PEPTIDES INTERNATIONAL

Biologically Active Peptides

Disulfide-Rich Peptides

Quick Reference

Nature has afforded a means of making highly potent biologically active peptides and mini-proteins by utilizing stabilizing elements to lock the pharmacophore of the molecule into a desired configuration. The structural scaffold most commonly found in these types of molecules are multiple disulfide bonds. These disulfide-rich molecules are often isolated from venoms from microbes, animals and plants with toxic properties. The activities of these venom derived peptides often are highly potent ion channel blockers, protease inhibitors and antimicrobial molecules. More recently, disulfide-rich peptides have also been found in non-venomous animals. Interestingly, some of these molecules have homologs that are often found in venoms. These molecules include disulfide-rich peptides such as defensins (antimicrobial) and hepcidins (iron regulatory hormone). Peptides International offers a wide assortment of these ion channel toxins, defensins, hepcidins, and Integrin inhibitors to aid in your research.

CODE	α-DEFENSIN PRODUCTS	QTY
PDF-4271-s	**α-Defensin-1 (Human)** **HNP-1 (Human Neutrophil Peptide-1)** Ala-Cys-Tyr-Cys-Arg-Ile-Pro-Ala-Cys-Ile-Ala-Gly-Glu-Arg-Arg-Tyr-Gly-Thr-Cys-Ile-Tyr-Gln-Gly-Arg-Leu-Trp-Ala-Phe-Cys-Cys (Disulfide bonds between Cys^{2}-Cys^{30}, Cys^{4}-Cys^{19} and Cys^{9}-Cys^{29}) (M.W. 3442.0) $C_{150}H_{222}N_{44}O_{38}S_6$ *Antimicrobial Peptide / Chemoattractant for Monocytes* T. Ganz, *et al.*, *J. Clin. Invest.*, **76**, 1436 (1985). *(Original; Structure)*	0.1 mg vial
PDF-4428-s	**α-Defensin-2 (Human)** *Antimicrobial Peptide*	0.1 mg vial
PDF-4416-s	**α−Defensin-3 (Human)** **HNP-3 (Human Neutrophil Peptide-3)** Asp-Cys-Tyr-Cys-Arg-Ile-Pro-Ala-Cys-Ile-Ala-Gly-Glu-Arg-Arg-Tyr-Gly-Thr-Cys-Ile-Tyr-Gln-Gly-Arg-Leu-Trp-Ala-Phe-Cys-Cys (Disulfide bonds between Cys^{2}-Cys^{30}, Cys^{4}-Cys^{19}, and Cys^{9}-Cys^{29}) (M.W. 3486.0) $C_{151}H_{222}N_{44}O_{40}S_6$ *Antimicrobial Peptide*	0.1 mg vial
PDF-4431-s	**α- Defensin-4 (Human)** **HNP-4 (Human Neutrophil Peptide-4)** Val-Cys-Ser-Cys-Arg-Leu-Val-Phe-Cys-Arg-Arg-Thr-Glu-Leu-Arg-Val-Gly-Asn-Cys-Leu-Ile-Gly-Gly-Val-Ser-Phe-Thr-Tyr-Cys-Cys-Thr-Arg-Val (Disulfide bonds between Cys^{2}-Cys^{30}, Cys^{4}-Cys^{19}, and Cys^{9}-Cys^{29}) (M.W. 3709.40) $C_{157}H_{255}N_{49}O_{43}S_6$ *Antimicrobial Peptide* A. Singh, *et al., Biochem. Biophys. Res. Commun.*,**155**, 524 (1988).(*Original; Primary Structure/Anti-ACTH Activity*) C.G. Wilde, *et al., J. Biol. Chem.*, **264**, 11200 (1989). (*Original; Structure/HNP-4/Antimicrobial Activity*) Z. Wu, *et al., J. Pept. Res.*, **64**, 118 (2004). (*Pharmacol; Antimicrobial Activity*)	0.1 mg vial
PDF-4415-s	**α-Defensin-5 (Human)** **HD-5 (Human Defensin-5)** Ala-Thr-Cys-Tyr-Cys-Arg-Thr-Gly-Arg-Cys-Ala-Thr-Arg-Glu-Ser-Leu-Ser-Gly-Val-Cys-Glu-Ile-Ser-Gly-Arg-Leu-Tyr-Arg-Leu-Cys-Cys-Arg (Disulfide bonds between Cys^{3}-Cys^{31}, Cys^{5}-Cys^{20}, and Cys^{10}-Cys^{30}) (M.W. 3582.1) $C_{144}H_{238}N_{50}O_{45}S_6$ *Antimicrobial Peptide in Paneth Cells*	0.1 mg vial

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CODE	a-DEFENSIN PRODUCTS (continued)	QTY
PDF-4458-s	**α- Defensin-6 (Human)** **[HD-6 (Human Defensin-6)]** Ala-Phe-Thr-Cys-His-Cys-Arg-Arg-Ser-Cys-Tyr-Ser-Thr-Glu-Tyr-Ser-Tyr-Gly-Thr-Cys-Thr-Val-Met-Gly-Ile-Asn-His-Arg-Phe-Cys-Cys-Leu (Disulfide bonds between Cys^{4}-Cys^{31}, Cys^{6}-Cys^{20}, and Cys^{10}-Cys^{30}) (M.W. 3708.20) $C_{156}H_{228}N_{46}O_{46}S_{7}$ Synthetic Product *Antimicrobial Peptide in Paneth Cells* D.E. Jones and C.L. Bevins, *FEBS Lett.*, **315**,187 (1993). (*Original; mRNA Seq.*) E.M. Porter, *et al., FEBS Lett.*, **434**, 272 (1998). (*Endogenous Form*) E. Hazrati, *et al., J. Immunol.*, **177**, 8658 (2006). (*Pharmacol.; Inhibition of Herpes Simplex Virus Infection*) M. Doss, *et al., J. Immunol.*, **182**, 7878 (2009). (*Pharmacol.; Influenza A Virus Neutralizing Activity*) M.E. Klotman, *et al., J. Immunol.*, **180**, 6176 (2008). (*Pharmacol.; Enhancement of HIV Infectivity*)	0.1 mg vial
	b-DEFENSIN PRODUCTS	
PDF-4337-s	**β-Defensin-1 (Human)** **hBD-1** Asp-His-Tyr-Asn-Cys-Val-Ser-Ser-Gly-Gly-Gln-Cys-Leu-Tyr-Ser-Ala-Cys-Pro-Ile-Phe-Thr- Lys-Ile-Gln-Gly-Thr-Cys-Tyr-Arg-Gly-Lys-Ala-Lys-Cys-Cys-Lys (Disulfide bonds between Cys^{5}-Cys^{34}, Cys^{12}-Cys^{27}, and Cys^{17}-Cys^{35}) (M.W. 3928.5) $C_{167}H_{256}N_{48}O_{50}S_{6}$ *Antibacterial Peptide* K.W. Bensch, *et al., FEBS Lett.*, **368**, 331 (1995). *(Original)* M.J. Goldman, *et al., Cell*, **88**, 553 (1997). (*Pharmacol.; Inactivated in Cystic Fibrosis*) T. Hiratsuka, *et al., Nephron*, **85**, 34 (2000). (*Pharmacol.*)	0.1 mg vial
PDF-4338-s	**β-Defensin-2 (Human)** **hBD-2** Gly-Ile-Gly-Asp-Pro-Val-Thr-Cys-Leu-Lys-Ser-Gly-Ala-Ile-Cys-His-Pro-Val-Phe-Cys-Pro-Arg-Arg-Tyr- Lys-Gln-Ile-Gly-Thr-Cys-Gly-Leu-Pro-Gly-Thr-Lys-Cys-Cys-Lys-Lys-Pro (Disulfide bonds between Cys^{8}-Cys^{37}, Cys^{15}-Cys^{30}, and Cys^{20}-Cys^{38}) (M.W. 4328.2) $C_{188}H_{305}N_{55}O_{50}S_{6}$ *Antibacterial Peptide Specific for Gram-Negative Bacteria/Also Effective for Candida albicans* J. Harder, *et al., Nature*, **387**, 861 (1997). (*Original*) T. Hiratsuka, *et al., Biochem. Biophys. Res. Commun.*, **249**, 943 (1998). (*Pharmacol.*) D.M. Hoover, *et al., J. Biol. Chem.*, **275**, 32911 (2000). (*S-S Bond*) T. Hiratsuka, *et al., Thorax*, **58**, 425 (2003). (*Pharmacol.; Activity against Pseudomonas aeruginosa*)	0.1 mg vial
PDF-4382-s	**β-Defensin-3 (Human)** **hBD-3** Gly-Ile-Ile-Asn-Thr-Leu-Gln-Lys-Tyr-Tyr-Cys-Arg-Val-Arg-Gly-Gly-Arg-Cys-Ala-Val-Leu-Ser-Cys-Leu-Pro- Lys-Glu-Glu-Gln-Ile-Gly-Lys-Cys-Ser-Thr-Arg-Gly-Arg-Lys-Cys-Cys-Arg-Arg-Lys-Lys (Disulfide bonds between Cys^{11}-Cys^{40}, Cys^{18}-Cys^{33}, and Cys^{23}-Cys^{41}) (M.W. 5155.1) $C_{216}H_{371}N_{75}O_{59}S_{6}$ *Antimicrobial Peptide / Staphylococcus aureus-Killing Factor* J. Harder, *et al., J. Biol. Chem.*, **276**, 5707 (2001). (*Original*) J.-R.C. García, *et al., Cell Tissue Res.*, **306**, 257 (2001). (*Original; Amino-Terminally Truncated Peptide*) L.A. Duits, *et al., Biochem. Biophys. Res. Commun.*, **280**, 522 (2001). (*Pharmacol.*) H.P. Jia, *et al., Gene*, **263**, 211 (2001). (*DNA Seq/Tissue Distribution*) D.J. Schibli, *et al., J. Biol. Chem.*, **277**, 8279 (2002). (*Solution Structure*)	0.1 mg vial
PDF-4406-s	**β-Defensin-4 (Human)** **hBD-4** **Prepro-hBD-4 (Human, 25-61)** Glu-Leu-Asp-Arg-Ile-Cys-Gly-Tyr-Gly-Thr-Ala-Arg-Cys-Arg-Lys-Lys-Cys-Arg-Ser-Gln-Glu-Tyr-Arg-Ile-Gly- Arg-Cys-Pro-Asn-Thr-Tyr-Ala-Cys-Cys-Leu-Arg-Lys (Disulfide bonds between Cys^{6}-Cys^{33}, Cys^{13}-Cys^{27}, and Cys^{17}-Cys^{34}) (M.W. 4366.0) $C_{180}H_{295}N_{63}O_{52}S_{6}$ *Antimicrobial Peptide / Chemoattractant for Monocytes*	0.1 mg vial
NBD-14338-v	**β-Defensin-2 (Human) Antiserum** **(Rabbit)** Antiserum: lyophilized from 0.001 M phosphate buffer (pH 7.0) Immunogen: β-Defensin-2 (Human)-TG (TG: Bovine Thyroglobulin) Reactivity: β-Defensin-2 (Human) + β-Defensin-1 (Human) − α-Defensin-1 (Human) −	50 µl vial

Important Information: In order to avoid confusion caused by the two components of LEAP peptides and by the previous product name, the Peptide Institute has changed the names for PLP-4392-s and PLP-4405-s.

Product Code	New product name	Previous product name
PLP-4392-s	Hepcidin / LEAP-1 (Human)	Liver-Expressed Antimicrobial Peptide 1 (Human)
PLP-4405-s	LEAP-2 (Human)	Liver-Expressed Atimicrobial Peptide 2 (Human)

CODE	LEAP and OTHER DEFENSIN PRODUCTS	QTY
PLP-4392-s	**Hepcidin / Liver-Expressed Antimicrobial Peptide 1 (Human)** **Hepcidin / LEAP-1 (Human)** Asp-Thr-His-Phe-Pro-Ile-Cys-Ile-Phe-Cys-Cys-Gly-Cys-Cys-His-Arg-Ser-Lys-Cys-Gly-Met-Cys-Cys-Lys-Thr (Disulfide bonds between Cys^{7}-Cys^{23}, Cys^{10}-Cys^{13}, Cys^{11}-Cys^{19}, and Cys^{14} Cys^{22}) (M.W. 2789.4) $C_{113}H_{170}N_{34}O_{31}S_9$ *Liver-Specific Antimicrobial Peptide / Iron-Regulatory Hormone* A. Krause, *et al., FEBS Lett.*, **480**, 147 (2000). (*Original; LEAP-1*) C.H. Park, *et al., J. Biol. Chem.*, **276**,7806 (2001). (*Original; Hepcidin*) T. Ganz and E. Nemeth, *Am. J. Physiol.*, **290**, G199 (2006). (*Review*) H.N. Hunter, *et al., J. Bio;. Chem.*, **277**, 37597 (2002). (*Previously Published S-S Bond Connectivity)* J. B. Jordan, *et al., J. Biol. Chem.*, **284**, 24155 (2009). (*S-S Bond*)	0.1 mg vial
PLP-4405-s	**Liver-Expressed Antimicrobial Peptide 2 (Human)** **LEAP-2 (Human)** **Prepro LEAP-2 (Human, 38-77)** Met-Thr-Pro-Phe-Trp-Arg-Gly-Val-Ser-Leu-Arg-Pro-Ile-Gly-Ala-Ser-Cys-Arg-Asp-Asp-Ser-Glu-Cys-Ile-Thr-Arg-Leu-Cys-Arg-Lys-Arg-Arg-Cys-Ser-Leu-Ser-Val-Ala-Gln-Glu (Disulfide bonds between Cys^{17}-Cys^{28} and Cys^{23}-Cys^{33}) (M.W. 4581.3) $C_{191}H_{316}N_{64}O_{57}S_5$ *Antimicrobial Peptide* A. Krause, *et al., Protein Sci.*, **12**, 143 (2003). (*Original & S-S Bond*)	0.1 mg vial
PLP-3745-PI NEW!	**Hepcidin (Baboon)** **LEAP (Baboon)** (Disulfide bonds between Cys^{7}-Cys^{23}, Cys^{10}-Cys^{13}, Cys^{11}-Cys^{19}, and Cys^{14} Cys^{22}) H-Asp-Thr-His-Phe-Pro-Ile-Cys-Ile-Phe-Cys-Cys-Gly-Cys-Cys-His-Arg-Ser-Lys-Cys-Gly-Met-Cys-Cys-Arg-Thr-OH (M.W. 2817.41) $C_{113}H_{170}N_{36}O_{31}S_9$ G.M. Morrison, *et al.*, *Mol Biol Evol.*, **20**, 460 (2003).	1 mg 5 mg
PLP-3405-v NEW!	**[$^{13}C_{18}$,15N3]-Hepcidin (Human) (.02 mg vial)** **[[$^{13}C_9$,15N]Phe4,9, [15N]Gly12]-Hepcidin (Human)** Asp- Thr- His-[13C9,15N]Phe-Pro-Ile-Cys-Ile-[13C9,15N]Phe-Cys-Cys-[15N]Gly-Cys-Cys-His-Arg-Ser-Lys-Cys-Gly-Met-Cys-Cys-Lys-Thr (Reported disulfide bonds between Cys^{7}-Cys^{23}, Cys^{10}-Cys^{13}, Cys^{11}-Cys^{19}, and Cys^{14}-Cys^{22}) (Trifluoroacetate Form) (M.W. 2810.20) $C_{9513}C_{18}H_{170}N_{3115}N_3O_{31}S_9$ *Stable Isotope-Labeled Peptide for Mass Spectrometric Detection of Hepcidin (Human)* N. Murao, *et al.*, *Rapid Commun. Mass Spectrom.*, **21**, 4033 (2007). T. Hosoki, *et al.*, *Proteomics Clin. Appl.*, **3**, 1256 (2009).	0.2 mg vial
PLP-4434-s	**Hepcidin / Liver-Expressed Antimicrobial Peptide 1 (Mouse)** *Iron-Regulatory Hormone*	0.1 mg vial
PMG-4196-v	**Magainin 1** **(Frog, Xenopus laevis)** Gly-Ile-Gly-Lys-Phe-Leu-His-Ser-Ala-Gly-Lys-Phe-Gly-Lys-Ala-Phe-Val-Gly-Glu-Ile-Met-Lys-Ser (M.W. 2409.8) $C_{112}H_{177}N_{29}O_{28}S$ *Potent Antimicrobial Peptide* M. Zasloff, *Proc. Natl. Acad. Sci. U.S.A.*, **84**, 5449 (1987). (*Original*)	0.5 mg vial
PDF-4432-s	**Plectasin** *(Fungus, Pseudoplectania nigrella)* Gly-Phe-Gly-Cys-Asn-Gly-Pro-Trp-Asp-Glu-Asp-Asp-Met-Gln-Cys-His-Asn-His-Cys-Lys-Ser-Ile-Lys-Gly-Tyr-Lys-Gly-Gly-Tyr-Cys-Ala-Lys-Gly-Gly-Phe-Val-Cys-Lys-Cys-Tyr (Disulfide bonds between Cys_4-Cys_{30}, Cys_{15}-Cys_{37}, and Cys_{19}-Cys_{39}) (M.W. 4401.9) $C_{189}H_{267}N_{53}O_{56}S_7$ *Antimicrobial Peptide* P.H. Mygind, *et al., Nature,* **437**, 975 (2005). *(Original ; Structure & Antimicrobial Activity)*	0.1 mg vial

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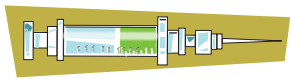

CODE	LEAP and OTHER DEFENSIN PRODUCTS (continued)	QTY
PDL-4454-s NEW!	**Dermcidin- 1L (Human)** **DCD-1L (Human)** Ser- Ser- Leu- Leu- Glu- Lys- Gly- Leu- Asp- Gly- Ala- Lys- Lys- Ala- Val- Gly- Gly- Leu- Gly- Lys- Leu- Gly- Lys- Asp- Ala- Val- Glu- Asp- Leu- Glu- Ser- Val- Gly- Lys- Gly- Ala- Val- His- Asp- Val- Lys- Asp- Val- Leu- Asp- Ser- Val- Leu (M.W. 4818.40) $C_{210}H_{359}N_{57}O_{71}$ *Antimicrobial Peptide in Sweat Glands* B. Schittek, *et al.*, *Nat. Immunol.*, **2**, 1133 (2001). (*Original; Antimicrobial Peptide*) S. Rieg, *et al.*, *J. Immunol.*, **174**, 8003 (2005). (*Endogenous Form*) H. Steffen, *et al.*, *Antimicrob. Agents Chemother.*, **50**, 2608 (2006). (*Pharmacol.*) F. Niyonsaba, *et al.*, *Br. J. Dermatol.*, **160**, 243 (2009). (*Pharmacol.*) I. Senyurek, *et al.*, *Antimicrob. Agents Chemother.*, **53**, 2499 (2009). (*Pharmacol.*)	0.1 mg vial

CODE	TOXINS	QTY
PAG-4256-s -20 °C	**ω-Agatoxin IVA** **ω-Aga-IVA** **(Funnel Web Spider, *Agelenopsis aperta*)** Lys-Lys-Lys-Cys-Ile-Ala-Lys-Asp-Tyr-Gly-Arg-Cys-Lys-Trp-Gly-Gly-Thr-Pro-Cys-Cys-Arg-Gly-Arg-Gly-Cys-Ile-Cys-Ser-Ile-Met-Gly-Thr-Asn-Cys-Glu-Cys-Lys-Pro-Arg-Leu-Ile-Met-Glu-Gly-Leu-Gly-Leu-Ala (Disulfide bonds between Cys^4-Cys^{20}, Cys^{12}-Cys^{25}, Cys^{19}-Cys^{36} and Cys^{27}-Cys^{34}) (M.W. 5202.2) $C_{217}H_{360}N_{68}O_{60}S_{10}$ *P-type Ca^{2+} Channel Selective Blocker* I.M. Mintz, *et al.*, *Nature*, **355**, 827 (1992). *(Original)* T.J. Turner, *et al.*, *Science*, **258**, 310 (1992). *(Pharmacol.)* H. Nishio, *et al.*, *Biochem. Biophys. Res. Commun.*, **196**, 1447 (1993). *(Chem. Synthesis & Biological Activity)* • This compound is distributed exclusively through Peptides International under license agreement with the University of Utah.	0.1 mg vial
PAG-4294-s -20 °C	**ω-Agatoxin TK** **ω-Aga-TK, ω-Aga-IVB** **(Funnel Web Spider, *Agelenopsis aperta*)** Glu-Asp-Asn-Cys-Ile-Ala-Glu-Asp-Tyr-Gly-Lys-Cys-Thr-Trp-Gly-Gly-Thr-Lys-Cys-Cys-Arg-Gly-Arg-Pro-Cys-Arg-Cys-Ser-Met-Ile-Gly-Thr-Asn-Cys-Glu-Cys-Thr-Pro-Arg-Leu-Ile-Met-Glu-Gly-Leu-D-Ser-Phe-Ala (Disulfide bonds between Cys^4-Cys^{20}, Cys^{12}-Cys^{25},Cys^{19}-Cys^{36} and Cys^{27}-Cys^{34}) (M.W. 5273.0) $C_{215}H_{337}N_{65}O_{70}S_{10}$ [145017-83-0] *P-type Ca^{2+} Channel Selective Blocker* Purity Information: QE See page 3 M. Kuwada, *et al.*, *Mol. Pharmacol.*, **46**, 587 (1994). *(Original)* Y. Shikata, *et al.*, *J. Biol. Chem.*, **270**, 16719 (1995). *(L-Ser to D-Ser Isomerase)* M.E. Adams, *et al.*, *Mol. Pharmacol.*, **38**, 681 (1990). (*Original; ω-Aga-IVB*) S.D. Heck, *et al.*, *J. Am. Chem. Soc.*, **116**, 10426 (1994). (*S-S Bond; ω-Aga-IVB*) T. Teramoto, *et al.*, *Brain Res.*, **756**, 225 (1997). *(Pharmacol.)* S.P. Lieske and J.-M. Ramirez, *J. Neurophysiol.*, **95**, 1323 (2006). (*Pharmacol.)* • This product is distributed under the license of Eisai Co., Ltd. Its use for any purpose other than research is strictly prohibited.	0.1 mg vial
PAG-3402-s -20 °C	**Biotinyl-ω-Agatoxin IVA** **Biotinyl-ω-Aga-IVA** (Trifluoroacetate Form) Biotinyl-Lys-Lys-Lys-Cys-Ile-Ala-Lys-Asp-Tyr-Gly-Arg-Cys-Lys-Trp-Gly-Gly-Thr-Pro-Cys-Cys-Arg-Gly-Arg-Gly-Cys-Ile-Cys-Ser-Ile-Met-Gly-Thr-Asn-Cys-Glu-Cys-Lys-Pro-Arg-Leu-Ile-Met-Glu-Gly-Leu-Gly-Leu-Ala (Disulfide bonds between Cys^4-Cys^{20}, Cys^{12}-Cys^{25}, Cys^{19}-Cys^{36} and Cys^{27}-Cys^{34}) (M.W. 5428.5) $C_{227}H_{374}N_{70}O_{62}S_{11}$ *Reagent for Localization Study of ω-Agatoxin IVA Binding Site* H. Nishio, *et al.*, *Biochem. Biophys. Res. Commun.*, **196**, 1447 (1993). (*Chem. Synthesis & Biological Activity*) S. Nakanishi, *et al.*, *J. Neurosci. Res.*, **41**, 532 (1995). (*Biochem.: Distribution of Binding Sites*)	0.1 mg vial
PCB-4227-s -20 °C	**Charybdotoxin (ChTX)*** **(Scorpion, *Leiurus quinquestriatus hebraeus*)** Pyr-Phe-Thr-Asn-Val-Ser-Cys-Thr-Thr-Ser-Lys-Glu-Cys-Trp-Ser-Val-Cys-Gln-Arg-Leu-His-Asn-Thr-Ser-Arg-Gly-Lys-Cys-Met-Asn-Lys-Lys-Cys-Arg-Cys-Tyr-Ser (Disulfide bonds between Cys^7-Cys^{28}, Cys^{13}-Cys^{33}, and Cys^{17}-Cys^{35}) (M.W. 4295.9) $C_{176}H_{277}N_{57}O_{55}S_7$ *Ca^{2+}-Activated K^+ Channel Blocker* G. Gimenez-Gallego, *et al.*, *Proc. Natl. Acad. Sci. USA*, **85**, 3329 (1988). *(Original)* P. Lambert, *et al.*, *Biochem. Biophys. Res. Commun.*, **170**, 684 (1990). *(Chem. Synthesis & Pharmacol.)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.1 mg vial

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CODE	TOXINS	QTY
PCN-4282-v	**Chlorotoxin** **(Scorpion, *Leiurus quinquestriatus*)** Met-Cys-Met-Pro-Cys-Phe-Thr-Thr-Asp-His-Gln-Met-Ala-Arg-Lys-Cys-Asp-Asp-Cys- Cys-Gly-Gly-Lys-Gly-Arg-Gly-Lys-Cys-Tyr-Gly-Pro-Gln-Cys-Leu-Cys-Arg-NH_2 (Disulfide bonds between Cys^{2}-Cys^{19},Cys^{5}-Cys^{28},Cys^{16}-Cys^{33} and Cys^{20}-Cys^{35}) (M.W. 3995.7) $C_{158}H_{249}N_{53}O_{47}S_{11}$ [163515-35-3] *Small-Conductance Cl^- Channel Blocker* J.A. DeBin, *et al.*, *Am. J. Physiol.*, **264**, C361 (1993). *(Original)* J. Najib, *et al.*, *In, Innovation and Perspective in Solid Phase Synthesis*, (R. Epton, *ed.*), Mayflower Worldwide, Birmingham, 1994, pp. 615-618. *(Original; Amide)* G. Lippens, *et al.*, *Biochemistry*, **34**, 13 (1995). *(NMR Structure)* L. Soroceanu, *et al.*, *Cancer Res.*, **58**, 4871 (1998). (*Pharmacol.*) D.B. Jacoby, *et al.*, *Anticancer Res.*, **30**, 39 (2010). (*Review*) K. Kesavan, *et al.*, *J. Biol. Chem.*, **285**, 4366 (2010). (*Review*)	0.5 mg vial
PCO-4265-v	**Conantokin G** **(Marine Snail, *Conus geographus*)** Gly-Glu-Gla-Gla-Leu-Gln-Gla-Asn-Gln-Gla-Leu-Ile-Arg-Gla-Lys-Ser-Asn-NH_2 (Gla: L-g-Carboxyglutamic acid) (M.W. 2264.2) $C_{88}H_{138}N_{26}O_{44}$ [93438-65-4] *Sleeper Peptide, N-Methyl-D-Aspartate (NMDA) Receptor Antagonist* J.M. McIntosh, *et al.*, *J. Biol. Chem.*, **259**, 14343 (1984). *(Original)* L.G. Hammerland, *et al.*, *Eur. J. Pharmacol.*, **226**, 239 (1992). *(Pharmacol.)* Y. Nishiuchi, *et al.*, *Int. J. Pept. Protein Res*, **42**, 533 (1993). *(Chem. Synthesis)*	0.5 mg vial
PCO-4264-v	**Conantokin T** **(Marine Snail, *Conus tulipa*)** Gly-Glu-Gla-Gla-Tyr-Gln-Lys-Met-Leu-Gla-Asn-Leu-Arg-Gla-Ala-Glu-Val-Lys-Lys-Asn-Ala-NH_2 (Gla: L-g-Carboxyglutamic acid) (M.W. 2683.8) $C_{110}H_{175}N_{31}O_{45}S$ *Sleeper Peptide, N-Methyl-D-Aspartate (NMDA) Receptor Antagonist* J.A. Haack, *et al.*, *J. Biol. Chem.*, **265**, 6025 (1990). *(Original)* Y. Nishiuchi,*et al.*, *Int. J. Pept. Protein Res.*, **42**, 533 (1993). *(Chem. Synthesis)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg vial
PCN-4126-v	**α-Conotoxin GI*‡** **(Marine Snail, *Conus geographus*)** (Hydrochloride Form) Glu-Cys-Cys-Asn-Pro-Ala-Cys-Gly-Arg-His-Tyr-Ser-Cys-NH_2 (Disulfide bonds between Cys^{2}-Cys^{7} and Cys^{3}-Cys^{13}) (M.W. 1437.6) $C_{55}H_{80}N_{20}O_{18}S_4$ [76862-65-2] *Blocker for Nicotinic Acetylcholine Receptor* W.R. Gray, *et al.*, *J. Biol. Chem.*, **256**, 4734 (1981). *(Original)* Y. Nishiuchi and S. Sakakibara, *FEBS Lett.*, **148,** 260 (1982). *(Chem. Synthesis)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg vial
PCN-4311-v	**α-Conotoxin ImI‡** **(Marine Snail, *Conus imperialis*)** Gly-Cys-Cys-Ser-Asp-Pro-Arg-Cys-Ala-Trp-Arg-Cys-NH_2 (Disulfide bonds between Cys^{2}-Cys^{8} and Cys^{3}-Cys^{12}) (M.W. 1351.6) $C_{52}H_{78}N_{20}O_{15}S_4$ [156467-85-5] *Blocker for Nicotinic Acetylcholine Receptor in Central Nervous System* J.M. McIntosh, *et al.*, *J. Biol. Chem.*, **269**, 16733 (1994). *(Original)* D.S. Johnson, *et al.*, *Mol. Pharmacol.*, **48**, 194 (1995). *(Pharmacol.)* E.F.R. Pereira, *et al.*, *J. Pharmacol. Exp. Ther.*, **278**, 1472 (1996). *(Pharmacol.; Competitive Antagonist)*	0.5 mg vial
PCN-4140-v	**α-Conotoxin MI*‡** **(Marine Snail, *Conus magus*)** Gly-Arg-Cys-Cys-His-Pro-Ala-Cys-Gly-Lys-Asn-Tyr-Ser-Cys-NH_2 (Disulfide bonds between Cys^{3}-Cys^{8} and Cys^{4}-Cys^{14}) (M.W. 1493.7) $C_{58}H_{88}N_{22}O_{17}S_4$ *Blocker for Nicotinic Acetylcholine Receptor* M. McIntosh, *et al.*, *Arch. Biochem. Biophys.*, **218**, 329 (1982). *(Original)* Y. Nishiuchi and S. Sakakibara, *Peptide Chemistry 1983,* **191**, (1984). *(Chem. Synthesis)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg vial

CODE	TOXINS	QTY
PCN-4228-v	**α-Conotoxin SI*‡** **(Marine Snail, *Conus striatus*)** Ile-Cys-Cys-Asn-Pro-Ala-Cys-Gly-Pro-Lys-Tyr-Ser-Cys-NH_2 (Disulfide bonds between Cys^2-Cys^7 and Cys^3-Cys^7) (M.W. 1353.6) $C_{55}H_{84}N_{16}O_{16}S_4$ *Blocker for Nicotinic Acetylcholine Receptor* G.C. Zafaralla, *et al.*, *Biochemistry*, **27**, 7102 (1988). *(Original)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg vial
‡ PLEASE NOTE: For shipping within the United States, please contact Peptides International for important information regarding the CDC Select Agent Transfer Program and additional requirements for placing orders. Conotoxin peptides are not available for export without a license from the US Department of Commerce.		
PCN-4217-v	**μ-Conotoxin GIIIB*‡** **(Marine Snail, *Conus geographus*)** Arg-Asp-Cys-Cys-Thr-Hyp-Hyp-Arg-Lys-Cys-Lys-Asp-Arg-Arg-Cys-Lys-Hyp-Met-Lys-Cys-Cys-Ala-NH_2 (Disulfide bonds between Cys^3-Cys^{15}, Cys^4-Cys^{20}, and Cys^{10}-Cys^{21}) (M.W. 2640.2) $C_{101}H_{175}N_{39}O_{30}S_7$ [140678-12-2] *Na^+ Channel Blocker: Specific for Skeletal Muscle* S. Sato, *et al.*, *FEBS Lett.*, **155**, 277 (1983). *(Original)* L.J. Cruz, *et al.*, *J. Biol. Chem.*, **260**, 9280 (1985). *(Naming)* Y. Ohizumi, *et al.*, *J. Biol. Chem.*, **261**, 6149 (1986). *(Pharmacol.)* S. Kubo, *et al.*, *Pept. Res.*, **6**, 66 (1993). *(Chem. Synthesis and Pharmacol.)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg vial
PCN-4263-v	**μ-Conotoxin GS‡** **(Marine snail, *Conus geographus*)** Ala-Cys-Ser-Gly-Arg-Gly-Ser-Arg-Cys-Hyp-Hyp-Gln-Cys-Cys-Met-Gly-Leu-Arg-Cys-Gly-Arg-Gly-Asn-Pro-Gln-Lys-Cys-Ile-Gly-Ala-His-Gla-Asp-Val (Gla: L-g-Carboxyglutamic acid) (Disulfide bonds between Cys^2-Cys^{14}, Cys^9-Cys^{19}, and Cys^{13}-Cys^{27}) (M.W. 3618.1) $C_{139}H_{226}N_{52}O_{48}S_7$ *Na^+ Channel Blocker* Y. Yanagawa, *et al.*, *Biochemistry*, **27**, 6256 (1988). *(Original)* M. Nakao, *et al.*, *Lett. Pept. Sci.*, **2**, 17 (1995). *(Chem. Synthesis and S-S Bond)*	0.5 mg vial
PCN-4440-v	**μ-Conotoxin SIIIA‡** **(Marine Snail, Conus striatus)** Pyr-NCCNGGCSSKWCRDHARCC-NH_2 Pyr-Asn-Cys-Cys-Asn-Gly-Gly-Cys-Ser-Ser-Lys-Trp-Cys-Arg-Asp-His-Ala-Arg-Cys-Cys-NH_2 (Reported disulfide bonds between Cys^3-Cys^{13}, Cys^4-Cys^{19}, and Cys^8-Cys^{20}) (M.W. 2207.5) $C_{83}H_{123}N_{33}O_{27}S_6$ *Tetrodotoxin-Resistant Na^+ Channel Blocker with Analgesic Activity* G. Bulaj, *et al.*, *Biochemistry*, **44**, 7259 (2005). (*Original; Primary Structure & Pharmacol.*) S. Yao, *et al.*, *Biochemistry*, **47**, 10940 (2008). (*Solution Structure & Pharmacol.*) C.-Z. Wang, *et al.*, *Toxicon*, **47**, 122 (2006). (*Pharmacol.*) B.R. Green, *et al.*, *Chem. Biol.*, **14**, 399 (2007). (*Pharmacol.*)	0.5 mg vial
PCN-4161-v	**ω-Conotoxin GVIA*‡** **(Marine Snail, *Conus geographus*)** Cys-Lys-Ser-Hyp-Gly-Ser-Ser-Cys-Ser-Hyp-Thr-Ser-Tyr-Asn-Cys-Cys-Arg-Ser-Cys-Asn-Hyp-Tyr-Thr-Lys-Arg-Cys-Tyr-NH_2 (Disulfide bonds between Cys^1-Cys^{16}, Cys^8-Cys^{19}, and Cys^{15}-Cys^{26}) (M.W. 3037.3) $C_{120}H_{182}N_{38}O_{43}S_6$ [106375-28-4] *N-type Ca^{2+} Channel Blocker* B.M. Olivera, *et al.*, *Biochemistry*, **23**, 5087 (1984). *(Original)* Y. Nishiuchi, *et al.*, *Biopolymers*, **25**, S61 (1986). *(Chem. Synthesis and S-S Bond)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg vial
PCN-4289-v	**ω-Conotoxin MVIIA*‡** **(Marine Snail, *Conus magus*)** Cys-Lys-Gly-Lys-Gly-Ala-Lys-Cys-Ser-Arg-Leu-Met-Tyr-Asp-Cys-Cys-Thr-Gly-Ser-Cys-Arg-Ser-Gly-Lys-Cys-NH_2 (Disulfide bonds between Cys^1-Cys^{16},Cys^8-Cys^{20},and Cys^{15}-Cys^{25}) (M.W. 2639.1) $C_{102}H_{172}N_{36}O_{32}S_7$ [107452-89-1] *Reversible N-type Ca^{2+} Channel Blocker* B.M. Olivera,*et al.*, *Biochemistry*, **26**, 2086 (1987). *(Original)* K. Valentino, *et al.*, *Proc. Natl. Acad. Sci. USA*, **90**, 7894 (1993). *(Pharmacol.)* J.A. Fox, *Pflügers Arch.*, **429**, 873 (1995). *(Pharmacol.)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg vial

CODE	TOXINS	QTY
PCN-4283-s	**ω-Conotoxin MVIIC‡** **(Marine Snail, *Conus magus*)** Cys-Lys-Gly-Lys-Gly-Ala-Pro-Cys-Arg-Lys-Thr-Met-Tyr-Asp-Cys-Cys-Ser-Gly-Ser-Cys-Gly-Arg-Arg-Gly-Lys-Cys-NH_2 (Disulfide bonds between Cys^{1}-Cys^{16},Cys^{8}-Cys^{20}, and Cys^{15}-Cys^{26}) (M.W. 2749.3) $C_{106}H_{178}N_{40}O_{32}S_7$ [147794-23-8]	0.1 mg vial
‡ PLEASE NOTE: For shipping within the United States, please contact Peptides International for important information regarding the CDC Select Agent Transfer Program and additional requirements for placing orders. Conotoxin peptides are not available for export without a license from the US Department of Commerce.		
PCN-4283-v	**ω-Conotoxin MVIIC‡** **(Marine Snail, *Conus magus*)** *P/Q-type Ca^{2+} Channel Blocker* D.R. Hillyard, *et al.*, *Neuron*, **9**, 69 (1992). *(Original; cDNA and Pharmacol.)* M.E. Adams, *et al.*, *Biochemistry*, **32**, 12566 (1993). *(Pharmacol.)* W.A. Sather, *et al.*, *Neuron*, **11**, 291 (1993). *(Pharmacol.)* D.B. Wheeler, *et al.*, *Science*, **264**, 107 (1994). *(Pharmacol.)*	0.5 mg vial
PCN-4284-v	**ω-Conotoxin SVIB*‡** **(Marine Snail, *Conus striatus*)** Cys-Lys-Leu-Lys-Gly-Gln-Ser-Cys-Arg-Lys-Thr-Ser-Tyr-Asp-Cys-Cys-Ser-Gly-Ser-Cys-Gly-Arg-Ser-Gly-Lys-Cys-NH_2 (Reported disulfide bonds between Cys^{1}-Cys^{16},Cys^{8}-Cys^{20}, and Cys^{15}-Cys^{26}) (M.W. 2739.1) $C_{105}H_{176}N_{38}O_{36}S_6$ [150433-82-2] *N-type Ca^{2+} Channel Blocker* C.A. Ramilo, *et al.*, *Biochemistry*, **31**, 9919 (1992). *(Original.)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.5 mg via
PDN-4330-s	**Dendrotoxin I** **(Black mamba, *Dendroaspis polylepis polylepis*)** Pyr-Pro-Leu-Arg-Lys-Leu-Cys-Ile-Leu-His-Arg-Asp-Pro-Gly-Arg-Cys-Tyr-Gln-Lys-Ile-Pro-Ala-Phe-Tyr-Tyr-Asn-Gln-Lys-Lys-Lys-Gln-Cys-Glu-Gly-Phe-Thr-Trp-Ser-Gly-Cys-Gly-Gly-Asn-Ser-Asn-Arg-Phe-Lys-Thr-Ile-Glu-Glu-Cys-Arg-Arg-Thr-Cys-Ile-Arg-Lys (Disulfide bonds between Cys^{7}-Cys^{57}, Cys^{16}-Cys^{40}, and Cys^{32}-Cys^{53}) (M.W. 7133.2) $C_{312}H_{487}N_{97}O_{84}S_6$ [107950-33-4] *Voltage-Dependant K^{+} Channel Blocker* D.J. Strydom, *Nature New Biol.*, **243**, 88 (1973). *(Original)* J.-N. Bidard, *et al.*, *Biochem. Biophys. Res. Commun.*, **143**, 383 (1987). *(Pharmacol.)* A.L. Harvey, *et al.*, *Biochem. Biophys. Res. Commun.*, **163**, 394 (1989). *(Pharmacol.)* H. Nishio, *et al.*, *J. Pept. Res.*, **51**, 355 (1998). *(Chem. Synthesis & Correction of Sequence; Asp^{12})*	0.1 mg vial
ECT-3760-PI NEW!	**Echistatin** H-Glu-Cys-Glu-Ser-Gly-Pro-Cys-Cys-Arg-Asn-Cys-Lys-Phe-Leu-Lys-Glu-Gly-Thr-Ile-Cys-Lys-Arg-Ala-Arg-Gly-Asp-Asp-Met-Asp-Asp-Tyr-Cys-Asn-Gly-Lys-Thr-Cys-Asp-Cys-Pro-Arg-Asn-Pro-His-Lys-Gly-Pro-Ala-Thr-OH (Disulfide bonds between Cys^{2}-Cys^{11}, Cys^{7}-Cys^{32}, Cys^{8}-Cys^{37}, and Cys^{20}-Cys^{39}) *αVβ3 integrin antagonist* (M.W. 5417.14) $C_{217}H_{341}N_{71}O_{74}S_9$ [154303-05-6] Musial, *et al.*, *Circulation*, **82**, 261 (1990). S. Sato, *et al.*, *J.Cell.Biol.*, **111**, 1713 (1990). Kumar, *et al.*, *J.Pharmacol.Exp.Ther.*, **283**, 843 (1997). V. Garsky, *et al.*, *Proc Nat Acad of Sciences*, **86**, 4022 (1989).	1 mg 5 mg
ENT-3744-PI NEW!	**Enterotoxin STp** H-Asn-Thr-Phe-Tyr-Cys-Cys-Glu-Leu-Cys-Cys-Asn-Pro-Ala-Cys-Ala-Gly-Cys-Tyr-OH (Disulfide bonds between Cys^{5} and Cys^{10}; Cys^{6} and Cys^{14}; Cys^{9} and Cys^{17}) (M.W. 1972.28) $C_{81}H_{110}N_{20}O_{26}S_6$	1 mg 5 mg
SHK-3746-PI NEW!	**5-Fam-ShK** Fluorescein-5-carbonyl-AEEAc-Arg-Ser-Cys-Ile-Asp-Thr-Ile-Pro-Lys-Ser-Arg-Cys-Thr-Ala-Phe-Gln-Cys-Lys-His-Ser-Met-Lys-Tyr-Arg-Leu-Ser-Phe-Cys-Arg-Lys-Thr-Cys-Gly-Thr-Cys-NH_2 Disulfide bonds between Cys^{3} and Cys35; Cys12 and Cys28; Cys17 and Cys^{32}) C.Beeton, *et al.*, *J. Biol. Chem.*, **278**, 9928 (2003) R.S.Norton, *et al.*, *Curr. Med. Chem.*, **11**, 3141 (2004)	1 mg

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CODE	TOXINS	QTY
PCB-4393-s	**GsMTx-4** **(Chilean Rose Tarantula, *Grammostola spatulata*)** Gly-Cys-Leu-Glu-Phe-Trp-Trp-Lys-Cys-Asn-Pro-Asn-Asp-Asp-Lys-Cys-Cys-Arg-Pro-Lys-Leu-Lys-Cys-Ser-Lys-Leu-Phe-Lys-Leu-Cys-Asn-Phe-Ser-Phe-NH_2 (Reported disulfide bonds between Cys^2-Cys^{17}, Cys^9-Cys^{23}, and Cys^{16}-Cys^{30}) (M.W. 4095.8) $C_{185}H_{273}N_{49}O_{45}S_6$ *Inhibitor for Cation-Selective Stretch-Activated Channels / Atrial Fibrillation Inhibiting Peptide*	0.1 mg vial
‡ PLEASE NOTE: For shipping within the United States, please contact Peptides International for important information regarding the CDC Select Agent Transfer Program and additional requirements for placing orders. Conotoxin peptides are not available for export without a license from the US Department of Commerce.		
PLL-4455-s	**Huwentoxin- IV** **HWTX-IV** **Chinese Bird Spider, (*Ornithoctonus huwena*)** (Trifluoroacetate Form) Glu-Cys-Leu-Glu-Ile-Phe-Lys-Ala-Cys-Asn-Pro-Ser-Asn-Asp-Gln-Cys-Cys-Lys-Ser-Ser-Lys-Leu-Val-Cys-Ser-Arg-Lys-Thr-Arg-Trp-Cys-Lys-Tyr-Gln-Ile-NH_2 (Disulfide bonds between Cys^2-Cys^{17}, Cys^9-Cys^{24}, and Cys^{16}-Cys^{31}) (M.W. 4106.80) $C_{174}H_{278}N_{52}O_{51}S_6$ Synthetic Product *Neuronal Tetrodotoxin-Sensitive Na^{+} Channel Blocker* K. Peng, Q. Shu, Z. Liu, and S. Liang, *J. Biol. Chem.*, **277**, 47564 (2002). (*Original*) J. Diao, Y. Lin, J. Tang, and S. Liang, *Toxicon*, **42**, 715 (2003). (*cDNA Seq*) Y. Xiao, *et al.*, *J. Biol. Chem.*, **283**, 27300 (2008). (*Pharmacol.*) Y. Xiao, X. Luo, F. Kuang, M. Deng, M. Wang, X. Zeng, and S. Liang, *Toxicon*, **51**, 230 (2008). (*Pharmacol.*)	0.1 mg vial
PIB-4235-s	**Iberiotoxin*** **IbTX** **(Scorpion, *Buthus tamulus*)** Pyr-Phe-Thr-Asp-Val-Asp-Cys-Ser-Val-Ser-Lys-Glu-Cys-Trp-Ser-Val-Cys-Lys-Asp-Leu-Phe-Gly-Val-Asp-Arg-Gly-Lys-Cys-Met-Gly-Lys-Lys-Cys-Arg-Cys-Tyr-Gln (Disufide bonds are formed between Cys^7-Cys^{28}, Cys^{13}-Cys^{33}, and Cys^{17}-Cys^{35}). (M.W. 4230.8) $C_{179}H_{274}N_{50}O_{55}S_7$ [129203-60-7] *Ca^{2+}-Activated K^+ Channel Blocker (Maxi-K^+ Channel Blocker)* A. Galvez, *et al.*, *J. Biol. Chem.*, **265,** 11083 (1990). *(Original)* M.L. Garcia, *et al.*, *J. Bioenerg. Biomembr.*, **23**, 615 (1991). *(Review)* K.M. Giangiacomo, *et al.*, *Biochemistry,* **31**, 6719 (1992). *(Pharmacol.)* G.J. Kaczorowski, *et al., J. Bioenerg. Biomembr.,* **28**, 255 (1996). *(Review)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.1 mg vial
PIM-4343-s	**Imperatoxin A** **IpTXa** **(Scorpion, *Pandinus imperator*)** Gly-Asp-Cys-Leu-Pro-His-Leu-Lys-Arg-Cys-Lys-Ala-Asp-Asn-Asp-Cys-Cys-Gly-Lys-Lys-Cys-Lys-Arg-Arg-Gly-Thr-Asn-Ala-Glu-Lys-Arg-Cys-Arg (Disulfide bonds between Cys^3-Cys^{17}, Cys^{10}-Cys^{21}, and Cys^{16}-Cys^{32}) (M.W. 3758.4) $C_{148}H_{254}N_{58}O_{45}S_6$ [172451-37-5] Purity: greater than 94% by HPLC *Activator of Ca^{2+} Release Channels/Ryanodine Receptors* H.H. Valdivia, *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, **89**, 12185 (1992). *(Pharmacol.)* R. El-Hayek, *et al.*, *J. Biol. Chem.*, **270**, 28696 (1995). *(Pharmacol.)* F.Z. Zamudio, *et al.*, *FEBS Lett.*, **405**, 385 (1997). *(Original; Structure)* K. Takeuchi, *et al.*, *Peptide Science*, **1999**, 307 (2000). *(S-S Bond)*	0.1 mg vial
PKL-4259-s	**Kaliotoxin (1-37)*** **(Scorpion, *Androctonus mauretanicus mauretanicus*)** Gly-Val-Glu-Ile-Asn-Val-Lys-Cys-Ser-Gly-Ser-Pro-Gln-Cys-Leu-Lys-Pro-Cys-Lys-Asp-Ala-Gly-Met-Arg-Phe-Gly-Lys-Cys-Met-Asn-Arg-Lys-Cys-His-Cys-Thr-Pro (Reported disulfide bonds between Cys^8-Cys^{28}, Cys^{14}-Cys^{33}, and Cys^{18}-Cys^{35}) (M.W. 4021.8) $C_{165}H_{271}N_{53}O_{48}S_8$ *High Conductance Ca^{2+}-Activated K^+ Channel Blocker* M. Crest, *et al.*, *J. Biol. Chem.*, **267**, 1640 (1992). *(Original)* R. Romi, *et al.*, *J. Biol. Chem.*, **268**, 26302 (1993). *(Chem. Synthesis & Pharmacol.)* F.R. Romi, *et al.*, *Biochemistry*, **33**, 14256 (1994). *(Unique Structure)* A.L. Harvey, *et al.*, *Toxicon*, **33**, 425 (1995). *(Pharmacol.)* ** The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.1 mg vial

CODE	TOXINS	QTY
PKT-4375-s	**Kurtoxin** **(Scorpion, *Parabuthus transvaalicus*)** Lys-Ile-Asp-Gly-Tyr-Pro-Val-Asp-Tyr-Trp-Asn-Cys-Lys-Arg-Ile-Cys-Trp-Tyr-Asn-Asn-Lys-Tyr-Cys-Asn-Asp-Leu-Cys-Lys-Gly-Leu-Lys-Ala-Asp-Ser-Gly-Tyr-Cys-Trp-Gly-Trp-Thr-Leu-Ser-Cys-Tyr-Cys-Gln-Gly-Leu-Pro-Asp-Asn-Ala-Arg-Ile-Lys-Arg-Ser-Gly-Arg-Cys-Arg-Ala (Disulfide bonds between Cys^{12}-$Cys^{61}$$Cys^{16}$-$Cys^{37}$, Cys^{23}-Cys^{44}, and Cys^{27}-Cys^{46}) (M.W. 7386.4) $C_{324}H_{478}N_{94}O_{90}S_8$ *T-type Ca^{2+} Channel Blocker* Purity Information: Qp See page 3 R.S-I. Chuang, *et al.*, *Nat. Neurosci.*, **1**, 668 (1998). (*Original*) S.S. Sidach and I.M. Mintz, *J. Neurosci.*, **22**, 2023 (2002). *(Pharmacol.; Specificity for Ca^{2+} Channel Blocking Activity)* T. Olamendi-Portugal, *et al.*, *Biochem. Biophys. Res. Commun.*, **299**, 562 (2002). *(Pharmacol.)* I. López-González, *et al.*, *Biochem. Biophys. Res. Commun.*, **300**, 408 (2003). *(Pharmacol.)* H. Nishio, *et al.*, *Lett. Pept. Sci.*, in press. *(Chem. Synthesis & S-S Bond)*	0.1 mg vial
PAR-4290-s	**Margatoxin (MgTX)** **(Scorpion, *Centruroides margaritatus*)** Thr-Ile-Ile-Asn-Val-Lys-Cys-Thr-Ser-Pro-Lys-Gln-Cys-Leu-Pro-Pro-Cys-Lys-Ala-Gln-Phe-Gly-Gln-Ser-Ala-Gly-Ala-Lys-Cys-Met-Asn-Gly-Lys-Cys-Lys-Cys-Tyr-Pro-His (Reported disulfide bonds between Cys^{7}-Cys^{29},Cys^{13}-Cys^{34}, and Cys^{17}-Cys^{36}) (M.W. 4178.9) $C_{178}H_{286}N_{52}O_{50}S_7$ [145808-47-5] *Volgate-Dependent K^+ Channel Blocker (Specific for Kv1.3 Channel)* R.J. Leonard, *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, **89**, 10094 (1992). *(Pharmacol.)* M. Garcia-Calvo, *et al.*, *J. Biol. Chem.*, **268**, 18866 (1993). *(Original)* M.A. Bednarek, *et al.*, *Biochem. Biophys. Res. Commun.*, **198**, 619 (1994). *(Chem. Synthesis & S-S Bond)* H.G. Knaus, *et al. Biochemistry*, **34**,13627 (1995). *(Pharmacol.)*	0.1 mg vial

List of Muscarinic Toxins

Code	Compound	Specificity	Quantity	Page
PMT-4341-s	Muscarinic Toxin 1 (MT1, MTX1)	$M_{1/4}$	0.1 mg vial	below
PMT-4410-s	Muscarinic Toxin 3 (MT3, MTX3, m4-toxin)	M_4	0.1 mg vial	below
PMT-4340-s	Muscarinic Toxin 7 (MT7, MTX7, m1-toxin1)	M_1	0.1 mg vial	below
PMT-4424-s	Muscarinic Toxin α (MTα)	$M_{3/4/5}$	0.1 mg vial	XX

PMT-4341-s	**Muscarinic Toxin 1** **MTX1, MT1** **(Green Mamba, *Dendroaspis angusticeps*)** Leu-Thr-Cys-Val-Thr-Ser-Lys-Ser-Ile-Phe-Gly-Ile-Thr-Thr-Glu-Asn-Cys-Pro-Asp-Gly-Gln-Asn-Leu-Cys-Phe-Lys-Lys-Trp-Tyr-Tyr-Ile-Val-Pro-Arg-Tyr-Ser-Asp-Ile-Thr-Trp-Gly-Cys-Ala-Ala-Thr-Cys-Pro-Lys-Pro-Thr-Asn-Val-Arg-Glu-Thr-Ile-Arg-Cys-Cys-Glu-Thr-Asp-Lys-Cys-Asn-Glu (Disulfide bonds between Cys^{3}-Cys^{24}, Cys^{17}-Cys^{42}, Cys^{46}-Cys^{58}, and Cys^{59}-Cys^{64}) (M.W. 7509.5) $C_{326}H_{499}N_{87}O_{101}S_8$ *Agonist for Muscarinic Acetylcholine Receptor-1 (M_1)* M. Jolkkonen, *et al.*, *Toxicon*, 33, 399 (1995). *(Original-Structure)* D. Jerusalinsky and A.L. Harvey, *Trends Pharmacol. Sci.*, 15, 424 (1994). *(Review; Toxin for Muscarinic Receptor)* A. Adem and E. Karlsson, *Life Sci.*, **60**, 1069 (1997). *(Pharmacol.)* H.Nishio, *et al.*, *Peptide Science*, 1999, 125 (2000). *(S-S Bond)*	0.1 mgt vial

CODE	TOXINS	QTY
PMT-4410-s	**Muscarinic Toxin 3** **MT3, MTX3, m4-toxin** **(Green Mamba, *Dendroaspis angusticeps*)** Leu-Thr-Cys-Val-Thr-Lys-Asn-Thr-Ile-Phe-Gly-Ile-Thr-Thr-Glu-Asn-Cys-Pro-Ala-Gly-Gln-Asn-Leu-Cys-Phe-Lys-Arg-Trp-His-Tyr-Val-Ile-Pro-Arg-Tyr-Thr-Glu-Ile-Thr-Arg-Gly-Cys-Ala-Ala-Thr-Cys-Pro-Ile-Pro-Glu-Asn-Tyr-Asp-Ser-Ile-His-Cys-Cys-Lys-Thr-Asp-Lys-Cys-Asn-Glu (Disulfide bonds between Cys^{3}- Cys^{24}, Cys^{17}- Cys^{42}, Cys^{46}- Cys^{57}, and Cys^{58}- Cys^{63}) (M.W. 7379.4) $C_{319}H_{489}N_{89}O_{97}S_{8}$ *Specific Ligand for Muscarinic Acetylcholine Receptor-4 (M_1 / M_4) (Non-specific Ligand)* Purity Information : QP See page 3 M. Jolkkonen, *et al.*, *FEBS Lett.*, **352**, 91 (1994). *(Original; MT3)* J.-S. Liang, *et al.*, *Toxicon*, **34**, 1257 (1996). *(Original; m4-toxin)* A. Adem and E. Karlsson, *Life Sci.*, **60**, 1069 (1997). *(Pharmacol.; Muscarinic Receptor Subtype Specificity)* S. Katayama, *et al.*, *Peptide Science 2004*, 161 (2005). *(S-S Bond)*	0.1 mgt vial
PMT-4340-s	**Muscarinic Toxin 7** **MTX7, MT7, m1-toxin 1** **(Green Mamba, *Dendroaspis angusticeps*)** Leu-Thr-Cys-Val-Lys-Ser-Asn-Ser-Ile-Trp-Phe-Pro-Thr-Ser-Glu-Asp-Cys-Pro-Asp-Gly-Gln-Asn-Leu-Cys-Phe-Lys-Arg-Trp-Gln-Tyr-Ile-Ser-Pro-Arg-Met-Tyr-Asp-Phe-Thr-Arg-Gly-Cys-Ala-Ala-Thr-Cys-Pro-Lys-Ala-Glu-Tyr-Arg-Asp-Val-Ile-Asn-Cys-Cys-Gly-Thr-Asp-Lys-Cys-Asn-Lys (Disulfide bonds between Cys^{3}-Cys^{24}, Cys^{17}-Cys^{42}, Cys^{46}-Cys^{57}, and Cys^{58}-Cys^{63}) (M.W. 7472.4) $C_{322}H_{484}N_{90}O_{98}S_{9}$ *Specific Ligand for Muscarinic Acetylcholine Receptor-1 (M_1)* A. Adem and E. Karlsson, *Life Sci.*, 60, 1069 (1997). *(Original)* H. Nishio, *et al.*, *Peptide Science,* 1999, 125 (2000). *(S-S Bond)* J.M. Carsi and L.T. Potter, *Toxicon*, 38, 187 (2000). *(Original; m1-toxin1)* Z. Gu, *et al.*, *J. Biol. Chem.*, 278, 17546 (2003). *(Pharmacol; Inhibition of β-Amyloid signaling)*	0.1 mgt vial
PMT-4424-s	**Muscarinic Toxin α** **MTα** **(Black Mamba, Dendroaspis polylepis)** Leu-Thr-Cys-Val-Thr-Ser-Lys-Ser-Ile-Phe-Gly-Ile-Thr-Thr-Glu-Asn-Cys-Pro-Asp-Gly-Gln-Asn-Leu-Cys-Phe-Lys-Lys-Trp-Tyr-Tyr-Leu-Asn-His-Arg-Tyr-Ser-Asp-Ile-Thr-Trp-Gly-Cys-Ala-Ala-Thr-Cys-Pro-Lys-Pro-Thr-Asn-Val-Arg-Glu-Thr-Ile-His-Cys-Cys-Glu-Thr-Asp-Lys-Cys-Asn-Glu (Disulfide bonds between Cys^{3}-Cys^{24}, Cys^{17}-Cys^{42}, Cys^{46}-Cys^{58}, and Cys^{59}-Cys^{64}) (M.W. 7545.4) $C_{326}H_{491}N_{89}O_{102}S_{8}$ *Ligand for Muscarinic Acetylcholine Receptor-3/4/5 (M_3/M_4/M_5) (Non-specific Ligand)*	0.1 mg vial
PNT-4195-s	**Neurotoxin NSTX-3** **(Papua New Guinean Spider, *Nephila maculata*)** 2,4-Dihydroxyphenylacetyl-L-Asparaginyl-N^{1}-(L-Arginyl-Putreanyl)-Cadaverine (M.W. 664.80) $C_{30}H_{52}N_{10}O_{7}$ Y. Aramaki, *et al.*, *Proc. Japan Acad.*, **62 (B)**, 359 (1986). *(Original)* T. Teshima, *et al.*, *Tetrahedron Letters*, **28**, 3509 (1987). *(Chem. Synthesis, Preliminary)* T. Teshima, *et al.*, *Tetrahedron,* **47**, 3305 (1991). *(Chem. Synthesis; Total Synthesis)* • This compound is distributed through Peptide Institute, Inc. under the license of Takeda, Chemical Industries, Ltd. and the Tokyo Metropolitan Institute for Neurosciences.	0.1 mg vial
PTX-4409-s	**ProTx-I** **(Tarantula, *Thrixopelma pruriens*)** Glu-Cys-Arg-Tyr-Trp-Leu-Gly-Gly-Cys-Ser-Ala-Gly-Gln-Thr-Cys-Cys-Lys-His-Leu-Val-Cys-Ser-Arg-Arg-His-Gly-Trp-Cys-Val-Trp-Asp-Gly-Thr-Phe-Ser (Disulfide bonds between Cys^{2}-Cys^{16}, Cys^{9}-Cys^{21}, and Cys^{15}- Cys^{28}) (M.W. 3987.5) $C_{171}H_{245}N_{53}O_{47}S_{6}$ *T-Type Ca^{2+} Channel / Na^{+} Channel / K^{+} Channel Blocker (Gating Modifier)* R.E. Middleton, *et al.*, *Biochemistry*, **41**, 14734 (2002). (*Original*) T. Ohkubo, *et al.*, *J. Pharmacol. Sci.*, **112**, 452 (2010). (*Pharmacol.*) B.T. Priest, *et al.*, *Toxicon*, **49**, 194 (2007). (*Review*)	0.1 mg vial

CODE	TOXINS	QTY
PTX-4450-s	**ProTx-II** **(Tarantula, Thrixopelma pruriens)** YCQKWMWTCDSERKCCEGMVCRLWCKKKLW Tyr-Cys-Gln-Lys-Trp-Met-Trp-Thr-Cys-Asp-Ser-Glu-Arg-Lys-Cys-Cys-Glu-Gly-Met-Val-Cys-Arg-Leu-Trp-Cys-Lys-Lys-Lys-Leu-Trp (Disulfide bonds between Cys^{2}-Cys^{16}, Cys^{9}- Cys^{21}, and Cys^{15}-Cys^{25}) (M.W. 3826.60) $C_{168}H_{250}N_{46}O_{41}S_{8}$ *Na^{+} Channel (Especially Nav1.7) / Ca_{2}^{+} Channel Blocker (Gating Modifier)* R.E. Middleton, *et al.*, *Biochemistry*, **41**, 14734 (2002). (*Original*) J.J. Smith, *et al.*, *J. Biol. Chem.*, **282**, 12687 (2007). (*Pharmacol.; Novel Toxin Binding Site Coupled to Nav Activation*) W.A. Schmalhofer, *et al.*, *Mol. Pharmacol*, **74**, 1476 (2008). (*Pharmacol.; Inhibition of $Na_{v}1.7$ Channels*) S.D. Dib-Hajj, *et al.*, *Trends Neurosci.*, **30**, 555 (2007). (*Review*) B.T. Priest, *et al.*, *Toxicon*, **49**, 194 (2007). (*Review*) S. Sokolov, *et al.*, *Mol. Pharmacol.*, **73**, 1020 (2008). (*Pharmacol.*)	0.1 mg vial
PTX-4435-s	**Psalmotoxin 1** **PcTX1** **(South American Tarantula, Psalmopoeus cambridgei)** (Trifluoroacetate Form) Glu-Asp-Cys-Ile-Pro-Lys-Trp-Lys-Gly-Cys-Val-Asn-Arg-His-Gly-Asp-Cys-Cys-Glu-Gly-Leu-Glu- Cys-Trp-Lys-Arg-Arg-Arg-Ser-Phe-Glu-Val-Cys-Val-Pro-Lys-Thr-Pro-Lys-Thr (Disulfide bonds between Cys^{3}-Cys^{18}, Cys^{10}-Cys^{23}, and Cys^{17}-Cys^{33}) (M.W. 4689.40) $C_{200}H_{312}N_{62}O_{57}S_{6}$ *Selective Blocker for Acid-Sensitive Ion Channel, ASIC1a* Purity Information: QE See page 3 P. Escoubas, *et al.*, *J. Biol. Chem.*, **275**, 25116 (2000). (*Original; Primary Structure & ASIC Blocking Selectivity*) P. Escoubas, *et al.*, *Protein Sci.*, **12**, 1332 (2003). (*Three-dimensional Solution Structure*) X. Chen, *et al.*, *J. Gen. Physiol.*, **127**, 267 (2006). (*Pharmacol.; State-Dependent Function*) X. Chen, *et al. J. Gen. Physiol.*, **126**, 71 (2005). (*Pharmacol.; Mechanism of Channel Inhibition*) J.K. Bubien, *et al.*, *Am. J. Physiol. Cell Physiol.*, **287**, C1282 (2004). (*Pharmacol.; Inhibition of Malignant Glioma Na^{+} Channels*) Z.-G. Xiong, *et al.*, *Cell*, **118**, 687 (2004). (*Pharmacol.; Neuroprotection in Ischemia*) S. Diochot, *et al.*, *Toxicon*, **49**, 271 (2007). (*Review*) Y.J. Qadri, *et al.*, *J. Biol. Chem.*, **284**, 17625 (2009). (*Pharmacol.*)	0.1 mg vial
PPT-4457-v	**Purotoxin- 1** **(Wolf Spider, *Geolycosa sp.*)** Gly-Tyr-Cys-Ala-Glu-Lys-Gly-Ile-Arg-Cys-Asp-Asp-Ile-His-Cys-Cys-Thr-Gly-Leu- Lys-Cys-Lys-Cys-Asn-Ala-Ser-Gly-Tyr-Asn-Cys-Val-Cys-Arg-Lys-Lys (Reported disulfide bonds between Cys^{3}-Cys^{16}, Cys^{10}-Cys^{21}, Cys^{15}-Cys^{32}, and Cys^{23}-Cys^{30}) (M.W. 3836.50) $C_{155}H_{248}N_{50}O_{48}S_{8}$ Synthetic Product *Inhibitor of P2X3 Purinoreceptors* E.V. Grishin, *et al.*, *Ann. Neurol.*, **67**, 680 (2010). (*Original; Structure & Pharmacol.*)	0.1 mg vial
PSF-4206-s	**Sarafotoxin S6b*** **(Snake, *Atractaspis engaddensis*)** Cys-Ser-Cys-Lys-Asp-Met-Thr-Asp-Lys-Glu-Cys-Leu-Tyr-Phe-Cys-His-Gln-Asp-Val-Ile-Trp (Disulfide bonds between Cys^{1}-Cys^{15} and Cys^{3}-Cys^{11}) (M.W. 2563.9) $C_{110}H_{159}N_{27}O_{34}S_{5}$ [120972-53-4] *Endothelin Related Peptide* C. Takasaki, *et al.*, *Toxicon*, **26**, 543 (1988). *(Original; Chem. Structure)* Y. Kloog,*et al.*, *Science*, **242**, 268 (1988). *(Original; Biochem.)* K. Nakajima, *et al.*, *J. Cardiovasc. Pharmacol.*, **13 (Suppl. 5)**, 58 (1989). *(Chem. Synthesis and Biological Activity)* T.X. Watanabe, *et al.*, *J. Cardiovasc. Pharmacol.*, **17**, S5 (1991). *(Pharmacol.)* * *The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.1 mg vial
PSF-4246-s	**Sarafotoxin S6c*** **(Snake, *Atractaspis engaddensis*)** Cys-Thr-Cys-Asn-Asp-Met-Thr-Asp-Glu-Glu-Cys-Leu-Asn-Phe-Cys-His-Gln-Asp-Val-Ile-Trp (Disulfide bonds between Cys^{1}-Cys^{15} and Cys^{3}-Cys^{11}) (M.W. 2515.8) $C_{103}H_{147}N_{27}O_{37}S_{5}$ [121695-87-2] *Selective ET_{B} Receptor Agonist* C. Takasaki, *et al.*, *Toxicon*, **26**, 543 (1988). *(Original; Chem. Structure)* W.G. Nayler, *et al. Biochem. Biophys. Res. Commun.*, **161**, 89 (1989). *(Pharmacol.)* D.L. Williams, Jr.,*et al.*, *Biochem. Biophys. Res. Commun.*, **175**, 556 (1991). *(Pharmacol.)* * *The biological activity of this peptide is examined by the Division of Pharmacology, Peptide Institute, Inc.*	0.1 mg vial

CODE	TOXINS	QTY
PSC-4260-s	**Scyllatoxin** **Leiurotoxin I** **(Scorpion, *Leiurus quinquestriatus hebraeus*)** Ala-Phe-Cys-Asn-Leu-Arg-Met-Cys-Gln-Leu-Ser-Cys-Arg-Ser-Leu-Gly-Leu-Leu-Gly-Lys-Cys-Ile-Gly-Asp-Lys-Cys-Glu-Cys-Val-Lys-His-NH_2 (Disulfide bonds betwen Cys^{3}-Cys^{21}, Cys^{8}-Cys^{26}, and Cys^{12}-Cys^{28}) (M.W. 3423.1) $C_{142}H_{237}N_{45}O_{39}S_7$ [142948-19-4] *Small Conductance Ca^{2+}-Activated K^+ Channel Blocker* G.G. Chicchi, *et al., J. Biol. Chem.*, **263**, 10192 (1988). *(Original)* P. Auguste, *et al.*, *Biochemistry*, **31**, 648 (1992). (Pharmacol.) J.C. Martins, *et al.*, *J. Mol. Biol.*, **253**, 590 (1995). *(S-S Bond)*	0.1 mg vial
PSK-4287-s	**Stichodactyla Toxin (ShK)** **(Sea Anemone, *Stichodactyla helianthus*)** Arg-Ser-Cys-Ile-Asp-Thr-Ile-Pro-Lys-Ser-Arg-Cys-Thr-Ala-Phe-Gln-Cys-Lys-His- Ser-Met-Lys-Tyr-Arg-Leu-Ser-Phe-Cys-Arg-Lys-Thr-Cys-Gly-Thr-Cys (Disulfide bonds between Cys^{3}-Cys^{35}, Cys^{12}-Cys^{28}, and Cys^{17}-Cys^{32}) (M.W. 4054.8) $C_{169}H_{274}N_{54}O_{48}S_7$ *Voltage Dependent K^+ Channel (A Channel) Blocker* E. Karlsson, *et al.*, *Toxicon*, **31**, 504 (1993). *(Original; in Abstract)* J. Pohl, *et al.*, *Lett. Pept. Sci.*, **1**, 291 (1994). *(S-S Bond)* O. Castañeda, *et al.*, *Toxicon*, **33**, 603 (1995). *(Pharmacol.)*	0.1 mg vial
PTT-4313-s	**Tityustoxin Kα** **(TsTX-Kα)** **(Scorpion, *Tityus serrulatus*)** Val-Phe-Ile-Asn-Ala-Lys-Cys-Arg-Gly-Ser-Pro-Glu-Cys-Leu-Pro-Lys- Cys-Lys-Glu-Ala-Ile-Gly-Lys-Ala-Ala-Gly-Lys-Cys-Met-Asn-Gly-Lys- Cys-Lys-Cys-Tyr-Pro (Reported disulfide bonds between Cys^{7}-Cys^{28}, Cys^{13}-Cys^{33}, and Cys^{17}-Cys^{35}) (M.W. 3941.7) $C_{168}H_{275}N_{49}O_{46}S_7$ *Voltage-Dependent K^+ Channel (A Channel) Blocker* T.R.Werkman, *et al.*, *Mol. Pharmacol.*, **44**, 430 (1993). *(Original)* R.S. Rogowski, *et al., Proc. Natl. Acad. Sci. U.S.A.*, **91**, 1475 (1994). *(Pharmacol.)* W.F. Hopkins, *J. Pharmacol. Exp. Ther.*, **285**, 1051 (1998). *(Pharmacol.)* K.C. Ellis, *et al.*, *Biochemistry*, **40**, 5942 (2001). *(S-S Bond)*	0.1 mg vial