNN1130.0250	250 mg € 275,00
		SNN1130.0500	500 mg € 600,00	
		SNN1130.0001	1 g € 1000,00	
<b>SNN1100 Spermine(FBBPalm)</b>	<p><b>N<sup>2</sup>,N<sup>3</sup>-Bis-(t-butyloxycarbonyl)-N<sup>1</sup>-(9-fluorenylmethyloxycarbonyl)-N<sup>4</sup>-palmitoyl-1,5,10,14-tetra-aza-quatrodecan</b></p> <p>FORMULA: C<sub>51</sub>H<sub>82</sub>N<sub>4</sub>O<sub>7</sub></p> <p>MOLECULAR WEIGHT: 863,24 g/mol</p>		SNN1100.0500	500 mg € 750,00
		SNN1100.0001	1 g € 1200,00	
<b>SNN1120 Spermine(FBBStea)</b>	<p><b>N<sup>2</sup>,N<sup>3</sup>-Bis-(t-butyloxycarbonyl)-N<sup>1</sup>-(9-fluorenylmethyloxycarbonyl)-N<sup>4</sup>-stearoyl-1,5,10,14-tetra-aza-quatrodecan</b></p> <p>FORMULA: C<sub>53</sub>H<sub>86</sub>N<sub>4</sub>O<sub>7</sub></p> <p>MOLECULAR WEIGHT: 891,3 g/mol</p>		SNN1120.0500	500 mg € 750,00
		SNN1120.0001	1 g € 1200,00	
<b>SNN1170 Spermine(HHHN<sub>3</sub>)*3HCl</b>	<p><b>N<sup>1</sup>-(3-Aminopropyl)-N<sup>4</sup>-(3-azidopropyl)butane-1,4-diamine trihydrochloride</b></p> <p>CAS-NO: 1190203-77-0net</p> <p>FORMULA: C<sub>10</sub>H<sub>24</sub>N<sub>6</sub>*3HCl</p> <p>MOLECULAR WEIGHT: 228,34*109,38 g/mol</p>		SNN1170.0250	250 mg € 245,00
		SNN1170.1000	1 g € 800,00	
		SNN1170.5000	5 g € 3200,00	
<b>SNN1210 Spermine(N<sub>3</sub>HHN<sub>3</sub>)*2TsOH</b>	<p><b>N<sup>1</sup>-(3-Aminopropyl)-N<sup>4</sup>-(3-azidopropyl)butane-1,4-diamine trihydrochloride</b></p> <p>FORMULA: C<sub>10</sub>H<sub>22</sub>N<sub>8</sub>*C<sub>14</sub>H<sub>16</sub>O<sub>6</sub>S<sub>2</sub></p> <p>MOLECULAR WEIGHT: 254,34*344,40 g/mol</p>		SNN1210.0500	500 mg € 165,00
		SNN1210.0001	1 g € 250,00	
		SNN1210.0005	5 g € 1000,00	
<b>SNN1180 Spermine(N<sub>3</sub>BBPalm)</b>	<p><b>N<sup>1</sup>-Azido-N<sup>2</sup>,N<sup>3</sup>-bis-(t-butyloxycarbonyl)-N<sup>4</sup>-palmitoyl-1,5,10,14-tetra-aza-quatrodecan</b></p> <p>FORMULA: C<sub>36</sub>H<sub>70</sub>N<sub>6</sub>O<sub>5</sub></p> <p>MOLECULAR WEIGHT: 666,98 g/mol</p>		SNN1180.0100	100 mg € 500,00
		SNN1180.0500	500 mg € 1200,00	
		SNN1180.1000	1 g € 3250,00	

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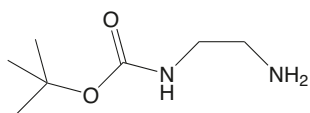
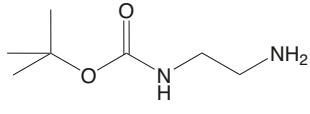
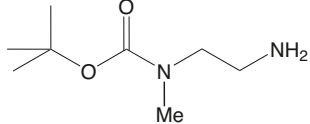
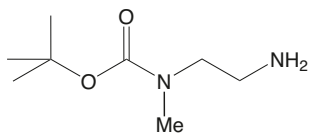


## 3. Linear Diamines

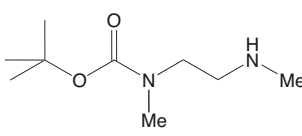
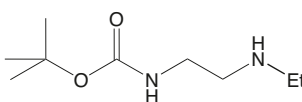
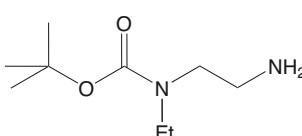
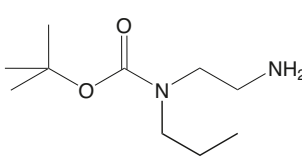
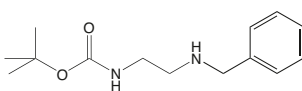
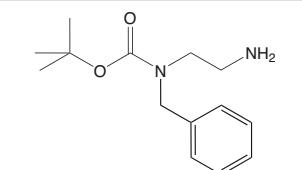
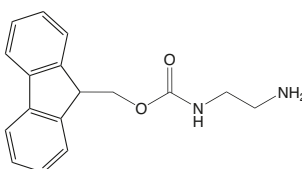
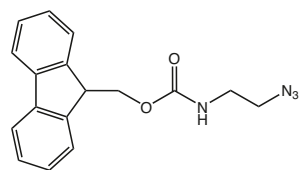
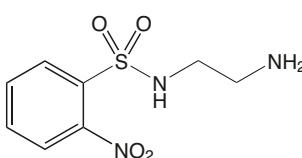
### Hydrazines

		Article No.	Quantity	Price
<b>BNN1009 Boc<sub>3</sub>-Hydrazine</b> Tris-(t-Butyloxycarbonyl)-hydrazine CAS-NO: 185456-26-2 FORMULA: C <sub>15</sub> H <sub>28</sub> N <sub>2</sub> O <sub>6</sub> MOLECULAR WEIGHT: 332,4 g/mol		BNN1009.0005	5 g	€ 100,00
		BNN1009.0025	25 g	€ 400,00
		BNN1009.0100	100 g	€ 1250,00
<b>BNN1039 Boc-HNNH-Z</b> 1-(t-Butyloxycarbonyl)-2-benzyloxycarbonyl-hydrazine CAS-NO: 57699-88-4 FORMULA: C <sub>18</sub> H <sub>18</sub> N <sub>2</sub> O <sub>4</sub> MOLECULAR WEIGHT: 266,3 g/mol		BNN1039.0005	5 g	€ 50,00
		BNN1039.0025	25 g	€ 200,00
<b>BNN1006 Boc,Z-NNH-Boc</b> N,N'-di-(t-Butyloxycarbonyl)-N-benzyloxycarbonyl-hydrazine CAS-NO: 202980-91-4 FORMULA: C <sub>18</sub> H <sub>26</sub> N <sub>2</sub> O <sub>6</sub> MOLECULAR WEIGHT: 366,42 g/mol		BNN1006.0001	1 g	€ 65,00
		BNN1006.0005	5 g	€ 250,00
		BNN1006.0025	25 g	€ 1000,00
<b>BNN1021 Boc-HNNH-PPh<sub>3</sub> Br</b> 1-(t-Butyloxycarbonyl)-2-triphenylphosphonium-hydrazine Bromide CAS-NO: 356534-53-7 FORMULA: C <sub>23</sub> H <sub>26</sub> BrN <sub>2</sub> O <sub>2</sub> P MOLECULAR WEIGHT: 473,35 g/mol		BNN1021.0005	5 g	€ 125,00
		BNN1021.0025	25 g	€ 500,00

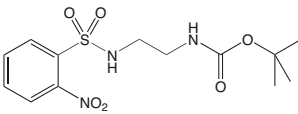
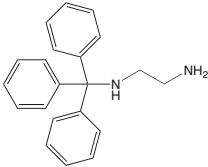
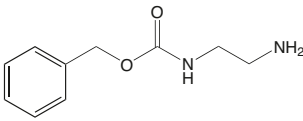
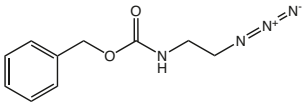
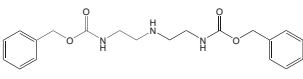
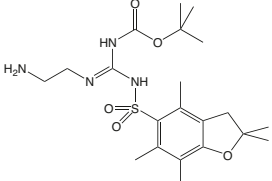
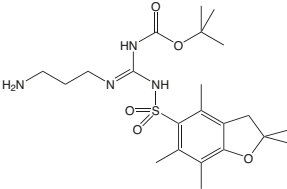
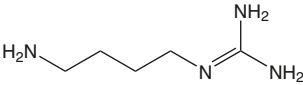
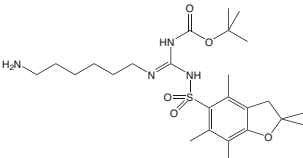
### Ethylenediamines

		Article No.	Quantity	Price
<b>BNN1018 Boc-EDA, liq.</b> N-t-Butyloxycarbonyl-ethylenediamine CAS-NO: 57260-73-8 FORMULA: C <sub>7</sub> H <sub>16</sub> N <sub>2</sub> O <sub>2</sub> MOLECULAR WEIGHT: 160,2 g/mol		please inquire!		
<b>BNN1017 Boc-EDA*HCl</b> N-t-Butyloxycarbonyl-ethylenediamine hydrochloride CAS-NO: 79513-35-2 FORMULA: C <sub>7</sub> H <sub>16</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 160,2*36,45 g/mol		BNN1017.0005	5 g	€ 150,00
		BNN1017.0025	25 g	€ 600,00
<b>BNN1005 Boc,Me-EDA</b> N-t-Butyloxycarbonyl-N-methyl-ethylenediamine CAS-NO: 121492-06-6 FORMULA: C <sub>8</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> MOLECULAR WEIGHT: 174,2 g/mol		please inquire!		
<b>BNN1034 Boc,Me-EDA*HCl</b> N-t-Butyloxycarbonyl-N-methyl-1,2-ethylenediamine hydrochloride CAS-NO: 202207-78-1 FORMULA: C <sub>8</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 174,2*36,45 g/mol		BNN1034.0005	5 g	€ 225,00
		BNN1034.0025	25 g	€ 900,00

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		Article No.	Quantity	Price	
<b>BNN1057</b>	<b>Boc,Me-EDA-Me*HCl</b>				
N-t-Butyloxycarbonyl-N,N'-dimethyl-1,2-ethylenediamine hydrochloride CAS-NO: 202207-84-9 FORMULA: C <sub>9</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 188,2*36,45 g/mol			BNN1057.0001	1 g	€ 150,00
		BNN1057.0005	5 g	€ 600,00	
		BNN1057.0025	25 g	€ 2400,00	
<b>BNN1036</b>	<b>Boc-EDA-Et*HCl</b>				
N-t-Butyloxycarbonyl-N'-ethyl-1,2-ethylenediamine hydrochloride FORMULA: C <sub>9</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 188,25*36,45 g/mol			BNN1036.0001	1 g	€ 90,00
		BNN1036.0005	5 g	€ 375,00	
		BNN1036.0025	25 g	€ 1500,00	
<b>BNN1003</b>	<b>Boc,Et-EDA*HCl</b>				
N-t-Butyloxycarbonyl-N-ethyl-ethylenediamine hydrochloride FORMULA: C <sub>9</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 188,25*36,45 g/mol			BNN1003.0001	1 g	€ 80,00
		BNN1003.0005	5 g	€ 300,00	
		BNN1003.0025	25 g	€ 1200,00	
<b>BNN1038</b>	<b>Boc,Pr-EDA*HCl</b>				
N-t-Butyloxycarbonyl-N-propyl-ethylenediamine hydrochloride FORMULA: C <sub>10</sub> H <sub>22</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 202,1*36,5 g/mol			please inquire!		
<b>BNN1019</b>	<b>Boc-EDA-Bzl*HCl</b>				
N-t-Butyloxycarbonyl-N'-benzyl-ethylenediamine hydrochloride CAS-NO: 126402-64-0 FORMULA: C <sub>14</sub> H <sub>22</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 250,3*36,45 g/mol			BNN1019.0001	1 g	€ 65,00
		BNN1019.0005	5 g	€ 250,00	
		BNN1019.0025	25 g	€ 1000,00	
<b>BNN1037</b>	<b>Boc,Bzl-EDA*HCl</b>				
N-t-Butyloxycarbonyl-N-benzyl-ethylenediamine hydrochloride CAS-NO: 152193-00-5 FORMULA: C <sub>14</sub> H <sub>22</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 250,3*36,5 g/mol			please inquire!		
<b>FNN1008</b>	<b>Fmoc-EDA*HCl</b>				
N'-(9-Fluorenylmethyloxycarbonyl)-ethylenediamine hydrochloride CAS-NO: 166410-32-8 FORMULA: C <sub>17</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 318,8 g/mol			FNN1008.0005	5 g	€ 175,00
		FNN1008.0025	25 g	€ 700,00	
<b>FNN1020</b>	<b>Fmoc-EDA-N<sub>3</sub></b>				
1-[(9-Fluorenylmethyloxycarbonyl)amino]-2-azidoethane CAS-NO: 432507-62-5 FORMULA: C <sub>17</sub> H <sub>16</sub> N <sub>4</sub> O <sub>2</sub> MOLECULAR WEIGHT: 308,33 g/mol			FNN1020.0001	1 g	€ 100,00
		FNN1020.0005	5 g	€ 350,00	
		FNN1020.0025	25 g	€ 1400,00	
<b>NNN1000</b>	<b>Ns-EDA*HCl</b>				
N-Nosyl-1,2-ethylenediamine hydrochloride CAS-NO: 92504-03-5 FORMULA: C <sub>8</sub> H <sub>11</sub> N <sub>3</sub> O <sub>4</sub> S*HCl MOLECULAR WEIGHT: 245,26*36,45 g/mol			NNN1000.0005	5 g	€ 200,00
		NNN1000.0025	25 g	€ 800,00	
		NNN1000.0100	100 g	€ 2400,00	

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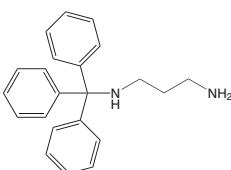
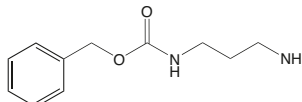
		Article No.	Quantity	Price
<b>NNN1003 Ns-EDA-Boc</b> N-(2-Nitrobenzenesulfonyl)-N'-(t-Butyloxycarbonyl)-1,2-diaminoethane FORMULA: C <sub>18</sub> H <sub>19</sub> N <sub>3</sub> O <sub>6</sub> S MOLECULAR WEIGHT: 345,38 g/mol		NNN1003.0005	5 g	€ 200,00
		NNN1003.0025	25 g	€ 800,00
		NNN1003.0100	100 g	€ 2400,00
<b>TNN1002 Trt-EDA*AcOH</b> 1-(Tritylamino)-ethyl-2-ammonium acetate CAS-NO: 1170595-42-2 FORMULA: C <sub>21</sub> H <sub>22</sub> N <sub>2</sub> *C <sub>2</sub> H <sub>4</sub> O <sub>2</sub> MOLECULAR WEIGHT: 302,42*60,05 g/mol		TNN1002.0005	5 g	€ 150,00
		TNN1002.0025	25 g	€ 600,00
<b>ZNN1002 Z-EDA*HCl</b> N'-Benzyloxycarbonyl-ethylenediamine hydrochloride CAS-NO: 18807-71-1 FORMULA: C <sub>10</sub> H <sub>14</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 230,69 g/mol		ZNN1002.0005	5 g	€ 100,00
		ZNN1002.0025	25 g	€ 400,00
		ZNN1002.0100	100 g	€ 1200,00
<b>ZNN1050 Z-EDA-N<sub>3</sub></b> N <sub>1</sub> -Azido-N <sub>2</sub> -benzyloxycarbonyl-ethylenediamine CAS-NO: 146552-66-1 FORMULA: C <sub>10</sub> H <sub>12</sub> N <sub>4</sub> O <sub>2</sub> MOLECULAR WEIGHT: 220,23 g/mol		ZNN1050.0001	1 g	€ 100,00
		ZNN1050.0005	5 g	€ 350,00
		ZNN1050.0025	25 g	€ 1400,00
<b>ZNN1048 Z-EDA-EDA-Z</b> N,N''-Di-benzyloxycarbonyl-diethylenetriamine FORMULA: C <sub>20</sub> H <sub>25</sub> N <sub>3</sub> O <sub>4</sub> MOLECULAR WEIGHT: 371,4 g/mol		ZNN1048.0001	1 g	€ 50,00
		ZNN1048.0005	5 g	€ 200,00
		ZNN1048.0025	25 g	€ 800,00
<b>BNN1060 Boc,Pbf-amidino-Et-NH<sub>2</sub>*HCl</b> 2-[N-t-Butyloxycarbonyl-N'-(2,2,4,6,7-pentamethyl-dihydrobenzofuran-5-sulfonyl)amidino]ethylamine hydrochloride CAS-NO: 1301749-66-5 FORMULA: C <sub>21</sub> H <sub>34</sub> N <sub>4</sub> O <sub>5</sub> S*HCl MOLECULAR WEIGHT: 454,58*36,45 g/mol		BNN1060.0001	1 g	€ 150,00
		BNN1060.0005	5 g	€ 600,00
		BNN1060.0025	25 g	€ 2400,00
<b>BNN1062 Boc,Pbf-amidino-Pr-NH<sub>2</sub>*HCl</b> 2-[N-t-Butyloxycarbonyl-N'-(2,2,4,6,7-pentamethyl-dihydrobenzofuran-5-sulfonyl)amidino]proylamine hydrochloride CAS-NO: 1263049-07-5 net FORMULA: C <sub>22</sub> H <sub>36</sub> N <sub>4</sub> O <sub>5</sub> S*HCl MOLECULAR WEIGHT: 468,61*36,45 g/mol		BNN1062.0001	1 g	€ 150,00
		BNN1062.0005	5 g	€ 600,00
		BNN1062.0025	25 g	€ 2400,00
<b>HNN1040 Agmatine sulfate</b> 4-(Aminobutyl)guanidine sulfate, 98% CAS-NO: 2482-00-0 FORMULA: C <sub>5</sub> H <sub>14</sub> N <sub>4</sub> *H <sub>2</sub> SO <sub>4</sub> MOLECULAR WEIGHT: 130,19*98,08 g/mol		HNN1040.0100	100 g	€ 1050,00
<b>BNN1061 Boc,Pbf-amidino-Hx-NH<sub>2</sub>*HCl</b> 2-[N-t-Butyloxycarbonyl-N'-(2,2,4,6,7-pentamethyl-dihydrobenzofuran-5-sulfonyl)amidino]hexylamine hydrochloride CAS-NO: 1263049-08-6 net FORMULA: C <sub>25</sub> H <sub>42</sub> N <sub>4</sub> O <sub>5</sub> S*HCl MOLECULAR WEIGHT: 510,69*36,45 g/mol		BNN1061.0001	1 g	€ 150,00
		BNN1061.0005	5 g	€ 600,00
		BNN1061.0025	25 g	€ 2400,00

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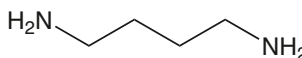
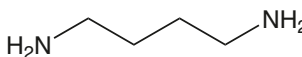
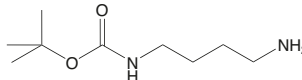
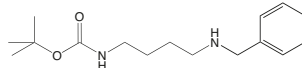
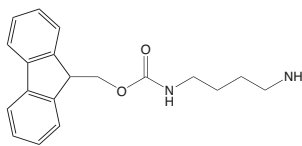
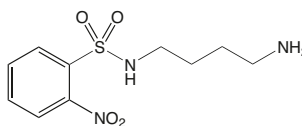
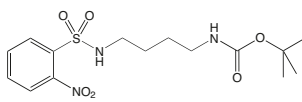
## Diaminopropanes

	Article No.	Quantity	Price
<b>BNN1052 Boc-DAP</b> N-t-Butyloxycarbonyl-1,3-diaminopropane CAS-NO: 75178-96-0 FORMULA: C <sub>8</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> MOLECULAR WEIGHT: 174,24 g/mol			please inquire!
<b>BNN1013 Boc-DAP*HCl</b> N-t-Butyloxycarbonyl-1,3-diaminopropane hydrochloride CAS-NO: 127346-48-9 FORMULA: C <sub>8</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 174,24*36,45 g/mol	BNN1013.0005	5 g	€ 150,00
	BNN1013.0025	25 g	€ 600,00
<b>BNN1004 Boc,Me-DAP*HCl</b> N-t-Butyloxycarbonyl-N-methyl-1,3-diaminopropane hydrochloride CAS-NO: 150349-36-3 net FORMULA: C <sub>9</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 188,25*36,45 g/mol	BNN1004.0001	1 g	€ 95,00
	BNN1004.0005	5 g	€ 350,00
	BNN1004.0025	25 g	€ 1400,00
<b>BNN1065 Boc-DAP-Bzl*HCl</b> N-t-Butyloxycarbonyl-N <sup>3</sup> -benzyl-1,3-diaminopropane hydrochloride CAS-NO: 90914-08-2 net FORMULA: C <sub>15</sub> H <sub>24</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 264,36*36,45 g/mol	BNN1065.0001	1 g	€ 75,00
	BNN1065.0005	5 g	€ 250,00
	BNN1065.0025	25 g	€ 1000,00
<b>FNN1004 Fmoc-DAP*HCl</b> N <sup>1</sup> -(9-Fluorenylmethyloxycarbonyl)-1,3-diaminopropane hydrochloride CAS-NO: 210767-37-6 FORMULA: C <sub>18</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 296,36*36,45 g/mol	FNN1004.0005	5 g	€ 175,00
	FNN1004.0025	25 g	€ 700,00
<b>FNN1030 Fmoc-DAP-N3</b> 1-[(9-Fluorenylmethyloxycarbonyl)amino]-3-azidopropane CAS-NO: 1021422-85-4 FORMULA: C <sub>18</sub> H <sub>18</sub> N <sub>4</sub> O <sub>2</sub> MOLECULAR WEIGHT: 322,36 g/mol	FNN1030.0001	1 g	€ 125,00
	FNN1030.0005	5 g	€ 400,00
	FNN1030.0025	25 g	€ 1600,00
Short, linear spacer molecule with Fmoc protected amino function, which can be used in many applications, from click conjugation to amid bond formation either with small molecules or for bioconjugation with proteins and antibodies.			
<b>NNN1001 Ns-DAP*HCl</b> N-Nosyl-1,3-diaminopropane hydrochloride CAS-NO: 863983-46-4 FORMULA: C <sub>9</sub> H <sub>13</sub> N <sub>3</sub> O <sub>4</sub> S*HCl MOLECULAR WEIGHT: 259,29*36,45 g/mol	NNN1001.0005	5 g	€ 200,00
	NNN1001.0025	25 g	€ 800,00
	NNN1001.0100	100 g	€ 2400,00
<b>NNN1004 Ns-DAP-Boc</b> N-(2-Nitrobenzenesulfonyl)-N <sup>1</sup> -(t-Butyloxycarbonyl)-1,3-diaminopropane FORMULA: C <sub>14</sub> H <sub>21</sub> N <sub>3</sub> O <sub>6</sub> S MOLECULAR WEIGHT: 359,4 g/mol	NNN1004.0005	5 g	€ 200,00
	NNN1004.0025	25 g	€ 800,00
	NNN1004.0100	100 g	€ 2400,00

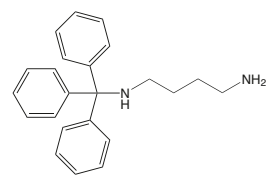
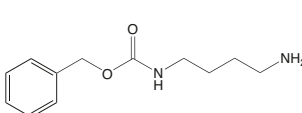
Prices are in EUR, net, exw Germany

		Article No.	Quantity	Price
<b>TNN1001 Trt-DAP*AcOH</b> 1-(Tritylamino)-propyl-3-ammonium acetate CAS-NO: 325143-22-4 FORMULA: $C_{22}H_{24}N_2 \cdot C_2H_4O_2$ MOLECULAR WEIGHT: 316,45*60,05 g/mol		TNN1001.0005	5 g	€ 150,00
		TNN1001.0025	25 g	€ 600,00
<b>ZNN1000 Z-DAP*HCl</b> N <sup>1</sup> -Benzyloxycarbonyl-1,3-diaminopropane hydrochloride CAS-NO: 17400-34-9 FORMULA: $C_{11}H_{16}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 208,26*36,45 g/mol		ZNN1000.0005	5 g	€ 125,00
		ZNN1000.0025	25 g	€ 500,00

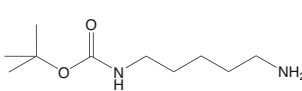
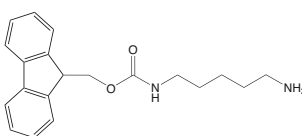
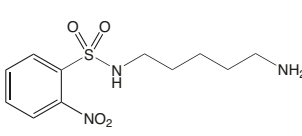
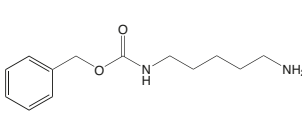
## Diaminobutanes

		Article No.	Quantity	Price
<b>HNN1070 Putrescine</b> 1,4-Diaminobutane, 99% CAS-NO: 110-60-1 FORMULA: $C_4H_{12}N_2$ MOLECULAR WEIGHT: 88,15 g/mol		please inquire!		
<b>HNN1080 Putrescine*2HCl</b> 1,4-Diaminobutane dihydrochloride CAS-NO: 333-93-7 FORMULA: $C_4H_{12}N_2 \cdot 2HCl$ MOLECULAR WEIGHT: 161,07 g/mol		HNN1080.1000	1 kg	€ 370,00
		HNN1080.5000	5 kg	€ 1130,00
		HNN1080.9010	10 kg	€ 1910,00
<b>BNN1012 Boc-DAB*HCl</b> N <sup>t</sup> -Butyloxycarbonyl-1,4-diaminobutane hydrochloride CAS-NO: 33545-98-1 FORMULA: $C_9H_{20}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 224,8 g/mole		BNN1012.0001	1 g	€ 50,00
		BNN1012.0005	5 g	€ 200,00
		BNN1012.0025	25 g	€ 800,00
<b>BNN1070 Boc-DAB-Bzl*HCl</b> N <sup>t</sup> -t-Butyloxycarbonyl-N <sup>1</sup> -benzyl-1,4-diaminobutane hydrochloride CAS-NO: 90914-09-3 net FORMULA: $C_{16}H_{26}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 278,39*36,45 g/mol		BNN1070.0001	1 g	€ 100,00
		BNN1070.0005	5 g	€ 250,00
		BNN1070.0025	25 g	€ 1000,00
<b>FNN1003 Fmoc-DAB*HCl</b> N <sup>1</sup> -(9-Fluorenylmethyloxycarbonyl)-1,4-diaminobutane hydrochloride CAS-NO: 321660-77-9 FORMULA: $C_{19}H_{22}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 346,9 g/mol		FNN1003.0005	5 g	€ 160,00
		FNN1003.0025	25 g	€ 600,00
		FNN1003.0100	100 g	€ 1800,00
<b>NNN1002 Ns-DAB*HCl</b> N-Nosyl-1,4-diaminobutane hydrochloride CAS-NO: 349553-74-8 FORMULA: $C_{10}H_{15}N_2O_4S \cdot HCl$ MOLECULAR WEIGHT: 273,31*36,45 g/mol		NNN1002.0005	5 g	€ 200,00
		NNN1002.0025	25 g	€ 800,00
		NNN1002.0100	100 g	€ 2400,00
<b>NNN1005 Ns-DAB-Boc</b> N-Nosyl-N <sup>t</sup> -Boc-1,4-diaminobutane CAS-NO: 211512-15-1 FORMULA: $C_{15}H_{23}N_2O_6S$ MOLECULAR WEIGHT: 373,43 g/mol		NNN1005.0005	5 g	€ 225,00
		NNN1005.0025	25 g	€ 900,00

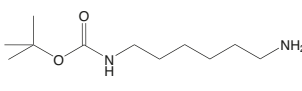
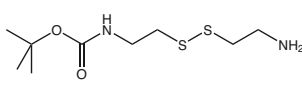
Prices are in EUR, net, exw Germany

		Article No.	Quantity	Price
<b>TNN1000 Trt-DAB*AcOH</b> 1-(Tritylamino)-butyl-4-ammonium acetate CAS-NO: 1173021-69-6 FORMULA: $C_{23}H_{26}N_2^+C_2H_4O_2^-$ MOLECULAR WEIGHT: 330,48*60,05 g/mol		TNN1000.0005	5 g	€ 150,00
		TNN1000.0025	25 g	€ 600,00
<b>ZNN1047 Z-DAB*HCl</b> N <sup>1</sup> -Benzyloxycarbonyl-1,4-diaminobutane hydrochloride CAS-NO: 18807-73-3 FORMULA: $C_{12}H_{18}N_2O_2^+HCl^-$ MOLECULAR WEIGHT: 258,74 g/mol		ZNN1047.0005	5 g	€ 150,00
		ZNN1047.0025	25 g	€ 600,00

## Diaminopentanes

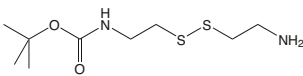
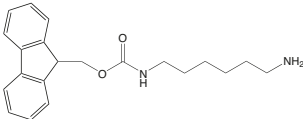
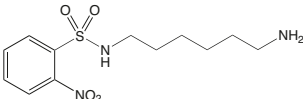
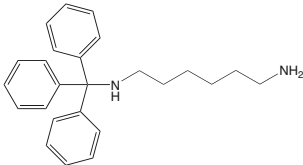
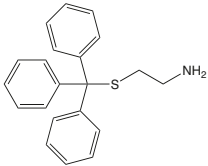
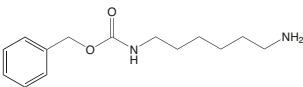
		Article No.	Quantity	Price
<b>BNN1014 Boc-DAPe*HCl</b> N-t-Butyloxycarbonyl-1,5-diaminopentane hydrochloride CAS-NO: 51644-96-3 FORMULA: $C_{10}H_{22}N_2O_2^+HCl^-$ MOLECULAR WEIGHT: 202,29*36,45 g/mol		BNN1014.0005	5 g	€ 225,00
		BNN1014.0025	25 g	€ 900,00
<b>FNN1005 Fmoc-DAPe*HCl</b> N <sup>1</sup> -(9-Fluorenylmethyloxycarbonyl)-1,5-diaminopentane hydrochloride CAS-NO: 118119-32-7 net FORMULA: $C_{20}H_{24}N_2O_2^+HCl^-$ MOLECULAR WEIGHT: 360,9 g/mol		FNN1005.0005	5 g	€ 200,00
		FNN1005.0025	25 g	€ 800,00
<b>NNN1007 Ns-DAPe*HCl</b> N-Nosyl-1,6-diaminopentane hydrochloride CAS-NO: 437718-20-2 FORMULA: $C_{11}H_{17}N_3O_4S^+HCl^-$ MOLECULAR WEIGHT: 287,34*36,45 g/mol		NNN1007.0005	5 g	€ 250,00
		NNN1007.0025	25 g	€ 1000,00
		NNN1007.0100	100 g	€ 3000,00
<b>ZNN1001 Z-DAPe*HCl</b> N <sup>1</sup> -Benzyloxycarbonyl-1,5-diaminopentane hydrochloride CAS-NO: 18807-74-4 FORMULA: $C_{13}H_{20}N_2O_2^+HCl^-$ MOLECULAR WEIGHT: 272,77 g/mol		ZNN1001.0005	5 g	€ 175,00
		ZNN1001.0025	25 g	€ 700,00

## Diaminohexanes

		Article No.	Quantity	Price
<b>BNN1020 Boc-HMD*HCl</b> N-t-Butyloxycarbonyl-1,6-hexamethylenediamine hydrochloride CAS-NO: 65915-94-8 FORMULA: $C_{11}H_{24}N_2O_2^+HCl^-$ MOLECULAR WEIGHT: 252,8 g/mol		BNN1020.0005	5 g	€ 95,00
		BNN1020.0025	25 g	€ 320,00
		BNN1020.0100	100 g	€ 975,00
<b>BNN1170 Boc-Cystamine</b> 2-(t-Butyloxycarbonylamino)ethylthio-2'-ethylamine FORMULA: $C_9H_{20}N_2O_2S$ MOLECULAR WEIGHT: 252,40 g/mol		BNN1170.0001	1 g	€ 135,00
		BNN1170.0005	5 g	€ 450,00
		BNN1170.0025	25 g	€ 1800,00

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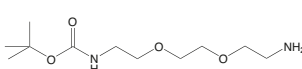
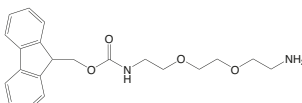
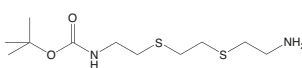
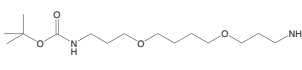
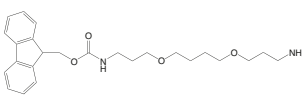
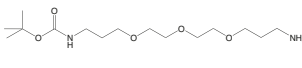
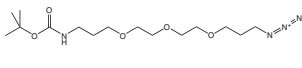
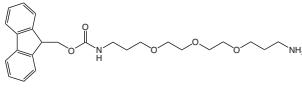
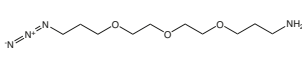
## Diaminohexanes

		Article No.	Quantity	Price
<b>BNN1063 Boc-Cystamine*HCl</b> 2-(t-Butyloxycarbonylamino)ethylthio-2'-ethylamine hydrochloride CAS-NO: 93790-49-9 FORMULA: $C_{20}H_{26}N_2O_2S \cdot HCl$ MOLECULAR WEIGHT: 252,40*36,45 g/mol		BNN1063.0001	1 g	€ 90,00
		BNN1063.0005	5 g	€ 350,00
		BNN1063.0025	25 g	€ 1400,00
<b>FNN1009 Fmoc-HMD*HCl</b> N <sup>1</sup> -(9-Fluorenylmethyloxycarbonyl)-1,6-hexamethylenediamine hydrochloride CAS-NO: 166410-37-3 net FORMULA: $C_{21}H_{26}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 374,9 g/mol		FNN1009.0005	5 g	€ 160,00
		FNN1009.0025	25 g	€ 600,00
		FNN1009.0100	100 g	€ 1800,00
<b>NNN1006 Ns-HMD*HCl</b> N-Nosyl-1,6-diaminohexane hydrochloride CAS-NO: 95915-82-5 FORMULA: $C_{12}H_{19}N_3O_2S \cdot HCl$ MOLECULAR WEIGHT: 301,37*36,45 g/mol		NNN1006.0005	5 g	€ 200,00
		NNN1006.0025	25 g	€ 800,00
		NNN1006.0100	100 g	€ 2400,00
<b>TNN1003 Trt-HMD*AcOH</b> 1-(Tritylamino)-hexyl-6-ammonium acetate CAS-NO: 325708-26-7 FORMULA: $C_{25}H_{30}N_2 \cdot C_2H_4O_2$ MOLECULAR WEIGHT: 358,53*60,05 g/mol		TNN1003.0005	5 g	€ 150,00
		TNN1003.0025	25 g	€ 600,00
<b>TNN1004 Trt-Cysteamine*HCl</b> 2-Tritylthio-1-ethylamine hydrochloride CAS-NO: 15297-43-5 FORMULA: $C_{21}H_{21}NS \cdot HCl$ MOLECULAR WEIGHT: 319,46*36,45 g/mol		TNN1004.0025	25 g	€ 250,00
		TNN1004.0100	100 g	€ 750,00
<b>ZNN1003 Z-HMD*HCl</b> N <sup>1</sup> -Benzyloxycarbonyl-1,6-hexamethylenediamine hydrochloride CAS-NO: 78618-06-1 FORMULA: $C_{14}H_{22}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 286,8 g/mol		ZNN1003.0005	5 g	€ 150,00
		ZNN1003.0025	25 g	€ 600,00

Disulfide bridges are an important structural element in many proteins and peptides. This brochure is a guideline how to plan and execute the Synthesis of **Cyclic Peptides** with one or several disulfide bridges.



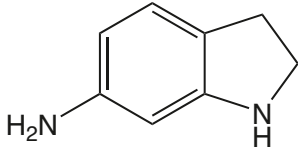
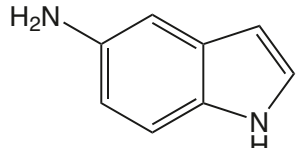
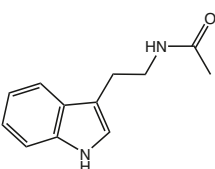
## 4. PEG based linear Diamines

		Article No.	Quantity	Price
<b>BNN1016 Boc-DOOA</b> 1-(t-Butyloxycarbonyl-amino)-3,6-dioxa-8-octaneamine, liq. CAS-NO: 153086-78-3 FORMULA: C <sub>11</sub> H <sub>24</sub> N <sub>2</sub> O <sub>4</sub> MOLECULAR WEIGHT: 248,32 g/mol		BNN1016.0001	1 g	€ 80,00
		BNN1016.0005	5 g	€ 275,00
		BNN1016.0025	25 g	€ 1100,00
<b>FNN1007 Fmoc-DOOA*HCl</b> 1-(9-Fluorenylmethyloxycarbonyl-amino)-3,6-dioxa-8-octaneamine hydrochloride CAS-NO: 868599-73-9 FORMULA: C <sub>21</sub> H <sub>26</sub> N <sub>2</sub> O <sub>4</sub> *HCl MOLECULAR WEIGHT: 370,45*36,45 g/mol		FNN1007.0001	1 g	€ 100,00
		FNN1007.0005	5 g	€ 350,00
		FNN1007.0025	25 g	€ 1400,00
<b>BNN1058 Boc-DSOA*HCl</b> 1-(t-Butyloxycarbonyl-amino)-3,6-dithio-8-octaneamine hydrochloride CAS-NO: 1301739-93-4 FORMULA: C <sub>11</sub> H <sub>24</sub> N <sub>2</sub> O <sub>2</sub> S <sub>2</sub> *HCl MOLECULAR WEIGHT: 280,45*36,45 g/mol		BNN1058.0001	1 g	€ 250,00
		BNN1058.0005	5 g	€ 1000,00
<b>BNN1015 Boc-DODA</b> 1-(t-Butyloxycarbonyl-amino)-4,9-dioxa-12-dodecanamine, liq. CAS-NO: 275823-77-3 FORMULA: C <sub>15</sub> H <sub>32</sub> N <sub>2</sub> O <sub>4</sub> MOLECULAR WEIGHT: 304,43 g/mol		BNN1015.0001	1 g	€ 100,00
		BNN1015.0005	5 g	€ 300,00
		BNN1015.0025	25 g	€ 1200,00
<b>FNN1006 Fmoc-DODA*HCl</b> 1-(9-Fluorenylmethyloxycarbonyl-amino)-4,9-dioxa-12-dodecan-amine hydrochloride FORMULA: C <sub>25</sub> H <sub>34</sub> N <sub>2</sub> O <sub>4</sub> *HCl MOLECULAR WEIGHT: 426,56*36,45 g/mol		FNN1006.0001	1 g	€ 110,00
		FNN1006.0005	5 g	€ 375,00
		FNN1006.0025	25 g	€ 1500,00
<b>BNN1028 Boc-TOTA</b> 1-(t-Butyloxycarbonyl-amino)-4,7,10-trioxa-13-tridecanamine, liq. CAS-NO: 194920-62-2 FORMULA: C <sub>15</sub> H <sub>32</sub> N <sub>2</sub> O <sub>5</sub> MOLECULAR WEIGHT: 320,43 g/mol		BNN1028.0001	1 g	€ 100,00
		BNN1028.0005	5 g	€ 300,00
		BNN1028.0025	25 g	€ 1200,00
<b>BNN1140 Boc-TOTA-N<sub>3</sub></b> 1-(t-Butyloxycarbonyl-amino)-4,7,10-trioxa-13-tridecanazide CAS-NO: 1162070-33-8 FORMULA: C <sub>15</sub> H <sub>30</sub> N <sub>4</sub> O <sub>5</sub> MOLECULAR WEIGHT: 346,42 g/mol		BNN1140.0001	1 g	€ 140,00
		BNN1140.0005	5 g	€ 450,00
		BNN1140.0025	25 g	€ 1800,00
<b>FNN1011 Fmoc-TOTA*HCl</b> 1-(9-Fluorenylmethyloxycarbonyl-amino)-4,7,10-trioxa-13-tridecan-amine hydrochloride CAS-NO: 868599-75-1 FORMULA: C <sub>25</sub> H <sub>34</sub> N <sub>2</sub> O <sub>5</sub> *HCl MOLECULAR WEIGHT: 442,56*36,45 g/mol		FNN1011.0001	1 g	€ 110,00
		FNN1011.0005	5 g	€ 400,00
		FNN1011.0025	25 g	€ 1600,00
<b>BNN1150 N<sub>3</sub>-TOTA</b> 1-Azido-4,7,10-trioxa-13-tridecanamine CAS-NO: 1162336-72-2 FORMULA: C <sub>10</sub> H <sub>22</sub> N <sub>4</sub> O <sub>3</sub> MOLECULAR WEIGHT: 246,31 g/mol		BNN1150.0001	1 g	€ 150,00
		BNN1150.0005	5 g	€ 500,00
		BNN1150.0025	25 g	€ 2000,00

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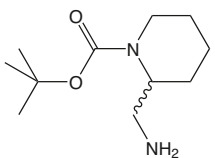
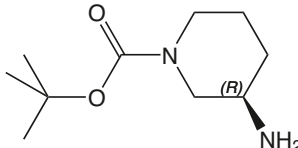
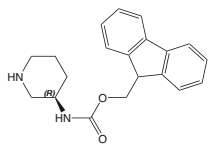
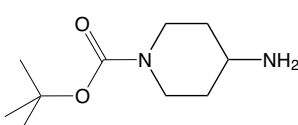
## 5. Cyclic Diamines

		Article No.	Quantity	Price
<b>HNN1050 6-Aminoindoline*2HCl</b> CAS-NO: 28228-73-1 FORMULA: C <sub>8</sub> H <sub>10</sub> N <sub>2</sub> *2HCl MOLECULAR WEIGHT: 134,18*72,90 g/mol		HNN1050.0005	5 g	€ 390,00
		HNN1050.0010	10 g	€ 550,00
		HNN1050.0025	25 g	€ 1100,00
<b>HNN1060 5-Aminoindole</b> 1H-Indole-5-amine CAS-NO: 5192-03-0 FORMULA: C <sub>8</sub> H <sub>8</sub> N <sub>2</sub> MOLECULAR WEIGHT: 132,17132,17 g/mol		HNN1060.0010	10 g	€ 300,00
		HNN1060.0025	25 g	€ 480,00
		HNN1060.0100	100 g	€ 1410,00
<b>ANN1000 N-Acetyltryptamine</b> N-[2-(1H-indol-3-yl)ethyl]acetamide CAS-NO: 1016-47-3 FORMULA: C <sub>12</sub> H <sub>14</sub> N <sub>2</sub> O MOLECULAR WEIGHT: 202,25 g/mol		ANN1000.0250	250 mg	€ 150,00
		ANN1000.0001	1 g	€ 450,00
		ANN1000.0005	5 g	€ 1550,00

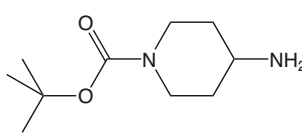
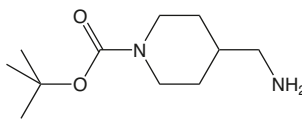
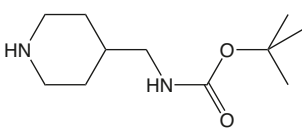
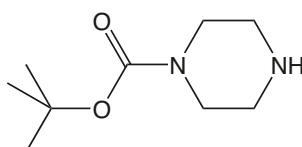
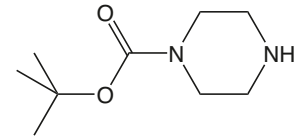
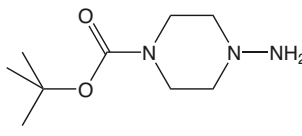
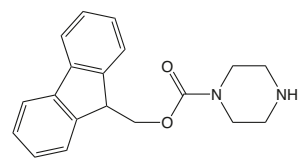
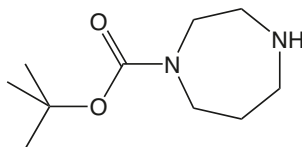
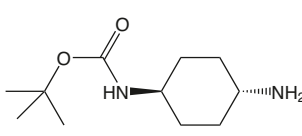
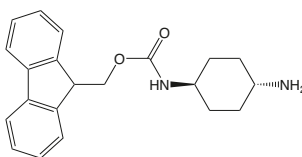
A structural analog of melatonin that binds the melatonin MT2 receptor ( $K_i = 0.41$  nM). It acts as a melatonin receptor antagonist in frog skin and chicken retina and as a partial agonist in rabbit retina. N-acetyl tryptamine also is a reaction product of assays for serotonin N-acetyltransferase in the melatonin biosynthetic pathway.

## References:

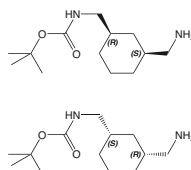
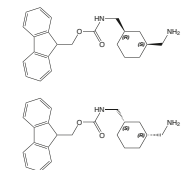
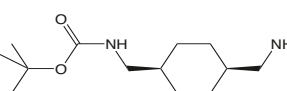
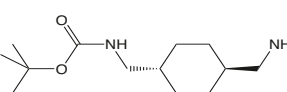
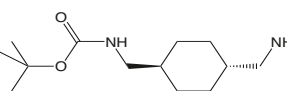
- ▶ Melatonin receptor pharmacology: Toward subtype specificity; D. Sugden, H. Pickering, M.T. Teh, *et al.*; *Biol. Cell* 1997; **89(8)**: 531-537.
- ▶ Characterization of a retinal melatonin receptor; M.L. Dubocovich; *J. Pharmacol. Exp. Ther.* 1985; **234(2)**: 395-401.
- ▶ Ligand efficacy and potency at recombinant human MT2 melatonin receptors: Evidence for agonist activity of some mtl-antagonists; R. Nonno, M. Pannacci, V. Lucini *et al.*; *Br. J. Pharmacol.* 2016; **127(5)**: 1288-1294.
- ▶ Melatonin receptor antagonists that differentiate between the human Mel1a and Mel1b recombinant subtypes are used to assess the pharmacological profile of the rabbit retina ML1 presynaptic heteroreceptor. Dubocovich, M.L., Masana, M.I., Iacob, S., *et al.*; *Naunyn Schmiedebergs Arch. Pharmacol.* 1997; **355(3)**: 365-375.
- ▶ Kinetic analysis of the catalytic mechanism of serotonin N-acetyltransferase (EC 2.3.1.87). DeAngelis, J., Gastel, J., Klein, D.C., *et al.*; *J. Biol. Chem.* 1998; **273(5)**: 3045-3050.

		Article No.	Quantity	Price
<b>BNN1059 Boc-Pip(2-AM)*HCl</b> (R,S)-1-t-Butyloxycarbonyl-2-(aminomethyl)piperidine hydrochloride CAS-NO: 141774-61-0 FORMULA: C <sub>17</sub> H <sub>27</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 214,31*36,45 g/mol		BNN1059.0001	1 g	€ 70,00
		BNN1059.0005	5 g	€ 250,00
		BNN1059.0025	25 g	€ 1000,00
<b>BNN1000 (R)-Boc-Pip(3-NH<sub>2</sub>)*HCl</b> (R)-1-t-Butyloxycarbonyl-3-aminopiperidine hydrochloride CAS-NO: 188111-79-7net FORMULA: C <sub>10</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 200,28*36,45 g/mol		please inquire!		
<b>FNN1000 (R)-Pip(3-NH-Fmoc)*HCl</b> R-3-(9-Fluorenylmethyloxycarbonyl-amino)-piperidine hydrochloride FORMULA: C <sub>20</sub> H <sub>22</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 358,9 g/mol		FNN1000.0001	1 g	€ 300,00
		FNN1000.0005	5 g	€ 1200,00
<b>BNN1064 Boc-Pip(4-NH<sub>2</sub>)</b> 1-Butyloxycarbonyl-4-amino-piperidine CAS-NO: 87120-72-7 FORMULA: C <sub>10</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> MOLECULAR WEIGHT: 200,28 g/mol		BNN1064.0025	25 g	€ 180,00
		BNN1064.0100	100 g	€ 290,00
		BNN1064.0250	250 g	€ 570,00
		BNN1064.0500	500 g	€ 890,00

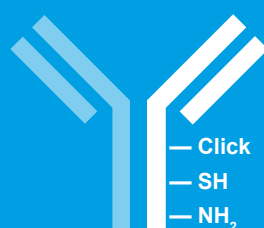
Prices are in EUR, net, exw Germany

		Article No.	Quantity	Price
<b>BNN1032</b>	<b>Boc-Pip(4-NH<sub>2</sub>)*HCl</b>			
1-Butyloxycarbonyl-4-amino-piperidine hydrochloride CAS-NO: 87120-72-7 net FORMULA: C <sub>10</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 200,28*36,45 g/mol			BNN1032.0001 1 g € 75,00 BNN1032.0005 5 g € 200,00 BNN1032.0025 25 g € 800,00 BNN1032.0100 100 g € 2400,00	
<b>BNN1025</b>	<b>Boc-Pip(4-AM)*HCl</b>			
1-t-Butyloxycarbonyl-4-(aminomethyl)-piperidine hydrochloride CAS-NO: 359629-16-6 FORMULA: C <sub>11</sub> H <sub>22</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 214,31*36,45 g/mol			BNN1025.0001 1 g € 55,00 BNN1025.0005 5 g € 215,00 BNN1025.0025 25 g € 850,00	
<b>BNN1029</b>	<b>Pip(4-Boc-AM)</b>			
4-(t-Butyloxycarbonyl-aminomethyl)-piperidine CAS-NO: 135632-53-0 FORMULA: C <sub>11</sub> H <sub>22</sub> N <sub>2</sub> O <sub>2</sub> MOLECULAR WEIGHT: 214,31 g/mol			BNN1029.0001 1 g € 110,00 BNN1029.0005 5 g € 450,00	
<b>BNN1023</b>	<b>Boc-Paz</b>			
N-(t-Butyloxycarbonyl)-piperazine CAS-NO: 57260-71-6 FORMULA: C <sub>9</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> MOLECULAR WEIGHT: 186,3 g/mol				please inquire!
<b>BNN1024</b>	<b>Boc-Paz*HCl</b>			
N-(t-Butyloxycarbonyl)-piperazine hydrochloride FORMULA: C <sub>9</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 186,3*36,45 g/mol			BNN1024.0005 5 g € 200,00 BNN1024.0025 25 g € 800,00	
<b>BNN1033</b>	<b>Boc-Paz-NH<sub>2</sub></b>			
1-t-Butyloxycarbonyl-4-amino-piperazine CAS-NO: 118753-66-5 FORMULA: C <sub>9</sub> H <sub>19</sub> N <sub>3</sub> O <sub>2</sub> MOLECULAR WEIGHT: 201,27 g/mol				please inquire!
<b>FNN1010</b>	<b>Fmoc-Paz*HCl</b>			
N <sup>1</sup> -(9-Fluorenylmethyloxycarbonyl)-piperazine hydrochloride CAS-NO: 215190-22-0 FORMULA: C <sub>19</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 344,8 g/mol			FNN1010.0005 5 g € 160,00 FNN1010.0025 25 g € 600,00 FNN1010.0100 100 g € 1800,00	
<b>BNN1022</b>	<b>Boc-HoPaz*HCl</b>			
N-(t-Butyloxycarbonyl)-homopiperazine hydrochloride CAS-NO: 112275-50-0 FORMULA: C <sub>10</sub> H <sub>20</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 200,28*36,45 g/mol			BNN1022.0005 5 g € 95,00 BNN1022.0025 25 g € 360,00 BNN1022.0100 100 g € 1100,00	
<b>BNN1008</b>	<b>Boc-1,4-trans-DACH*HCl</b>			
N-t-Butyloxycarbonyl-1,4-trans-diaminocyclohexane hydrochloride CAS-NO: 946002-43-3 FORMULA: C <sub>11</sub> H <sub>22</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 214,31*36,45 g/mol			BNN1008.0005 5 g € 250,00 BNN1008.0025 25 g € 1000,00	
<b>FNN1002</b>	<b>Fmoc-1,4-trans-DACH*HCl</b>			
N <sup>1</sup> -(9-Fluorenylmethyloxycarbonyl)-1,4-trans-diaminocyclohexane hydrochloride CAS-NO: 672310-17-7 FORMULA: C <sub>21</sub> H <sub>24</sub> N <sub>2</sub> O <sub>2</sub> *HCl MOLECULAR WEIGHT: 372,9 g/mol			FNN1002.0001 1 g € 95,00 FNN1002.0005 5 g € 350,00 FNN1002.0025 25 g € 1400,00	

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		Article No.	Quantity	Price
<b>BNN1007 Boc-1,3-cis-DAMCH*HCl</b> N-t-Butyloxycarbonyl-1,3-cis-diaminomethyl-cyclohexane hydrochloride FORMULA: $C_{26}H_{46}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 242,36*36,45 g/mol		BNN1007.0005	5 g	€ 225,00
		BNN1007.0025	25 g	€ 900,00
		BNN1007.0100	100 g	€ 2700,00
<b>FNN1001 Fmoc-1,3-cis-DAMCH*HCl</b> N <sup>1</sup> -(9-Fluorenylmethyloxycarbonyl)-1,3-cis-diaminomethyl-cyclohexane hydrochloride FORMULA: $C_{23}H_{28}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 364,49*36,45 g/mol		FNN1001.0001	1 g	€ 110,00
		FNN1001.0005	5 g	€ 450,00
<b>BNN1043 Boc-1,4-cis-DAMCH*HCl</b> N-t-Butyloxycarbonyl-1,4-cis-diaminomethyl-cyclohexane hydrochloride CAS-NO: 203306-83-6 net FORMULA: $C_{26}H_{46}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 242,36*36,45 g/mol		BNN1043.0001	1 g	€ 100,00
		BNN1043.0005	5 g	€ 375,00
		BNN1043.0025	25 g	€ 1500,00
<b>BNN1075 Boc-1,4-trans-DAMCH</b> N-t-Butyloxycarbonyl-1,4-trans-diaminomethyl-cyclohexane (oil) CAS-NO: 166168-16-7 FORMULA: $C_{26}H_{46}N_2O_2$ MOLECULAR WEIGHT: 242,36 g/mol		please inquire!		
<b>BNN1035 Boc-1,4-trans-DAMCH*HCl</b> N-t-Butyloxycarbonyl-1,4-trans-diaminomethyl-cyclohexane hydrochloride CAS-NO: 256649-59-9 FORMULA: $C_{26}H_{46}N_2O_2 \cdot HCl$ MOLECULAR WEIGHT: 242,36*36,45 g/mol		BNN1035.0001	1 g	€ 125,00
		BNN1035.0005	5 g	€ 375,00
		BNN1035.0025	25 g	€ 1500,00

## Antibody Drug Conjugation



Linker		Drug
Conjugation Chemistry	Enzyme Cleavable Part	Traceless Linker
		High Potential Drug

Peptide based tracelessly cleavable linkers for Antibody Drug Conjugation (ADC) from stock and on custom synthesis basis.

Contact our specialists via [info@iris-biotech.de](mailto:info@iris-biotech.de)

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There is no minimum order value. At the time of acceptance of an order Iris Biotech GmbH will either arrange prompt despatch from stock or the manufacture/acquisition of material to satisfy the order. In the event of the latter Iris Biotech GmbH will indicate an estimated delivery date. In addition to all its other rights Iris Biotech GmbH reserves the right to refuse the subsequent cancellation of the order if Iris Biotech GmbH expects to deliver the product on or prior to the estimated delivery date. Time shall not be of the essence in respect of delivery of the products. If Iris Biotech GmbH is unable to deliver any products by reason of any circumstances beyond its reasonable control („Force Majeure“) then the period for delivery shall be extended by the time lost due to such Force Majeure. Details of Force Majeure will be forwarded by Iris Biotech GmbH to the buyer as soon as reasonably practicable.

### Prices, Quotations and Payments

Prices are subject to change. For the avoidance of doubt, the price advised by Iris Biotech GmbH at the time of the buyer placing the order shall supersede any previous price indications. The buyer must contact the local office of Iris Biotech GmbH before ordering if further information is required. Unless otherwise agreed by the buyer and Iris Biotech GmbH, the price shall be for delivery ex-works. In the event that the buyer requires delivery of the products otherwise than ex-works the buyer should contact the local office of Iris Biotech GmbH in order to detail its requirements. Iris Biotech GmbH shall, at its discretion, arrange the buyer's delivery requirements including, without limitation, transit insurance, the mode of transit (Iris Biotech GmbH reserves the right to vary the mode of transit if any regulations or other relevant considerations so require) and any special packaging requirements (including cylinders). For the avoidance of doubt all costs of delivery and packaging in accordance with the buyer's requests over and above that of delivery in standard packaging ex-works shall be for the buyer's account unless otherwise agreed by both parties. Incoterms 2010 shall apply. Any tax, duty or charge imposed by governmental authority or otherwise and any other applicable taxes, duties or charges shall be for the buyer's account. Iris Biotech GmbH may, on request and where possible, provide quotations for multiple packs or bulk quantities, and non-listed items. Irrespective of the type of request or means of response all quotations must be accepted by the buyer without condition and in writing before an order will be accepted by Iris Biotech GmbH. Unless agreed in writing on different terms, quotations are valid for 30 days from the date thereof. Payment terms are net 30 days from invoice date unless otherwise agreed in writing. Iris Biotech GmbH reserves the right to request advance payment at its discretion. For overseas transactions the buyer shall pay all the banking charges of Iris Biotech GmbH. The buyer shall not be entitled to withhold or set-off payment for the products for any reason whatsoever. Government/Corporate Visa and MasterCard (and other such credit cards) may be accepted on approved accounts for payment of the products. Personal credit cards are not acceptable. Failure to comply with the terms of payment of Iris Biotech GmbH shall constitute default without reminder. In these circumstances Iris Biotech GmbH may (without prejudice to any other of its rights under these terms) charge interest to accrue on a daily basis at the rate of 2% per month from the date upon which payment falls due to the actual date of payment (such interest shall be paid monthly). If the buyer shall fail to fulfil the payment terms in respect of any invoice of Iris Biotech GmbH Iris Biotech GmbH may demand payment of all outstanding balances from the buyer whether due or not and/or cancel all outstanding orders and/or decline to make further deliveries or provision of services except upon receipt of cash or satisfactory securities. Until payment by the buyer in full of the price and any other monies due to Iris Biotech GmbH in respect of all other products or services supplied or agreed to be supplied by Iris Biotech GmbH to the buyer (including but without limitation any costs of delivery) the property in the products shall remain vested in Iris Biotech GmbH.

### Shipping, Packaging and Returns

The buyer shall inspect goods immediately on receipt and inform Iris Biotech GmbH of any shortage or damage within five days. Quality problems must be notified within ten days of receipt. Goods must not be returned without prior written authorisation of Iris Biotech GmbH. Iris Biotech GmbH shall at its sole discretion replace the defective products (or parts thereof) free of charge or refund the price (or proportionate price) to buyer. Opened or damaged containers cannot be returned by the buyer without the written prior agreement of Iris Biotech GmbH. In the case of agreed damaged containers which cannot be so returned, the buyer assumes responsibility for the safe disposal of such containers in accordance with all applicable laws.

### Product Quality, Specifications and Technical Information

Products are analysed in the Quality Control laboratories of Iris Biotech GmbH's production partners by methods and procedures which Iris Biotech GmbH considers appropriate. In the event of any dispute concerning reported discrepancies arising from the buyer's analytical results, determined by the buyer's own analytical procedures, Iris Biotech GmbH reserves the right to rely on the results of own analytical methods of Iris Biotech GmbH. Certificates of Analysis or Certificates of Conformity are available at the discretion of Iris Biotech GmbH for bulk orders but not normally for prepack orders. Iris Biotech GmbH reserves the right to make a charge for such Certification. Specifications may change and reasonable variation from any value listed should not form the basis of a dispute. Any supply by Iris Biotech GmbH of bespoke or custom product for a buyer shall be to a specification agreed by both parties in writing. Technical information, provided orally, in writing, or by electronic means by or on behalf of Iris Biotech GmbH, including any descriptions, references, illustrations or diagrams in any Catalogue or brochure, is provided for guidance purposes only and is subject to change.

## **Safety**

All chemicals should be handled only by competent, suitably trained persons, familiar with laboratory procedures and potential chemical hazards. The burden of safe use of the products of Iris Biotech GmbH vests in the buyer. The buyer assumes all responsibility for warning his employees, and any persons who might reasonably be expected to come into contact with the products, of all risks to person and property in any way connected with the products and for instructing them in their safe handling and use. The buyer also assumes the responsibility for the safe disposal of all products in accordance with all applicable laws.

## **Uses, Warranties and Liabilities**

All products of Iris Biotech GmbH are intended for laboratory research purposes and unless otherwise stated on product labels, in the catalogue and product information sheet of Iris Biotech GmbH or in other literature furnished to the buyer, are not to be used for any other purposes, including but not limited to use as or as components in drugs for human or animal use, medical devices, cosmetics, food additives, household chemicals, agricultural or horticultural products or pesticides. Iris Biotech GmbH offers no warranty regarding the fitness of any product for a particular purpose and shall not be responsible for any loss or damage whatsoever arising therefrom. No warranty or representation is given by Iris Biotech GmbH that the products do not infringe any letters patent, trademarks, registered designs or other industrial rights. The buyer further warrants to Iris Biotech GmbH that any use of the products in the United States of America shall not result in the products becoming adulterated or misbranded within the meaning of the Federal Food, Drug and Cosmetic Act (or such equivalent legislation in force in the buyer's jurisdiction) and shall not be materials which may not, under sections 404, 505 or 512 of the Act, be introduced into interstate commerce. The buyer acknowledges that, since the products of Iris Biotech GmbH are intended for research purposes, they may not be on the Toxic Substances Control Act 1976 („TSCA“) inventory. The buyer warrants that it shall ensure that the products are approved for use under the TSCA (or such other equivalent legislation in force in the buyer's jurisdiction), if applicable. The buyer shall be responsible for complying with any legislation or regulations governing the use of the products and their importation into the country of destination (for the avoidance of doubt to include, without limitation, the TSCA and all its amendments, all EINECS, ELINCS and NONS regulations). If any licence or consent of any government or other authority shall be required for the acquisition, carriage or use of the products by the buyer the buyer shall obtain the same at its own expense and if necessary produce evidence of the same to Iris Biotech GmbH on demand. Failure to do so shall not entitle the buyer to withhold or delay payment. Any additional expenses or charges incurred by Iris Biotech GmbH resulting from such failure shall be for the buyer's account. Save for death or personal injury caused by negligence of Iris Biotech GmbH, sole obligation of Iris Biotech GmbH and buyer's exclusive remedy with respect to the products proved to the satisfaction of Iris Biotech GmbH to be defective or products incorrectly supplied shall be to accept the return of said products to Iris Biotech GmbH for refund of the actual purchase price paid by the buyer (or proportionate part thereof), or replacement of the defective product (or part thereof) with alternative product. Iris Biotech GmbH shall have no liability to the buyer under or arising directly or indirectly out of or otherwise in connection with the supply of products by Iris Biotech GmbH to the buyer and/or their re-sale or use by the buyer or for any product, process or services of the buyer which in any way comprises the product in contract tort (including negligence or breach of statutory duty) or otherwise for pure economic loss, loss of profit, business, reputation, depletion of brand, contracts, revenues or anticipated savings or for any special indirect or consequential damage or loss of any nature except as may otherwise be expressly provided for in these terms. All implied warranties, terms and representations in respect of the products (whether implied by statute or otherwise) are excluded to the fullest extent permitted by law. The buyer shall indemnify Iris Biotech GmbH for and against any and all losses, damages and expenses, including legal fees and other costs of defending any action, that Iris Biotech GmbH may sustain or incur as a result of any act or omission by the buyer, its officers, agents or employees, its successors or assignees, its customers or all other third parties, whether direct or indirect, in connection with the use of any product. For the avoidance of doubt and in the event that Iris Biotech GmbH supplies bespoke or custom product to the buyer's design or specification, this indemnity shall extend to include any claim by a third party that the manufacture of the product for the buyer or the use of the product by the buyer infringes the intellectual property rights of any third party.

## **General**

Iris Biotech GmbH shall be entitled to assign or sub-contract all or any of its rights and obligations hereunder. The buyer shall not be entitled to assign, transfer, sub-contract or otherwise delegate any of its rights or obligations hereunder. Any delay or forbearance by Iris Biotech GmbH in exercising any right or remedy under these terms shall not constitute a waiver of such right or remedy. If any provision of these terms is held by any competent authority to be invalid or unenforceable in whole or in part the validity of the other provisions of these terms and the remainder of the provision in question shall not be affected. These terms shall be governed by German Law and the German Courts shall have exclusive jurisdiction for the hearing of any dispute between the parties save in relation to enforcement where the jurisdiction of the German Courts shall be non-exclusive.

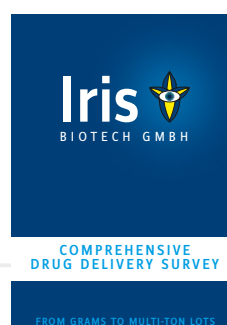


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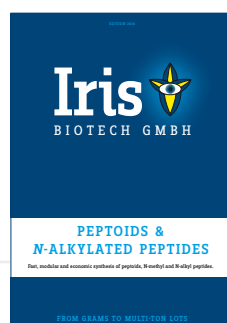
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