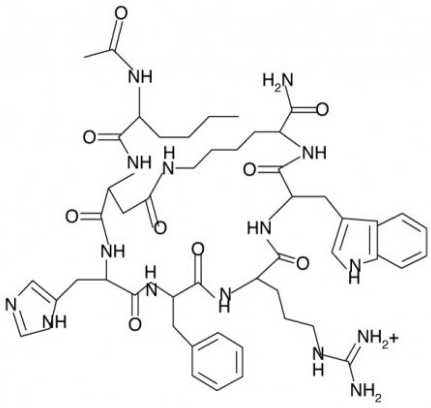
PEPTIDES INTERNATIONAL

03 Biologically Active Peptides

Peptide Macrocycles

Includes MANY NEW! items

Peptide macrocycles are ring-shaped molecules that have a wide application range from drug discovery to nanomaterials. A macrocycle generally has at least twelve atoms in a cyclic arrangement. In nature, the most common macrocyles contain 14-, 16-, or 18-atoms in their framework.[1] Using traditional synthetic methods, peptide macrocycles can be difficult to synthesize due to entropically unfavorable conditions.[2] Recent developments in synthesis have uncovered new ways to prepare peptide macrocycles, easing this difficulty. Because of their nature, they are resistant to proteolytic degradation making them good for biomolecular interactions at protein-protein interfaces.[3]



PMC-3683-PI

In addition, their capacity for fine-molecular tuning makes them excellent therapeutic agents. Despite their notoriously difficult synthetic methods, peptide macrocycles are expected to experience exponential growth due to their therapeutic viability. Some common macrocycles include Calcitonin, Octreotide, and Cyclosporine A. Peptides International offers a wide assortment of peptide macrocycles as well as having the capability to custom synthesize one to suit your research.

References

1. A.K. Yudin, *Chemical Science*, **6**, 30 (2015).
2. C.J. White & A.K. Yudin, *Nature Chemistry*, **3**, 509 (2011). (*Review*) *http://www.nature.com/nchem/journal/v3/n7/full/nchem.1062.html*
3. J.R. Frost, *et al.*, *Nature Chemistry*, Advance Online Publication (2016). *http://www.nature.com/nchem/journal/vaop/ncurrent/full/nchem.2636.html*

CODE	PRODUCT	QTY
PMC-3881-PI	**Ac-Arg-[Cys-Met-Ava-Arg-Val-Tyr-Ava-Cys]-NH_2** Ava = Aminovaleric acid (M.W. 971.22) $C_{49}H_{82}N_{16}O_{11}S_3$ (Disulfide bond between Cys^2 and Cys^9) *Melanin Concentrating Hormone Receptor 1 Antagonist* M.A. Bednarek, *et al.*, *Biochemistry*, **41**, 6383 (2002).	1 mg 5 mg
PMC-3683-PI	**Ac-Nle-*cyclo* [Asp-His-D-Phe-Arg-Trp-Lys]-NH_2** Ac-Nle-*cyclo*[DHfRWK]-NH_2; Melanotan II; MT-II (M.W. 1024.2) $C_{50}H_{69}N_{15}O_9$ [121062-08-6] *Potent Melanocortin 1, 3, 4 and 5 Receptor Agonist* F. Al-Obeidi, *et al.*, *J. Med. Chem.*, **32**,174 (1989).	1 mg 5 mg
PAD-4278-s	**Adrenomedullin (Human)** Tyr-Arg-Gln-Ser-Met-Asn-Asn-Phe-Gln-Gly-Leu-Arg-Ser-Phe-Gly-Cys-Arg-Phe-Gly-Thr-Cys-Thr-Val-Gln-Lys-Leu-Ala-His-Gln-Ile-Tyr-Gln-Phe-Thr-Asp-Lys-Asp-Lys-Asp-Asn-Val-Ala-Pro-Arg-Ser-Lys-Ile-Ser-Pro-Gln-Gly-Tyr-NH_2 (M.W. 6028.7) $C_{264}H_{406}N_{80}O_{77}S_3$ [148498-78-6] (Disulfide bond between Cys^{16}-Cys^{21}) *Hypotensive Peptide* K. Kitamura, *et al.*, *Biochem. Biophys. Res. Commun.*, **192**, 553 (1993). (*Original*) K. Kitamura, *et al.*, *Biochem. Biophys. Res. Commun.*, **194**, 720 (1993). K. Kitamura, *et al.*, *Drugs*, **49**, 485 (1995). (*Review*) D.A. Schell, *et al.*, *Trends Endocrinol. Metab.*, **7**, 7 (1996). (*Review*)	0.1 mg vial

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CODE	PRODUCT	QTY
PAP-4456-s	**Adropin (Human, 34-76)** Cys-His-Ser-Arg-Ser-Ala-Asp-Val-Asp-Ser-Leu-Ser-Glu-Ser-Ser- Pro-Asn-Ser-Ser-Pro-Gly-Pro-Cys-Pro-Glu-Lys-Ala-Pro-Pro- Pro-Gln-Lys-Pro-Ser-His-Glu-Gly-Ser-Tyr-Leu-Leu-Gln-Pro (M.W. 4499.8) $C_{190}H_{293}N_{55}O_{68}S_2$ [1802086-30-1] (Disulfide bond between Cys^1-Cys^{23}) *Regulatory Factor in Energy Homeostasis* K.G. Kumar, *et al.*, *Cell Metab.*, **8**, 468 (2008). (*Original: Primary Structure/Pharmacol.*) R.A. Kesterson, *et al.*, *Cell Metab.*, **8**, 468 (2008). (*Original: Primary Structure / Pharmacol.*)	0.1 mg vial
PAM-4219-v	**Amylin (Human)** Lys-Cys-Asn-Thr-Ala-Thr-Cys-Ala-Thr-Gln-Arg-Leu-Ala-Asn-Phe-Leu-Val-His-Ser-Ser-Asn-Asn-Phe-Gly-Ala-Ile-Leu-Ser-Ser-Thr-Asn-Val-Gly-Ser-Asn-Thr-Tyr-NH_2 IAPP: Islet Amyloid Polypeptide DAP: Diabetes-Associated Peptide (M.W. 3903.3) $C_{165}H_{261}N_{51}O_{55}S_2$ [122384-88-7] (Disulfide bond between Cys^2 and Cys^7) P. Westermark, *et al.*, *Proc. Natl. Acad. Sci. USA*, **84**, 3881 (1987). (*Original; 36th A.A. Unknown*) G.J.S. Cooper, *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, **84**, 8628 (1987). (*Original; Complete Sequence*) A. Clark, *et al.*, *Lancet*, **2**, 231 (1987). (*Pharmacol; May be Pathogenic*)	0.5 mg vial
PAF-4135-s	**ANP (Human, 1-28)** Ser-Leu-Arg-Arg-Ser-Ser-Cys-Phe-Gly-Gly-Arg-Met-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg-Tyr; A-Type (Atrial) Natriuretic Peptide (Human, 1-28) (Porcine, Bovine, Canine); ANP (1-28) (M.W. 3080.4) $C_{127}H_{203}N_{45}O_{39}S_3$ [91917-63-4] (Disulfide bond between Cys^7-Cys^{23}) P. Needleman, *et al.*, *Annu. Rev. Pharmacol. Toxicol.*, **29**, 23 (1989). (*Review*) A. Rosenzweig and C.E. Seidman, *Annu. Rev. Biochem.*, **60**, 229 (1991). (*Review*) K. Kangawa and H. Matsuo, *Biochem. Biophys. Res. Commun.*, **118**, 131 (1984). (*Original*) T.X. Watanabe, *et al.*, *Eur. J. Pharmacol.*, 147, 49 (1988). (*Pharmacol.*) P. Needleman, *et al.*, *Annu. Rev. Pharmacol. Toxicol.*, 29, 23 (1989). (*Review*)	0.1 mg vial
PBN-4212-v	**BNP-32 (Human)** B-Type (Brain) Natriuretic Peptide-32 (Human) Ser-Pro-Lys-Met-Val-Gln-Gly-Ser-Gly-Cys-Phe-Gly-Arg-Lys-Met-Asp-Arg-Ile-Ser-Ser-Ser-Ser-Gly-Leu-Gly-Cys-Lys-Val-Leu-Arg-Arg-His (M.W. 3464) $C_{143}H_{244}N_{50}O_{42}S_4$ [124584-08-3] (Disulfide bond between Cys^{10}-Cys^{26}) T. Sudoh, *et al.*, *Biochem. Biophys. Res. Commun.*, **159**, 1427 (1989). (*Original; cDNA*) Y. Kambayashi, *et al.*, *FEBS Lett.*, **259**, 341 (1990). (*Original; Isolation and Structure*) A. Rosenzweig and C.E. Seidman, *Annu. Rev. Biochem.*, **60**, 229 (1991). (*Review*)	0.5 mg vial
PCL-4051-s	**Calcitonin (Human)** Cys-Gly-Asn-Leu-Ser-Thr-Cys-Met-Leu-Gly-Thr-Tyr-Thr-Gln-Asp-Phe-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ala-Ile-Gly-Val-Gly-Ala-Pro-NH_2 (M.W. 3417.8) $C_{151}H_{226}N_{40}O_{45}S_3$ [21215-62-3] (Disulfide bond between Cys^1-Cys^7) R. Neher, *et al.*, *Helv. Chim. Acta*, **51**, 1900 (1968). (*Original*) Y. Nakagawa, *et al.*, *Peptide Chemistry 1977*, **189** (1978). (*Chem. Synthesis*)	0.1 mg vial
PCG-4160-s	**CGRP (Human)** Ala-Cys-Asp-Thr-Ala-Thr-Cys-Val-Thr-His-Arg-Leu-Ala-Gly-Leu-Leu-Ser-Arg-Ser-Gly-Gly-Val-Val-Lys-Asn-Asn-Phe-Val-Pro-Thr-Asn-Val-Gly-Ser-Lys-Ala-Phe-NH_2; α-CGRP (Human) (M.W. 3789.3) $C_{163}H_{267}N_{51}O_{49}S_2$ [90954-53-3] (Disulfide bond between Cys^2-Cys^7) H.R. Morris, *et al.*, *Nature*, **308**, 746 (1984). (*Original*)	0.1 mg vial
PCT-4229-v	**CNP-22 (Human, Porcine, Rat)** Gly-Leu-Ser-Lys-Gly-Cys-Phe-Gly-Leu-Lys-Leu-Asp-Arg-Ile-Gly-Ser-Met-Ser-Gly-Leu-Gly-Cys C-Type Natriuretic Peptide-22 (Human)(Porcine, Rat, Mouse) (M.W. 2197.6) $C_{93}H_{157}N_{27}O_{28}S_3$ [127869-51-6] (Disulfide bond between Cys^6-Cys^{22}) T. Sudoh, *et al.*, *Biochem. Biophys. Res. Commun.*, **168**, 863 (1990). (*Original; Porcine*) Y. Tawaragi, *et al.*, *Biochem. Biophys. Res. Commun.*, **175**, 645 (1991). (*cDNA Seq.; Human*) M. Kojima, *et al.*, FEBS Lett., **276**, 209 (1990). (*cDNA Seq.; Rat*) Y. Ogawa, *et al.*, *Genomics*, **24**, 383 (1994). (*Nucleotide Seq.; Mouse*) A. Rosenzweig and C.E. Seidman, *Annu. Rev. Biochem.*, **60**, 229 (1991). (*Review*)	0.5 mg vial

CODE	PRODUCT	QTY
PCN-4329-v	**Cortistatin (Rat)** CST-14 (Rat) Pro-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Ser-Ser-Cys-Lys (M.W. 1721) $C_{81}H_{113}N_{19}O_{19}S_2$ [937031-00-0] (Disulfide bond between Cys^2-Cys^{13}) *Neuronal Depressant and Sleep-Modulating Peptide* L. De Lecea, *et al.*, *Nature*, **381**, 242 (1996). (*Original*) L. De Lecea, *et al.*, *J. Neurosci.*, **17**, 5868 (1997). (*Biochem.*) M. Connor, *et al.*, *Br. J. Pharmacol.*, **122**, 1567 (1997) (*Pharmacol.*) J.F. Flood, *et al.*, *Brain Res.*, **775**, 250 (1997). (*Pharmacol.*)	0.5 mg vial
PCI-3953-PI	***cyclo* (Arg-Gly-Glu-D-Phe-Lys)** c(RGEfK) (M.W. 617.71) $C_{28}H_{43}N_9O_7$	1 mg 5 mg
IRA-3854-PI NEW!	**Cyclorasin 9A5** *cyclo*(Trp-Thr-D-Ala-Arg-Arg-Arg-D-2-Nal-Arg-4-F-Phe-D-Nle-Gln) (M.W.1586.86) $C_{75}H_{108}N_{25}O_{13}F$ *Inhibitor of K-Ras and Lung Cancer Growth. Activates Apoptosis* P. Upadhyay, *et al.*, *Angew. Chem. Int. Ed.*, **54**, 1 (2015).	1 mg 5 mg
IRA-3828-PI NEW!	**Cyclorasin 9A54** *cyclo*(Arg-Phe(3,4-Di-F)-D-Nle-Gln-Trp-Tle-D-Val-Arg-Arg-Arg-2-D-Nal) (M.W. 1644.95) $C_{79}H_{115}N_{25}O_{12}F_2$ P. Upadhyay, *et al.*, *Angew. Chem. Int. Ed.*, **54**, 1 (2015).	1 mg 5 mg
IRA-3829-PI NEW!	**Cyclorasin 12A** *cyclo*(Arg-Phe(4-F)-Arg-Trp-Arg-D-Ala-Gln-Arg-Arg-2-D-Nal) (M.W. 1528.78) $C_{71}H_{102}N_{27}O_{11}F$ P. Upadhyay, *et al.*, *Angew. Chem. Int. Ed.*, **54**, 1 (2015).	1 mg 5 mg
RGD-3750-PI NEW!	**H-dPEG™$_4$-Glu[dPEG™$_4$(*cyclo* (Arg-Gly-Asp-D-Phe-Lys))]$_2$** (M.W. 2060.35) $C_{92}H_{150}N_{22}O_{31}$ *For In Vitro Assays of Integrin αvβ3/αvβ5 Expression in Tumor Tissues* R. Gao, *et al.*, *Med Princ Pract.*, **24**, 244 (2015). Y Zheng, *et al.*, *Bioconjugate Chem*, **25**,1925 (2014).	0.5 mg 1 mg 5 mg
LUG-3871-PI NEW!	**Lugdunin** *cyclo*(D-Leu-Val-D-Val-psi[CHNH]Thz-D-Val-Trp) (M.W. 783.05) $C_{40}H_{62}N_8O_6S$ *Antibiotic Produced by* S. lugdunensis, *Shown to Inhibit Growth of* S. aureus *and Prevent its Colonization* A. Zipperer, *et al., Nature*, **535**, 511 (2016).	0.5 mg 1 mg
OCT-3738-PI	**Octreotide** D-Phe-(Cys-Phe-Trp-Lys-Thr-Cys)-Thr-ol (M.W. 1019.26) $C_{49}H_{66}N_{10}O_{10}S_2$ [83150-76-9] (Disulfide bonds between Cys^2-Cys^7) *Somatostatin Analog*	1 mg 5 mg
POS-4261-s	**Glu17,Gla21,24-Osteocalcin (Human)** Tyr-Leu-Tyr-Gln-Trp-Leu-Gly-Ala-Pro-Val-Pro-Tyr-Pro-Asp-Pro-Leu-Glu-Pro-Arg-Arg-Gla-Val-Cys-Gla-Leu-Asn-Pro-Asp-Cys-Asp-Glu-Leu-Ala-Asp-His-Ile-Gly-Phe-Gln-Glu-Ala-Tyr-Arg-Arg-Phe-Tyr-Gly-Pro-Val (Gla: L-γ-Carboxyglutamic acid) (M.W. 5885.4) $C_{268}H_{381}N_{67}O_{80}S_2$ [136461-73-9] (Disulfide bond between Cys^{23}-Cys^{29}) *Bone Gla Protein* J.W. Poser, *et al.*, *J. Biol. Chem.*, **255**, 8685 (1980). (*Original*) M. Nakao, *et al.*, *Pept. Res.*, **7**, 171 (1994). (*Chem. Synthesis*)	0.1 mg vial