

Peptide Macrocyclization

Macrocyclization as a Strategy to Improve Peptide Stability

FEBRUARY 1, 2022

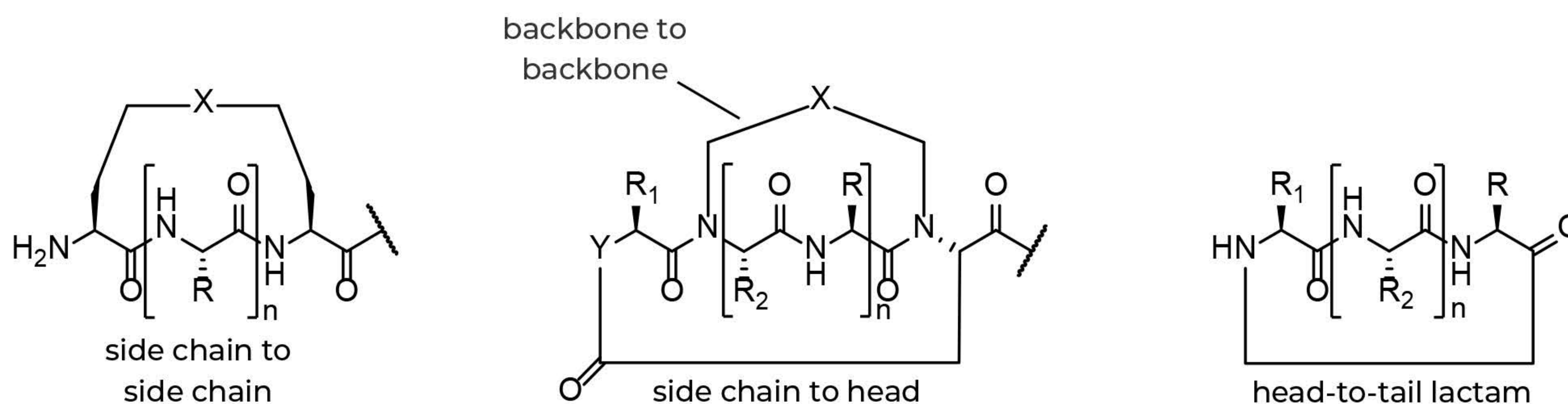
Protein-protein and protein-peptide interactions play critical roles in all types of cellular processing. Peptides are natural partners of proteins and as ligands, bind to proteins with high affinity due to their capacity to adapt to the often flexible protein surface. While peptides offer biocompatibility due to their similarity to proteins, as drug candidates they suffer drawbacks that include low plasma bioavailability, instability from proteolytic enzymes, and poor passive membrane permeability. Some success has been achieved with linear peptides, particularly with peptides that maintain α -helical secondary structures. These motifs can be introduced to stabilized α -helical motifs by common 'peptide-stapling' approaches, but stapled peptides can suffer from low bioactivity and poor solubility. Another strategy to improve peptide stability has been to modify peptides by macrocyclization.

Macrocyclization Chemistry

CPC Scientific specializes in the synthesis of complex peptide macrocycles and has the expertise to carry out a variety of ring-closure methodologies. We routinely synthesize peptide macrocycles with the following bond types:

- Multiple, site-selective disulfide bridges (Cys-Cys, Pen-Cys, and Pen-Pen)
- Amide bond cyclizations (lactam)
- Head-to-tail, head-to-sidechain, sidechain-to-tail, sidechain-to-sidechain
- Backbone-to-backbone, backbone-to-sidechain, backbone-to-head, and backbone-to-tail
- Thioether bridges
- hydrocarbon-stapled peptides
- Copper-catalyzed azide-alkyne cycloaddition (Click Chemistry)

Macrocyclic Bond Configurations



X = S-S (disulfide bridge)

X = NH-CO (lactam bridge, amide bond)

X = S (thioether bridge, sulfide bridge)

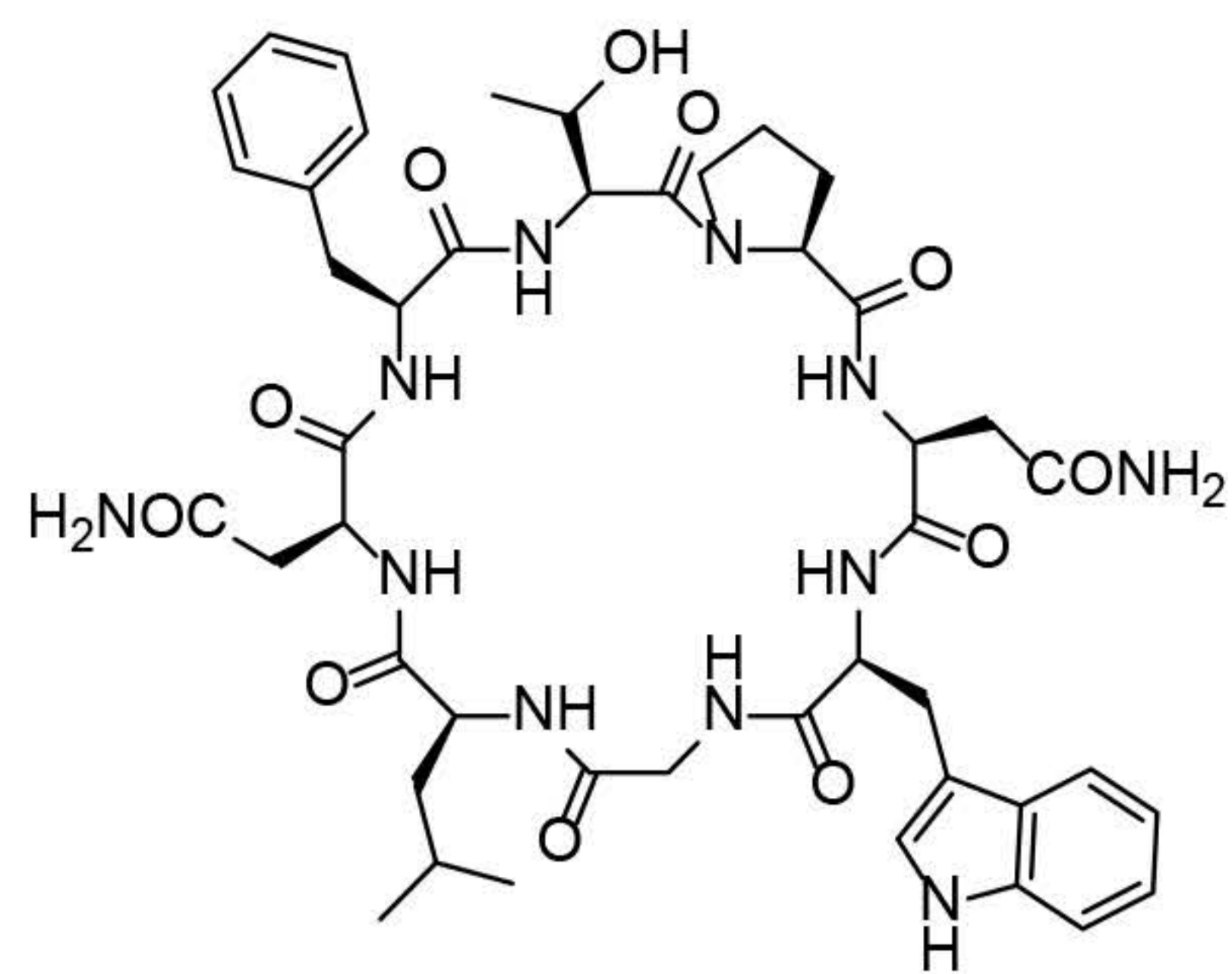
X = O-CO (lactone bridge, depsipeptide)

X = CH=CH (alkene bridge, hydrocarbon stapled)

Y = NH (lactam bridge, amide bond)

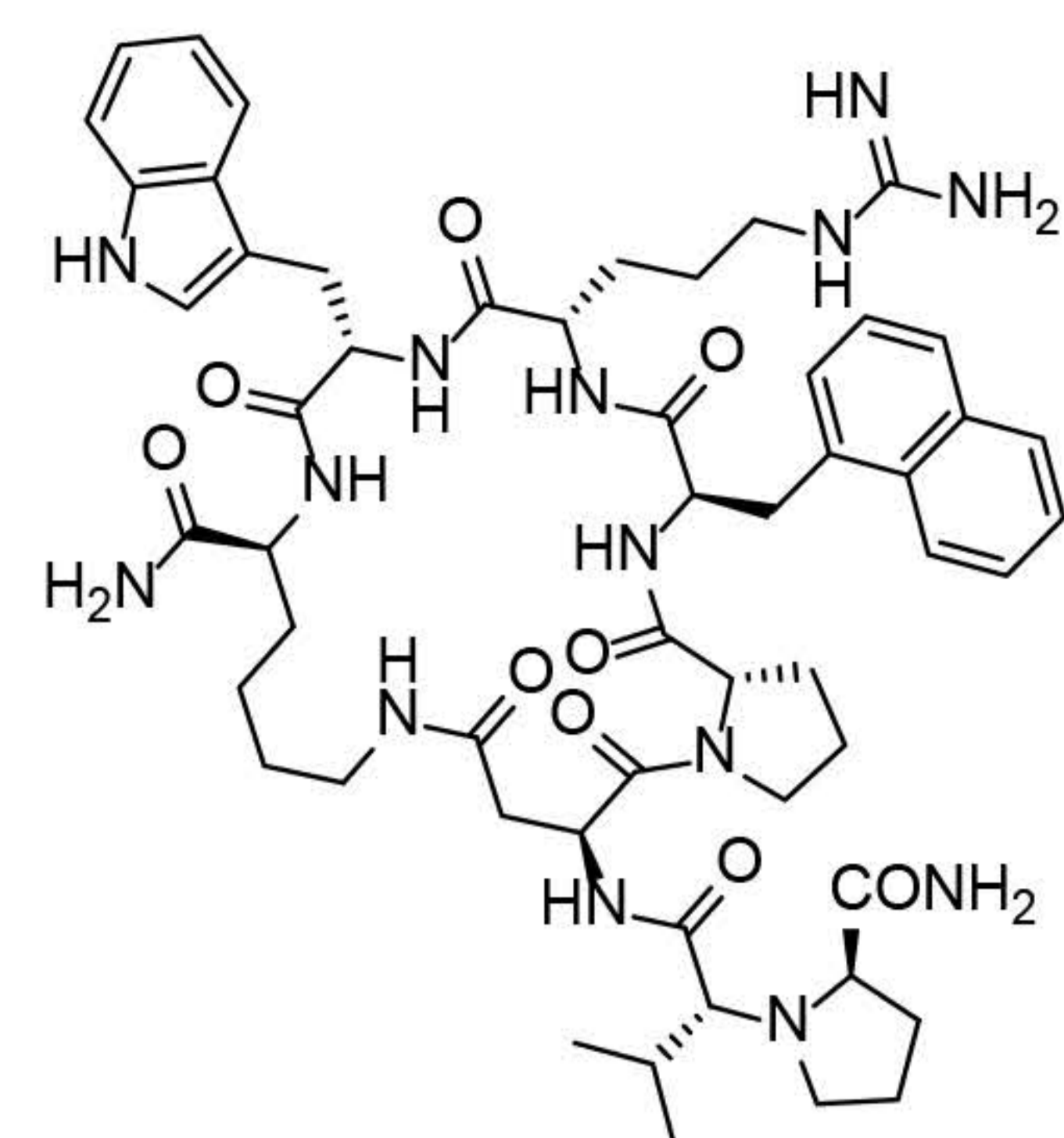
Y = O (depsipeptide)





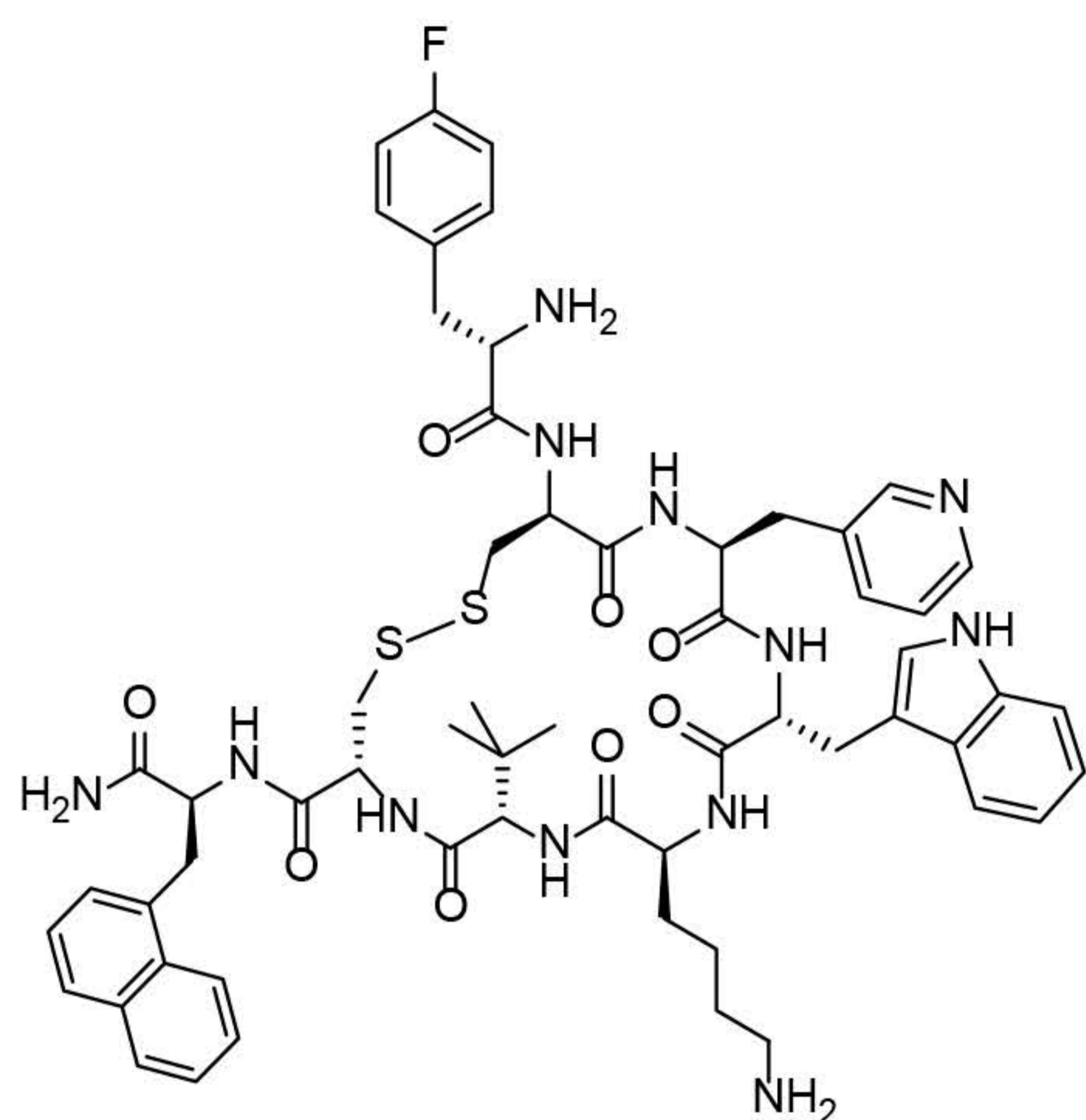
Head-to-Tail Macrocycle (Lactam)

Mogford, J.E. et al. *Circulation Res.* 79, 821 (1996)



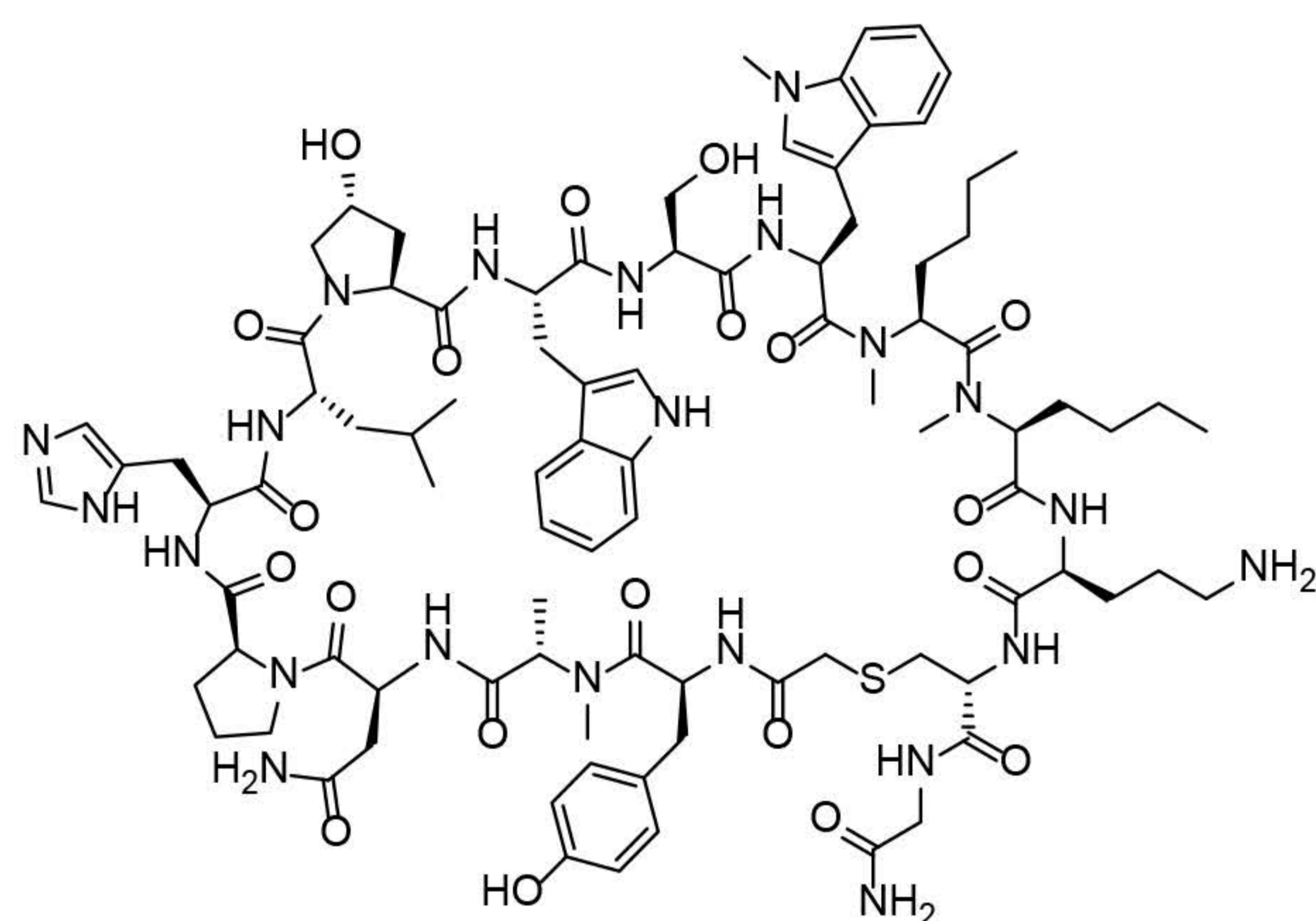
Side Chain-to-Side Chain Macrocycle (Lactam)

Axiak-Bechtel, et. al. *Pharmacology Research & Perspectives* 9, no. 3 (2021): e00777.



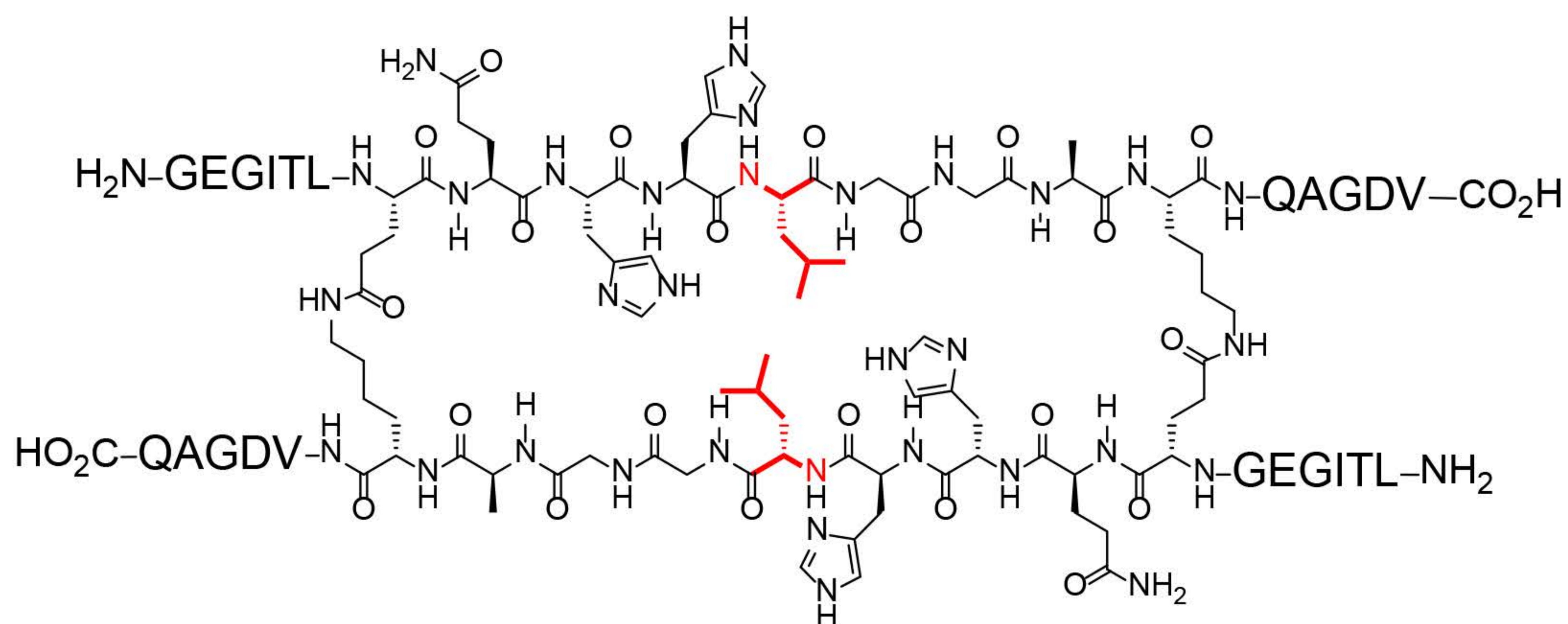
Side Chain-to-Side Chain Macrocycle (Disulfide Bridge)

"FRET substrate 5-FAM-GGfPRSGGGK(CPQ2)-PEG2-C-OH with FAM GhavamiNejad, A. et al. *Drug Delivery and Translational Research* 2021, 1-13.



Head-to-Side Chain Macrocycle (Thioether Bridge)

Rapid PD-L1 detection in tumors with PET using a highly specific peptide. Chatterjee, Samit, et al. *Biochemical and Biophysical Research Communications* 483.1 (2017): 258-263.



Side Chain to Side Chain Macrocycle (Homodimer)

Wang, Weixun, et al. *Analytical Chemistry* 84.15 (2012): 6891-6898.



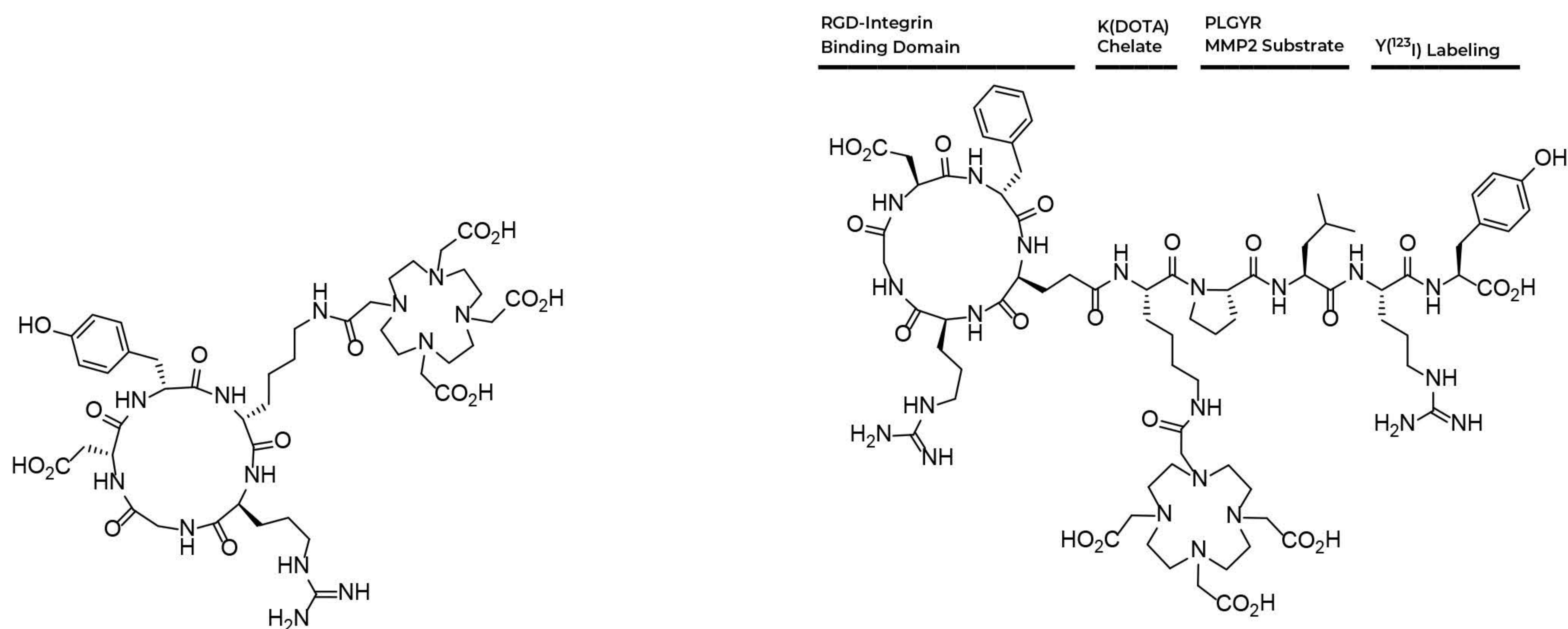
Cyclized RGD Motif

As the investigation into drug delivery platforms continues, more emphasis is being directed towards localization and cellular uptake. Cell-targeting peptides (CTPs) have emerged as effective tools for targeting cancer cells that overexpress certain receptor proteins that recognize and internalize CTPs by receptor-mediated endocytosis. Angiogenesis is a process that is dependent on vascular endothelial cell migration and infiltration in tumor metastasis and is regulated by cell adhesion receptors. Integrins are an important class of heterodimeric transmembrane proteins[1] that play key roles in cell signaling, apoptosis, and cell adhesion. Among members of the integrin family, $\alpha\beta3$ integrins are the most well studied for their importance in tumor angiogenesis and metastasis. Because $\alpha\beta3$ integrins are overexpressed in various tumor cell types (e.g., breast, prostate, and ovarian cancers) and absent in healthy tissue types, this receptor is an attractive target for cancer therapeutics (e.g., radiotracers, cancer drugs). Inhibition of $\alpha\beta3$ integrin receptors has been associated with tumor prevention and reduced tumor growth by antagonizing angiogenesis. Peptide-based antagonists that bind to $\alpha\beta3$ integrins have been developed and synthesized. One of the most potent and selective of these peptide antagonists, cyclo[Arg-Gly-Asp-D-Phe-Val] (c[RGDFV]), was developed by Kessler and co-workers.[2]

CPC Scientific has synthesized a variety of RGD motif peptides designed for multivalent molecular architectures and as conjugates to chelating moieties (e.g., DOTA, NOTA, etc.).

Cyclic RGD (cRGD) peptide-based nanomedicines have been developed for clinical use. Dual targeting liposomal systems that consist of cRGD and transferrin (TF) combined with a liposome (cRGD/ TF-LP) have established a brain glioma cascade delivery system. Crucial to this system was the discovery that cRGD peptide combined with TF enables delivery across the blood-brain barrier (BBB), allowing RGD-targeting in the brain. When combined with paclitaxel, cRGD/TF-LP forms a new system that can precisely target gliomas in the brain, a difficult area for chemotherapy medication alone to reach.[3]

Examples of RGD-Based Targeted Radiotherapeutics



DOTA-c(RGDyK).

Preliminary Therapy Evaluation of ^{225}Ac -DOTA-c(RGDyK) Demonstrates that Cerenkov Radiation Derived from ^{225}Ac Daughter Decay Can Be Detected by Optical Imaging for In Vivo Tumor Visualization. Pandya, Darpan N., et al. *Theranostics* 6.5 (2016): 698.

PET agent: cyclo(RGDfE)K-(DOTA)PLGVRY.

Initial characterization of a dually radiolabeled peptide for simultaneous monitoring of protein targets and enzymatic activity. Mebrahtu, Efrem, et al. *Nuclear Medicine and Biology* 40.2 (2013): 190-196.

RGD-Based Nanomedicines

Cyclic RGD (cRGD) peptide-based nanomedicines have been developed for clinical use. Dual targeting liposomal systems that consist of cRGD and transferrin (TF) combined with a liposome (cRGD/TF-LP) have established a brain glioma cascade delivery system. Crucial to this system was the discovery that cRGD peptide combined with TF enables delivery across the blood-brain barrier (BBB), allowing RGD-targeting in the brain. When combined with paclitaxel, cRGD/TF-LP forms a new system that can precisely target gliomas in the brain, a difficult area for chemotherapy medication alone to reach.^[3]

Another nanoparticle (NP)-based cRGD targeting system is mesoporous silica nanoparticles (MSNs), a platform that has predominantly been investigated for controlled drug release. MSN-cRGD loaded with camptothecin (CPT) have been used successfully to target and cause apoptosis in metastatic breast cancer cell lines, MDA-MB 435. By combining the MSN-cRGD platform with a fluorescent tag, it was demonstrated that increase localization and cellular uptake was occurring in this cell line.^[4]

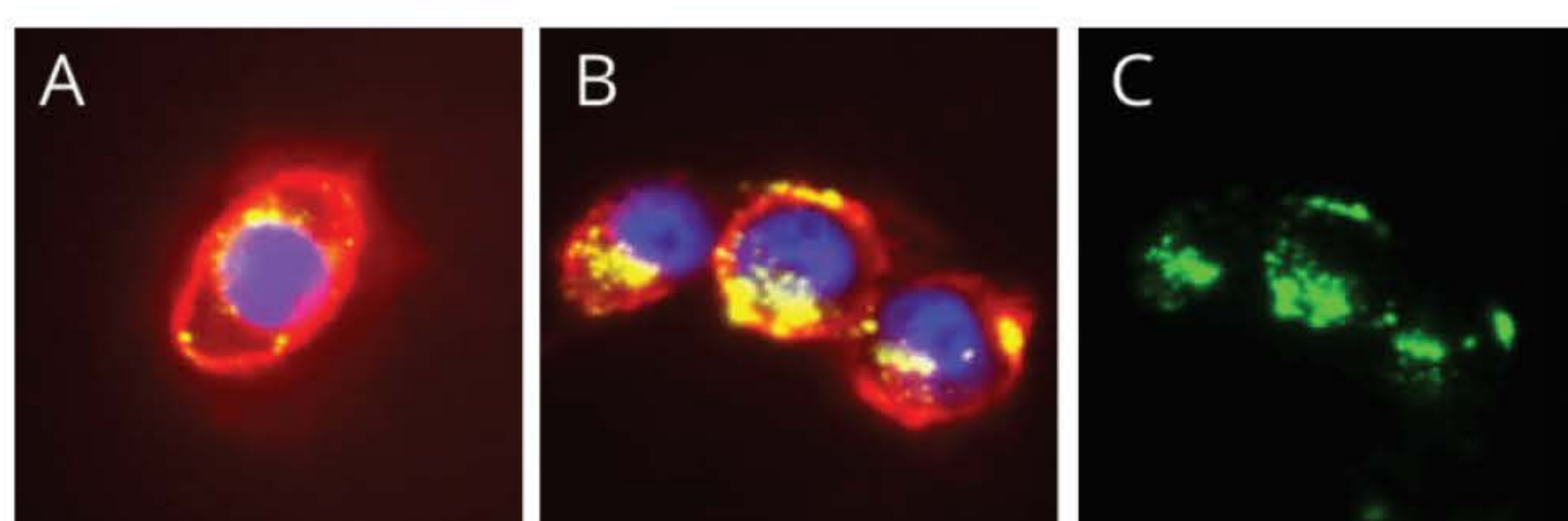


Figure.

MDA-MB 435 cell line with 20ug/mL (left) NP (control), (middle) cRGD-NP overlay images showing cellular membrane (red) and cell nucleus (blue), and (right) cRGD-NP dye (green).

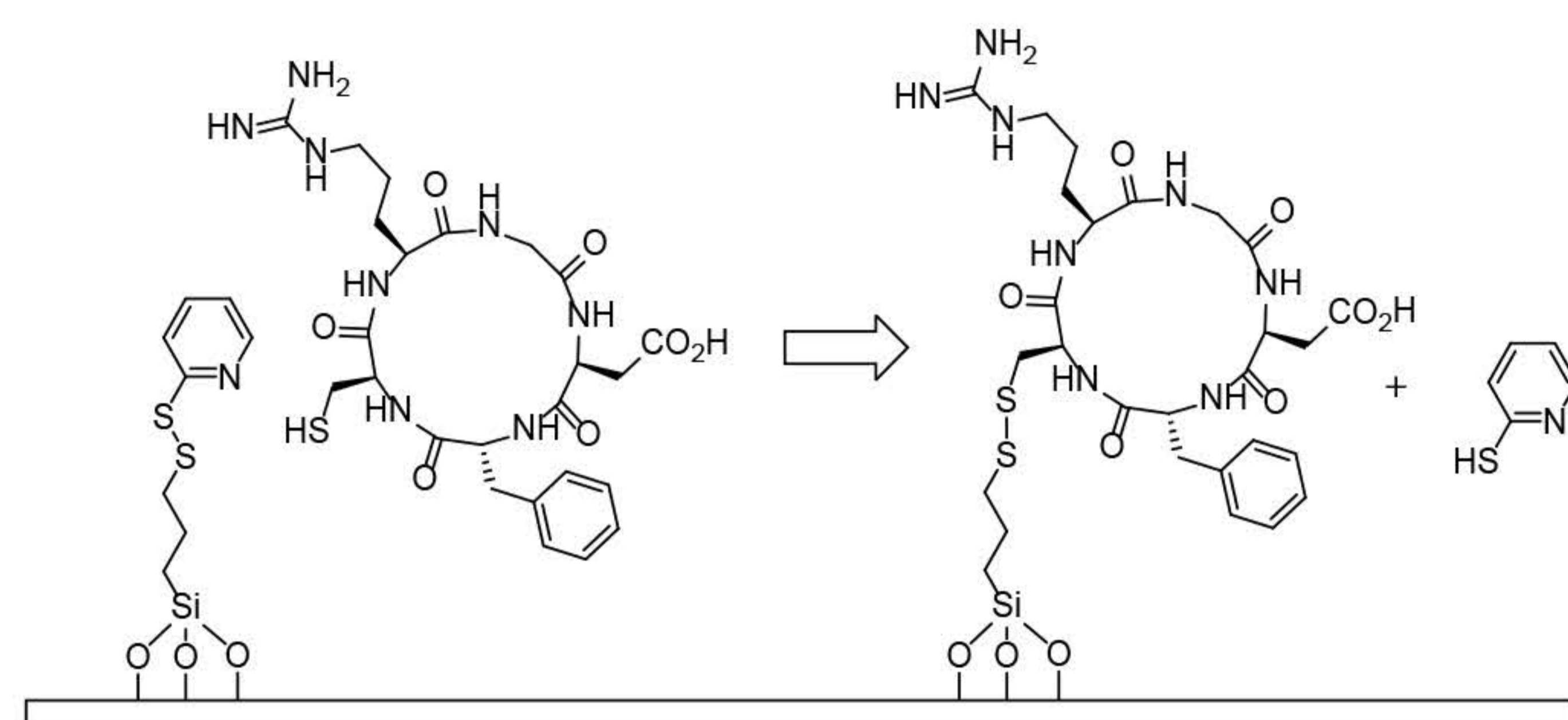


Figure.

Nanoparticle (NP)-based cRGD targeting system is mesoporous silica nanoparticles (MSNs).^[3]

PD-L1 Binding Peptide (WL12)

Peptide macrocycles that share the conformational constraints and proteolytic resistance with small molecules, may have some additional advantages in selectivity towards the target tissues and have higher potency. WL12 is a novel peptide-based PDL1 ligand with a highly specific positron emission tomography (PET) imaging agent. ^[64Cu]WL12 can be used to detect PD-L1 expression in tumor cells within 60 minutes of radio-tracer administration.

The WL12 peptide contains several structural features that make it more resistant to proteolytic metabolism that include (1) macrocyclization (thioether linkage), (2) main-chain N-methylation, and (3) the incorporation of unnatural amino acids. A DOTA chelator for radiolabeling with ⁶⁴Cu may be conveniently attached to the primary amine on the ornithine side chain. Modeling studies have suggested that the ornithine residue is not involved in binding to PD-L1.

The binding mode of WL12 with PD-L1 involves an intermolecular β -sheet in WL12 that further stabilizes the binding conformation (see below). Stabilization is gained by the addition of two hydrogen bonds formed by an antiparallel edge-to-edge interaction between two opposing strands of the macrocycle. In addition to the β -sheet stabilization, binding is also enhanced by a hydrophobic interaction between D-leucine in WL12 and Ile134 in PD-L1, in which the D-leucine side chain extends into a hydrophobic pocket of PD-L1.



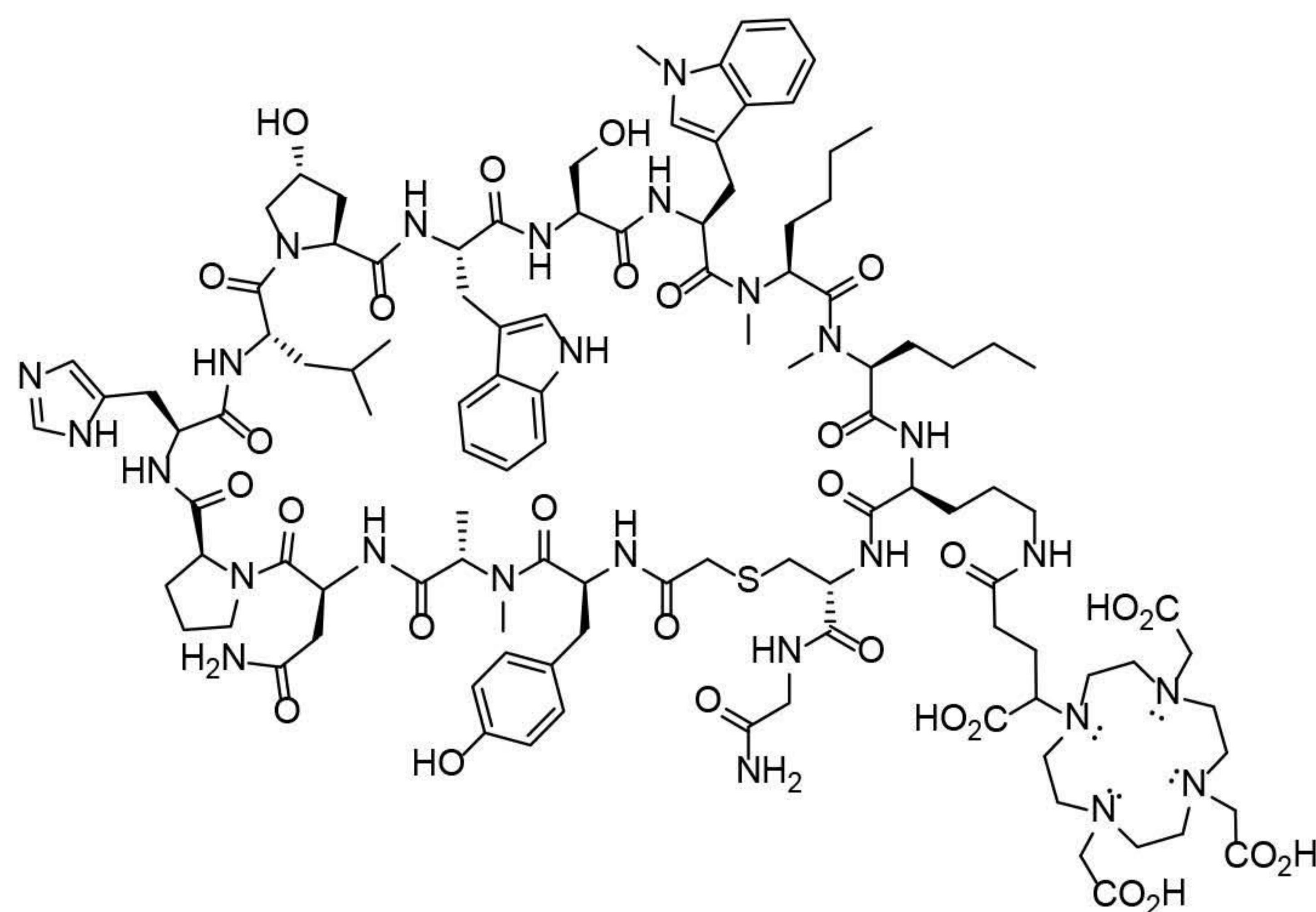


Figure.

Development of [18F]FPy-WL12 as a PD-L1 specific PET imaging peptide. Lesniak, W. G., Mease, et. al. *Molecular Imaging*, 18, (2019).

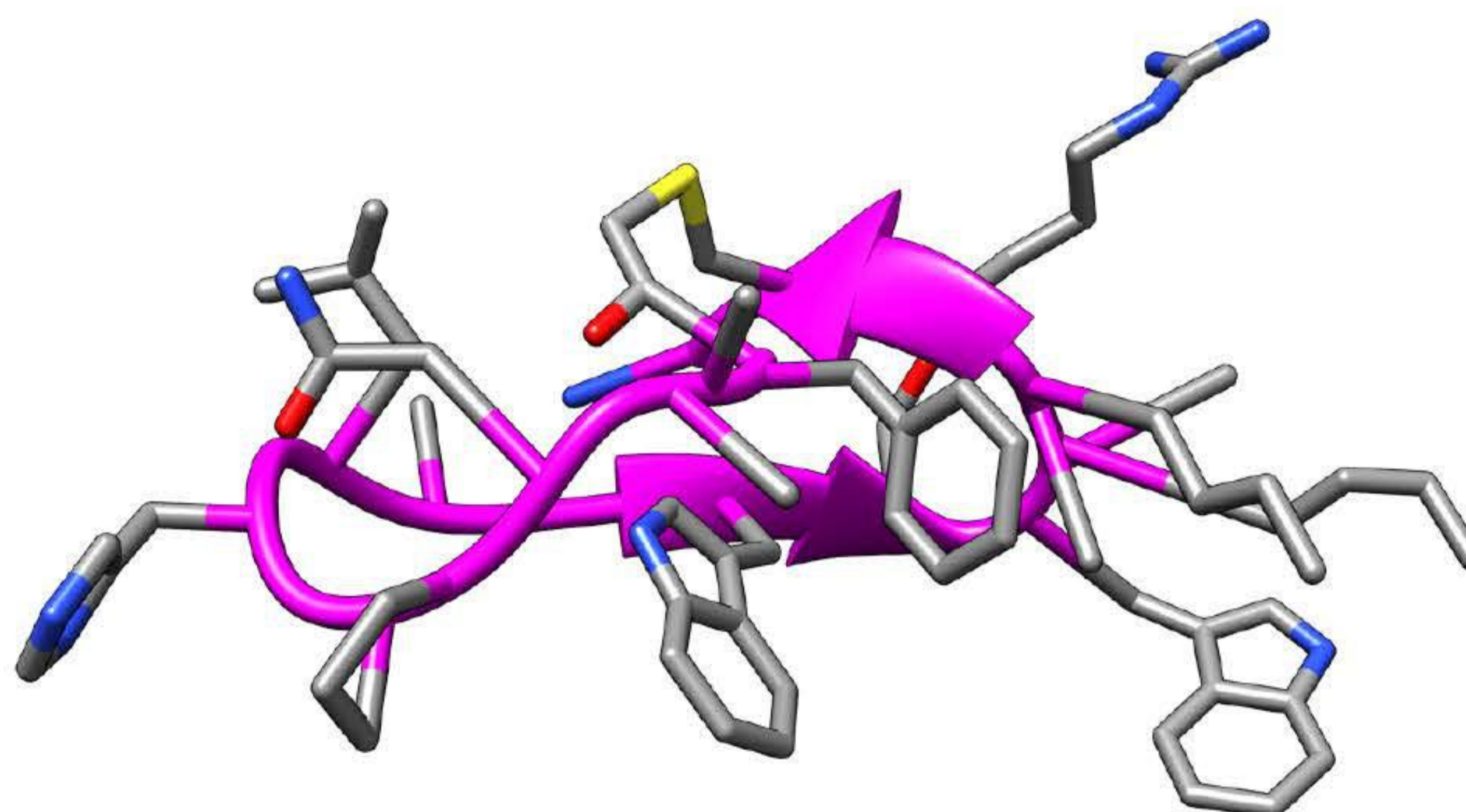


Figure.

β -sheet structure in WL12 while bound to PD-L1.

References

1. Van der Flier, Arjan, and Arnoud Sonnenberg. "Function and interactions of integrins." *Cell and tissue research* 305, no. 3 (2001): 285-298.
2. Wermuth, J., S. L. Goodman, A. Jonczyk, and H. Kessler. "Stereoisomerism and biological activity of the selective and superactive $\alpha v \beta 3$ integrin inhibitor cyclo (-RGDfV-) and its retro-inverso peptide." *Journal of the American Chemical Society* 119, no. 6 (1997): 1328-1335.
3. Ferris, Daniel P., Jie Lu, Chris Gothard, Rolando Yanes, Courtney R. Thomas, John-Carl Olsen, J. Fraser Stoddart, Fuyuhiko Tamanoi, and Jeffrey I. Zink. "Synthesis of biomolecule-modified mesoporous silica nanoparticles for targeted hydrophobic drug delivery to cancer cells." *Small* 7, no. 13 (2011): 1816-1826.

Macrocyclic Peptide Citations

TCMCB07 [a cyclic substituted melanocortin antagonist with the structure Ac- Nle- cyclo[Asp- Pro- DNaI(2')- Arg- Trp- Lys]- DVal- DPro- NH₂] was manufactured by CPC Scientific Inc. under cGMP conditions. Active pharmaceutical ingredient was dissolved in milliQ water at 10 mg ml⁻¹, sterile filtered [..]"

Axiak-Bechtel, Sandra M., Stacey B. Leach, David G. Scholten, Jessica R. Newton-Northup, Brendan J. Johnson, H. E. Durham, Kenneth A. Gruber, and Michael F. Callahan. "Pharmacokinetics and safety of TCMCB07, a melanocortin-4 antagonist peptide in dogs." *Pharmacology Research & Perspectives* 9, no. 3 (2021): e00777.

[..] matrices were functionalized with cell adhesive peptides [..] Gly-Phe-Hyp-Gly-Glu-Arg (GFOGER; CPC Scientific) via Michael-Type addition to available vinyl sulfone groups."

DePalma, S. J.; Davidson, C. D.; Stis, A. E.; Helms, A. S.; Baker, B. M., "Microenvironmental determinants of organized iPSC-cardiomyocyte tissues on synthetic fibrous matrices." *Biomaterials Science*, 2021, 9 (1), 93-107.

The conformational epitope was synthesized as a cyclic peptide with additional N-terminal residues CG and a C-terminal G to recapitulate the predicted structure of HHQK on Aβ₄₀. Peptide synthesis was performed by CPC Scientific Inc. (Sunnyvale CA, USA) [..] Cyclization was performed via a head-to-tail (C-G) amide bond and c[CGHHQKG] was then conjugated to either keyhole limpet hemocyanin (KLH) or bovine serum albumin (BSA) via maleimide-based coupling.

Gibbs, Ebrima, Judith M. Silverman, Beibei Zhao, Xubiao Peng, Jing Wang, Cheryl L. Wellington, Ian R. Mackenzie, Steven S. Plotkin, Johanne M. Kaplan, and Neil R. Cashman. "A rationally designed humanized antibody selective for amyloid beta oligomers in Alzheimer's disease." *Scientific Reports* 9, no. 1 (2019): 1-14.

Lesniak, W. G., Mease, R. C., Chatterjee, S., Kumar, D., Lisok, A., Wharram, B., ... & Nimmagadda, S. "Development of [18F] FPY-WL12 as a PD-L1 specific PET imaging peptide." *Molecular Imaging*, 18, (2019) 1536012119852189.

"DOTA-c(RGDyK) was purchased from CPC Scientific, Inc. (Sunnyvale, CA), and its purity and mass were confirmed at Wake Forest using HPLC and electrospray ionization (ESI) mass spectrometry as described below."

Pandya, Darpan N., et al. "Preliminary Therapy Evaluation of 225Ac-DOTA-c (RGDyK) Demonstrates that Cerenkov Radiation Derived from 225Ac Daughter Decay Can Be Detected by Optical Imaging for In Vivo Tumor Visualization." *Theranostics* 6.5 (2016): 698.

"PRL-2903 (PRL) was synthesized and purchased from CPC Scientific Inc. (San Jose, CA, USA)."

GhavamiNejad, A.; Lu, B.; Samarikhalaj, M.; Liu, J. F.; Mirzaie, S.; Pereira, S.; Zhou, L.; Giacca, A.; Wu, X. Y., " Transdermal delivery of a somatostatin receptor type 2 antagonist using microneedle patch technology for hypoglycemia prevention." *Drug Delivery and Translational Research* 2021, 1-13.

A head-to-tail cyclic, octapeptide analog of Locmi-AKH-I, cycloAKH (cyclo[LNFTPNWG]) was synthesized to severely restrict the conformational freedom of the AKH structure.

Abdulganiyyu, I. A.; Kaczmarek, K.; Zabrocki, J.; Nachman, R. J.; Marchal, E.; Schellens, S.; Verlinden, H.; Broeck, J. V.; Marco, H.; Jackson, G. E. "Conformational analysis of a cyclic AKH neuropeptide analog that elicits selective activity on locust versus honeybee receptor." *Insect Biochemistry and Molecular Biology* 2020, 103362.

The FC131 peptide (cyclo[2-Nal-Gly-d-Tyr-NMe-d-Orn-Arg]) was synthesized by CPC Scientific (Sunnyvale, CA).

Baba, Osamu, Andrew Elvington, Martyna Szpakowska, Deborah Sultan, Gyu Seong Heo, Xiaohui Zhang, Hannah Luehmann et al. "CXCR4-binding PET tracers link monocyte recruitment and endothelial injury in murine atherosclerosis." *bioRxiv* (2020).

PD-L1 binding peptide, WL12, was custom synthesized by CPC Scientific (Sunnyvale, CA) with >95% purity.

Chatterjee, Samit, et al. "Rapid PD-L1 detection in tumors with PET using a highly specific peptide." *Biochemical and Biophysical Research Communications* 483.1 (2017): 258-263.

Leclair, Erwan, et al. "Glucagon responses to exercise-induced hypoglycaemia are improved by somatostatin receptor type 2 antagonism in a rat model of diabetes." *Diabetologia* (2016): 1-8.

"Myristoyl-transportan-LyP-1 tandem peptide was synthesized by CPC Scientific (sequence: myr-GGWTLNSAGYLLGKINLKALAALAKKIL-GGGG-CGNKRTRGC, Cys-Cys bridge). FAM-labeled LyP-1 bearing an azide (azidoacetyl-GGG-cyclo-(EGNKRTRGK)), FAM-labeled LyP-1 bearing a cysteine (C-K(5FAM)-C6-cyclo-(CGNKRTRGC)) and transportan bearing a C-terminal cysteine (myristic acid-GGWTLNSAGYLLGKINLKALAALAKKILC) were synthesized by CPC Scientific, Inc."

Lo, Justin H., et al. "A comparison of modular PEG incorporation strategies for stabilization of peptide-siRNA nanocomplexes." *Bioconjugate Chemistry* (2016).



"The SSTR2a (PRL-2903: Fpa-cyclo[D-Cys-Pal-D-Trp-Lys-Tle-Cys]-Nal-NH2) was purchased by CPC Scientific (Sunnyvale, CA)..."

Leclair, Erwan, et al. "Glucagon responses to exercise-induced hypoglycaemia are improved by somatostatin receptor type 2 antagonism in a rat model of diabetes." *Diabetologia* (2016): 1-8.

"[RGD-Glu-(DO3A)-6-Ahx-RM2], [Cyclo-(Arg-Gly-Asp-D-Tyr-Lys)-(DO3A)-Glu-(6-Ahx-D-Phe-Gln-Trp-Ala-Val-Gly-His-Sta-Leu-NH2)], was purchased from CPC Scientific (Sunnyvale, CA, USA)."

Jiang, Zongrun, et al. "Molecular imaging investigations of a ⁶⁷Ga/⁶⁴Cu labeled...ligand,[RGD-Glu-(DO3A)-6-Ahx-RM2], targeting GRPR/αβ3 biomarkers." *Radiochimica Acta* 104.7 (2016): 499-512.

"...4 -c(GX1) 774.9 μM or HYNIC-E-[c(RGDfk)-c(GX1)] 569.5 μM (μg/mL) (CPC Scientific Inc., CA ... 5 /well) were seeded into well culture plates, and it was added the radiotracers ^{99m}Tc-HYNIC-PEG 4 -c ... For nonspecific binding assays, cold conjugate (1 mmol/L/well) was also ..."

Oliveira, E. A., and B. L. Faintuch. "Radiolabeling and biological evaluation of the GX1 and RGD-GX1 peptide sequence for angiogenesis targeting." *Nuclear Medicine and Biology* 42.2 (2015): 123-130.

"Linear and cyclic targeting sequences of the peptides CCVVVT-EG4-GRGDSP-NH2 (97%) (Cap-IRGD) and c[RGDfk(CCVVVT-EG 4)] (96%) (Cap-cRGD) were purchased from CPC Scientific."

Ng, Quinn KT, et al. "Indium-111 labeled gold nanoparticles for in-vivo molecular targeting." *Biomaterials* 35.25 (2014): 7050-7057.

"The synthesized cyclo-(RPKPQQFFGL) peptide and human angiotensin II were purchased from CPC Scientific (CPC Scientific Inc., Sunnyvale, CA, USA)."

Zekavat, Behrooz, et al. "Evidence for sequence scrambling and divergent H/D exchange reactions of doubly-charged isobaric b-type fragment ions." *J. Am. for Mass Spectrometry* 25.2 (2014): 226-236.

"DOTA-[Tyr3]octreotide and NO2A-[Tyr3]octreotide were purchased from CPC Scientific (Sunnyvale, CA)."

Lin, Mai, Michael J. Welch, and Suzanne E. Lapi. "Effects of Chelator Modifications on ⁶⁸Ga-Labeled [Tyr3] Octreotide Conjugates." *Molecular Imaging and Biology* 15.5 (2013): 606-613.

"Peptide Stable isotope-labeled internal standard peptide (Q 7 and K 15 reciprocally cross-linked dimer of LTIGEGQQHHL*GGAKQAGDV, where L* represents ¹³C 6, ¹⁵N 1 -labeled leucine) was synthesized and analyzed for purity and amino acid content (CPC Scientific)"

Wang, Weixun, et al. "Quantification of circulating D-dimer by peptide immunoaffinity enrichment and tandem mass spectrometry." *Analytical Chemistry* 84.15 (2012): 6891-6898.

"Here, we report the design and characterization of a dually radiolabeled peptide [⁶⁴Cu]c(RGDfE)K(DOTA)PLGVRY[¹²³I] for targeting cancer cells ... All peptides were purchased from CPC scientific (San Jose, CA.)"

Mebrahtu, Efrem, et al. "Initial characterization of a dually radiolabeled peptide for simultaneous monitoring of protein targets and enzymatic activity." *Nuclear Medicine and Biology* 40.2 (2013): 190-196.

"Cyclo-DEYDDPfk; Cyclo-DE(pY)LDPfk; Cyclo-DE(FCOOH)LDPfk (FCOOH= phenylalanine with a carboxyl group at the para position) were purchased either from the MCW facility of the Wisconsin Medical College or from CPC Scientific (San José, CA, USA)"

Leone, Marilisa, et al. "Design and NMR Studies of Cyclic Peptides Targeting the N-Terminal Domain of the Protein Tyrosine Phosphatase YopH." *Chemical Biology & Drug Design* 77.1 (2011): 12-19.

"To determine the IC50 values of the selected cyclic peptides, we chemically synthesized the peptides C2 and G12 in both linear and cyclic forms (CPC Scientific)."

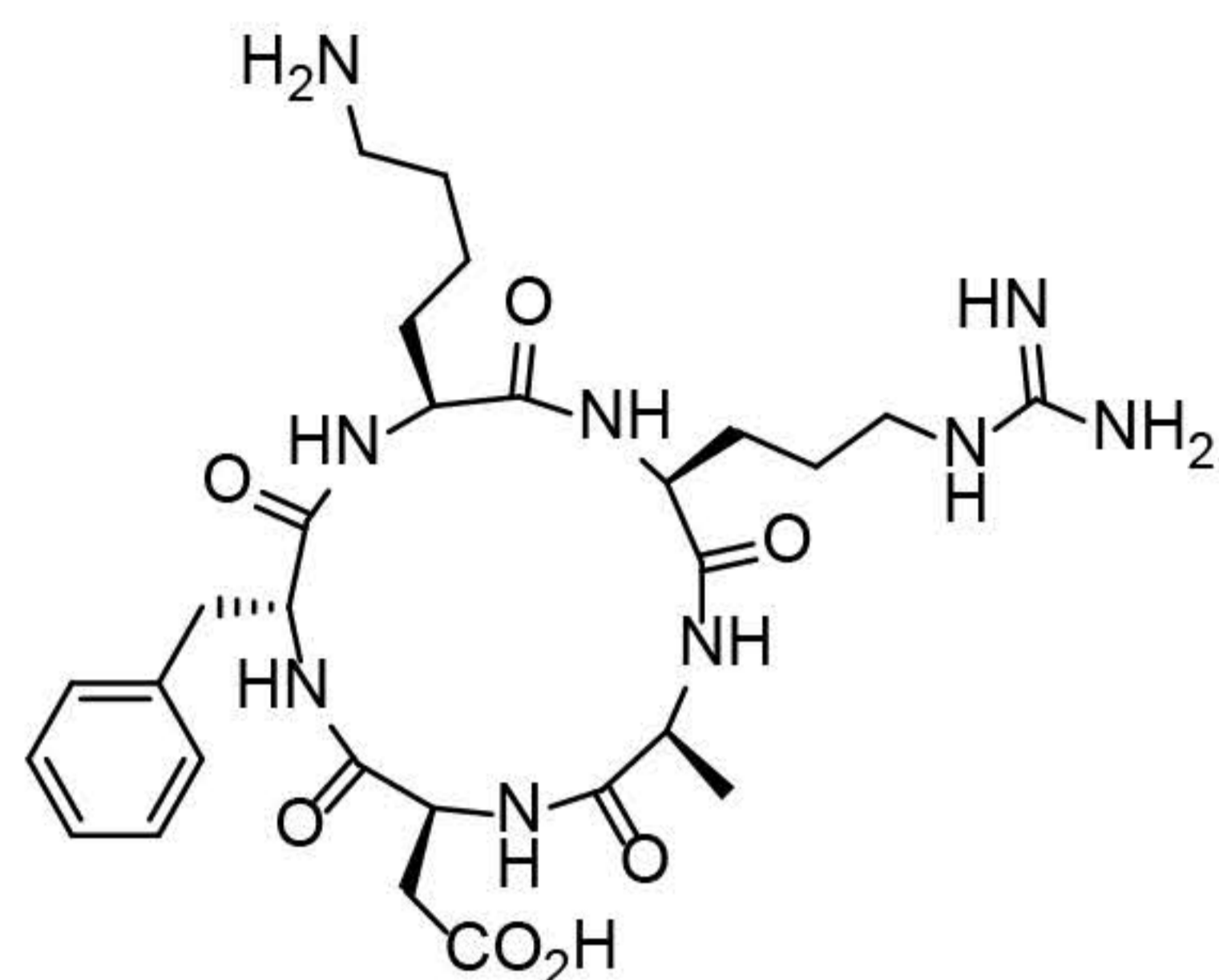
Young, Travis S., et al. "Evolution of cyclic peptide protease inhibitors." *Proceedings of the National Academy of Sciences* 108.27 (2011): 11052-11056.

Macrocycle Peptides Available from Stock

Lactam(head-to-tail)

BQ-123

Cyclo(DTrp-DAsp-Pro-DVal-Leu) (trifluoroacetate salt)



SKU	Size	Price
ENDT-008A	0.5mg	\$30
ENDT-008B	1mg	\$50

Description:

This peptide is a negative control for the cyclo (-RGDfK-), the RGD peptide. RGD peptides are modulators of cell adhesion and are recognized by several members of the integrin family. This peptide has low affinity binding to integrin peptides.

Molecular Formula: $C_{31}H_{42}N_6O_7$

Molecular Weight: 610.71

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 136553-81-6

Research Area: Cardiovascular

Keywords: lactam,
peptide macrocycle

Categories:

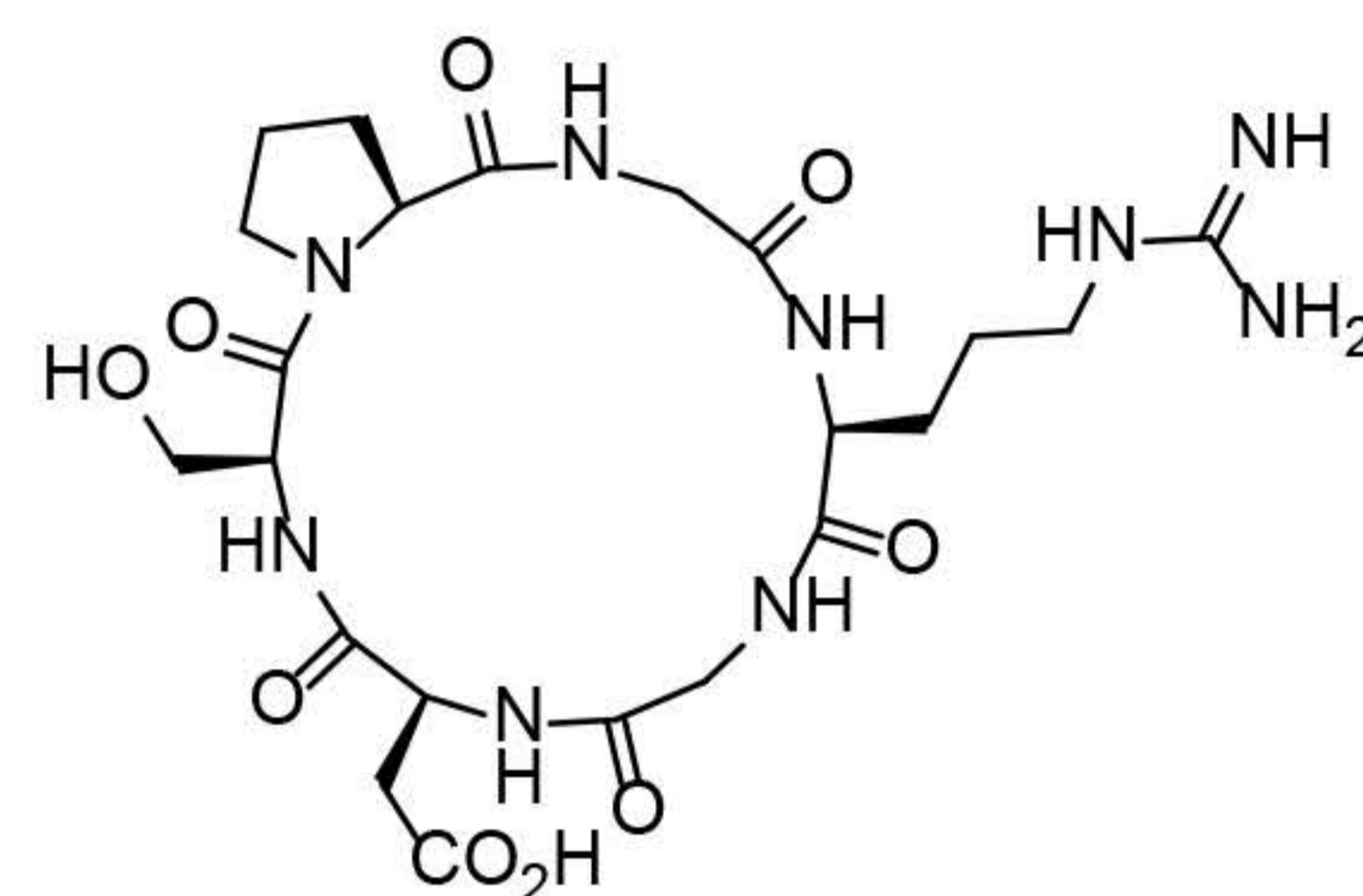
Cardiovascular, Endothelins and Related Peptides, Peptide Macrocycle

References:

C.R. Hiley et al., FEBS Letters, 311, 179 (1992)
K. Ishikawa et al., J. Med. Chem., 35, 2139 (1992)
W.G. Haynes et al., TIPS, 14, 225 (1993)

Cyclo (-GRGDSP)

Cyclo(-Gly-Arg-Gly-Asp-Ser-Pro) (trifluoroacetate salt)



SKU	Size	Price
RGDP-001A	1mg	\$55
RGDP-001B	5mg	\$218
RGDP-001C	10mg	\$405
RGDP-001D	25mg	\$825

Description:

This cyclic peptide is a potent vasodilator. It is more powerful than the linear GRGDSP in changing the vascular tone of arterioles isolated from rat cremaster muscle.

Molecular Formula: $C_{22}H_{35}N_9O_9$

Molecular Weight: 569.57

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 135432-37-0

Research Area: Cancer

Keywords: lactam,
peptide macrocycle

Categories:

Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

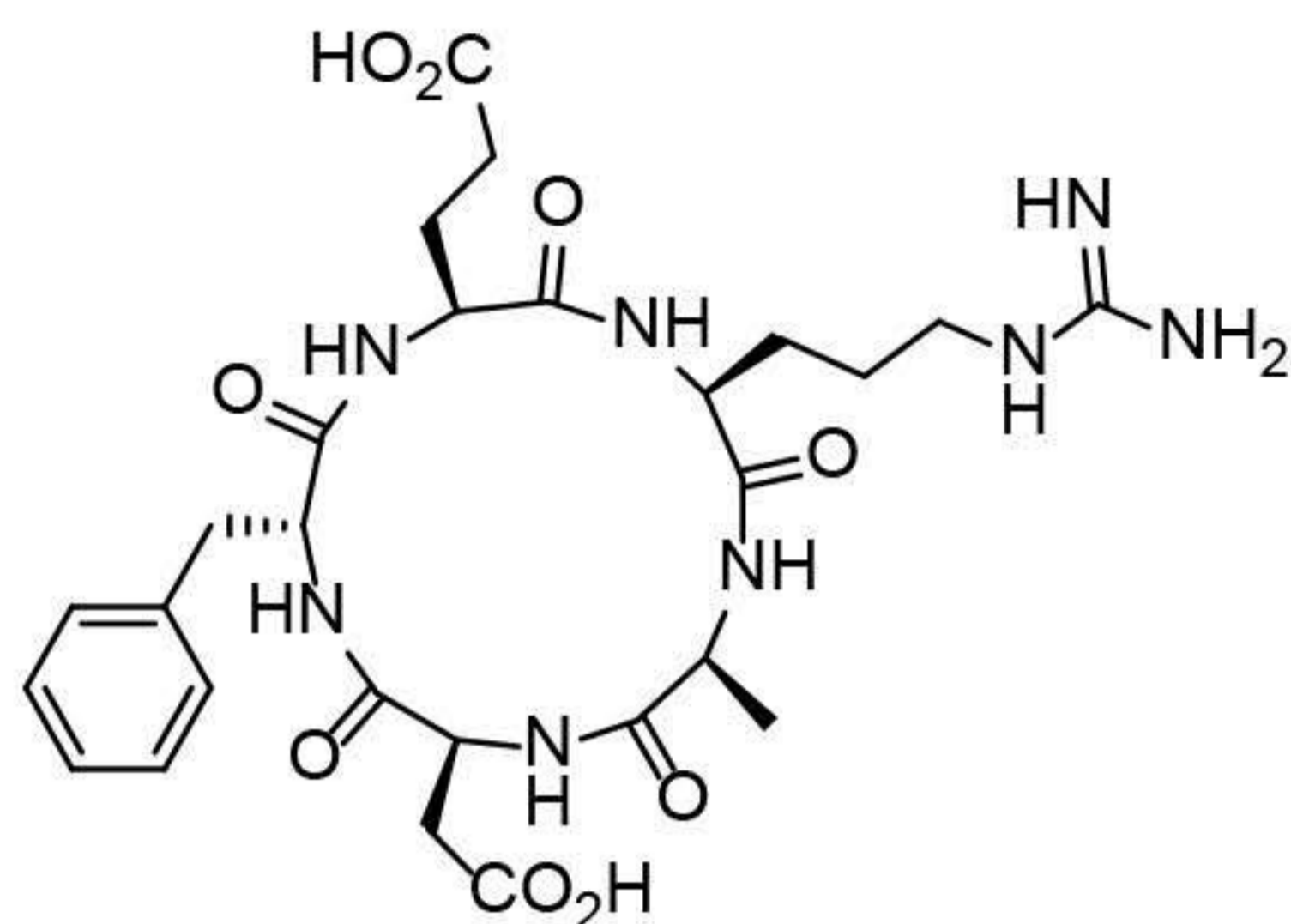
References:

Mogford, JE. et al. *Circulation Res.* 79, 821 (1996)



Cyclo (-RADfE), RGD negative control

Cyclo(-Arg-Ala-Asp-D-Phe-Glu-) (ammonium salt)



SKU	Size	Price
RGDP-002A	0.5mg	\$56
RGDP-002B	1mg	\$92
RGDP-002C	5mg	\$250

Description:

This peptide is a negative control for the cyclo (-RGDfE) peptide. RGD peptides are modulators of cell adhesion, and are recognized by several members of the integrin family. This peptide has a low affinity binding to integrin peptides.

Molecular Formula:

Molecular Weight: 618.65

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 756500-23-9

Research Area: Cancer

Keywords: lactam,
peptide macrocycle

Categories:

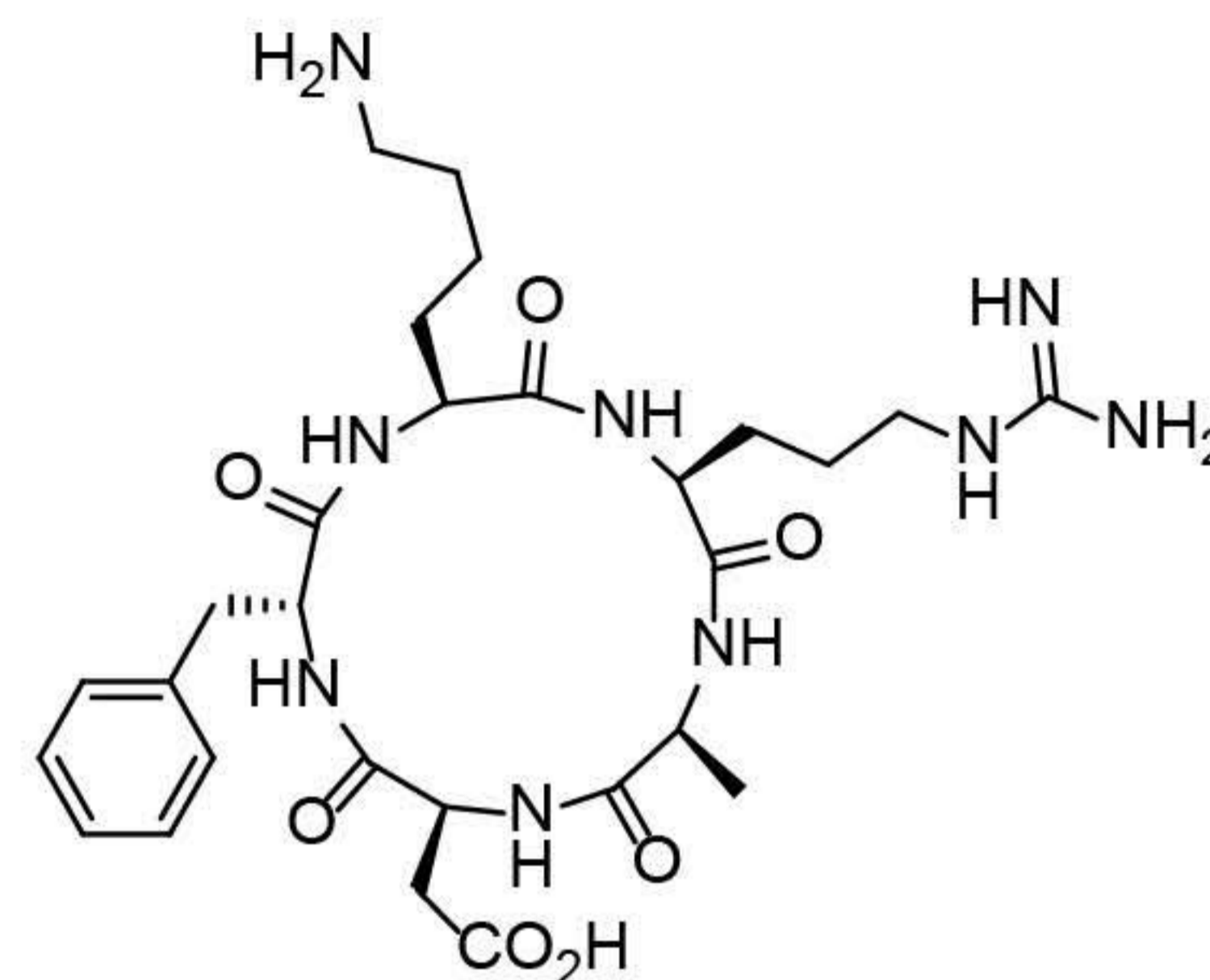
Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

References:

Wester, H. et al. *J. Nucl. Med.* 46, 1940 (2005)
Janssen, M. et al. *Canc. Res.* 62, 6146 (2002)

Cyclo (-RADfK-), RGD negative control

Cyclo(-Arg-Ala-Asp-D-Phe-Lys-) (trifluoroacetate salt)



SKU	Size	Price
RGDP-003A	1mg	\$52
RGDP-003B	5mg	\$225

Description:

This peptide is a negative control for the cyclo (-RGDfK-), the RGD peptide. RGD peptides are modulators of cell adhesion and are recognized by several members of the integrin family. This peptide has low affinity binding to integrin peptides.

Molecular Formula: C₂₈H₄₃N₉O₇

Molecular Weight: 617.70

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 756500-23-9

Research Area: Cancer

Keywords: lactam,
peptide macrocycle

Categories:

Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

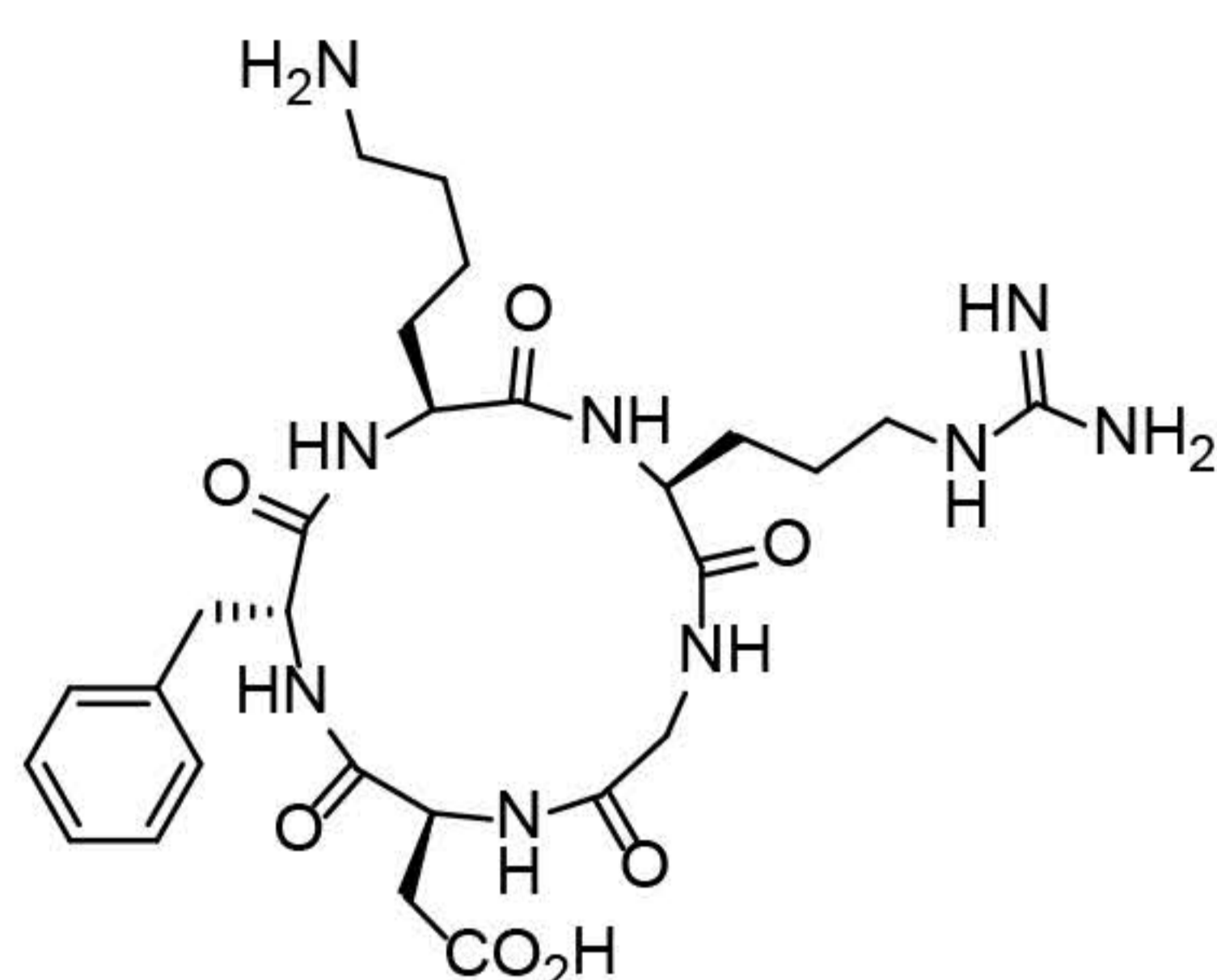
References:

Wester, H. et al. *J. Nucl. Med.* 46, 1940 (2005)
Janssen, M. et al. *Canc. Res.* 62, 6146 (2002)



Cyclo (-RGDfK)

Cyclo(-Arg-Gly-Asp-D-Phe-Lys) (trifluoroacetate salt)



SKU	Size	Price
RGDP-002A	1mg	\$62
RGDP-002B	5mg	\$225
RGDP-002C	25mg	\$960

Description:

In one study where this peptide was labeled with ¹²⁵I, it was found to bind specifically and with high affinity to α v β 3 receptors on neovascular blood vessel sections of different major human cancers. The integrin α (IIb) β (3)-specific cyclic hexapeptide contains an Arg-Gly-Asp (RGD) sequence.

Molecular Formula: C₂₇H₄₁N₉O₇

Molecular Weight: 603.67

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 161552-03-0

Research Area: Cancer

Keywords: lactam,
peptide macrocycle

Categories:

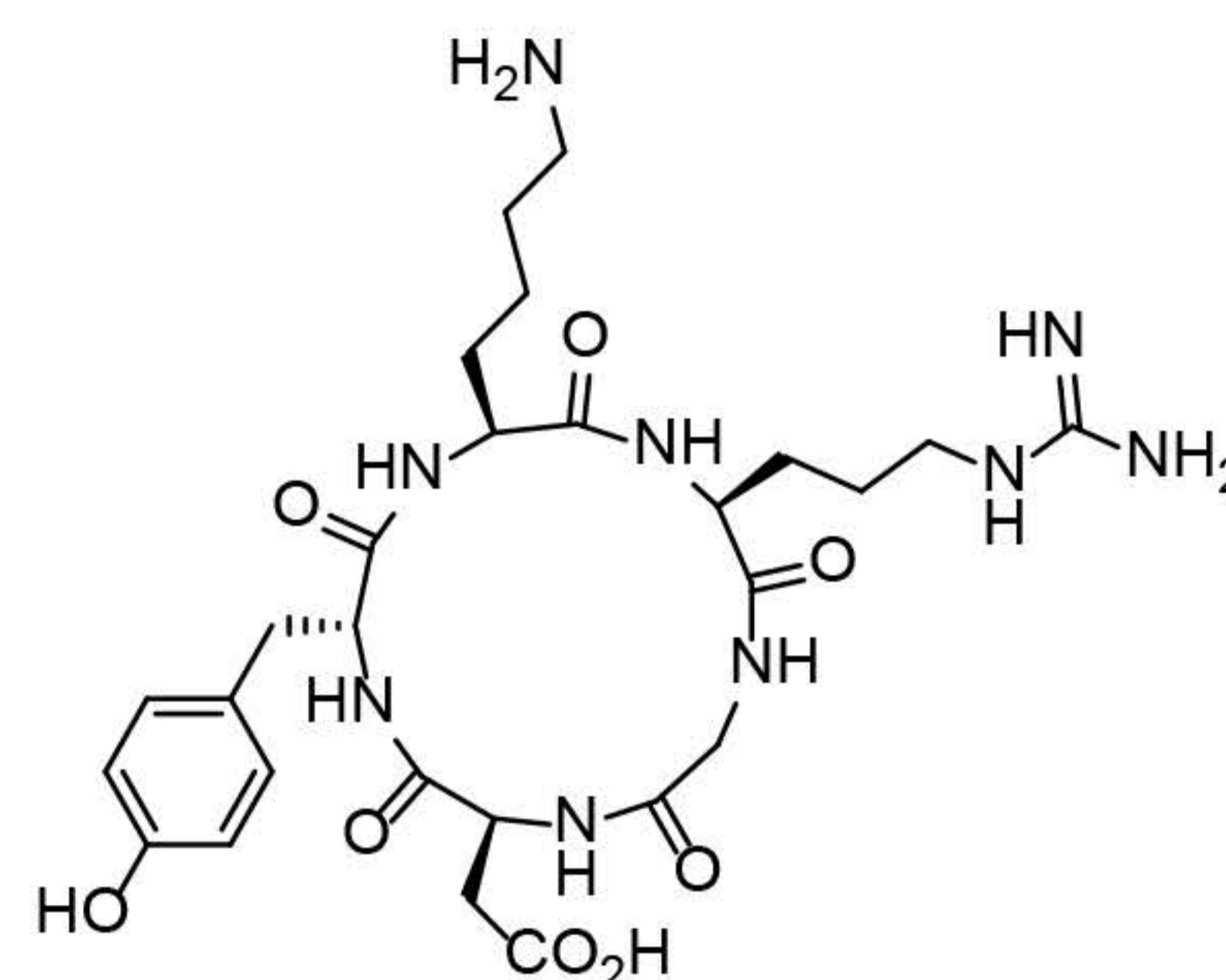
Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

References:

Van Hagen, PM. et al. *Int. J. Cancer* 90, 186 (2000)
 Hu, B. et al. *Biochem.* 39, 2284 (2000).
 M. Kantlehner, et al., *Chembiochem.*, 1, 107 (2000)
 R.J. Kok, et al., *Bioconj. Chem.*, 13, 128 (2002)

Cyclo (-RGDyK)

Cyclo(-Arg-Gly-Asp-D-Tyr-Lys) (trifluoroacetate salt)



SKU	Size	Price
RGDP-005A	1mg	\$57
RGDP-005B	5mg	\$171

Description:

α v β 3 Integrin Binding RGD Peptide RGD Tumor Targeting and Tumor Imaging Peptide.

Molecular Formula: C₂₇H₄₁N₉O₈

Molecular Weight: 619.68

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 217099-14-4

Research Area: Cancer

Keywords: lactam,
peptide macrocycle

Categories:

Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

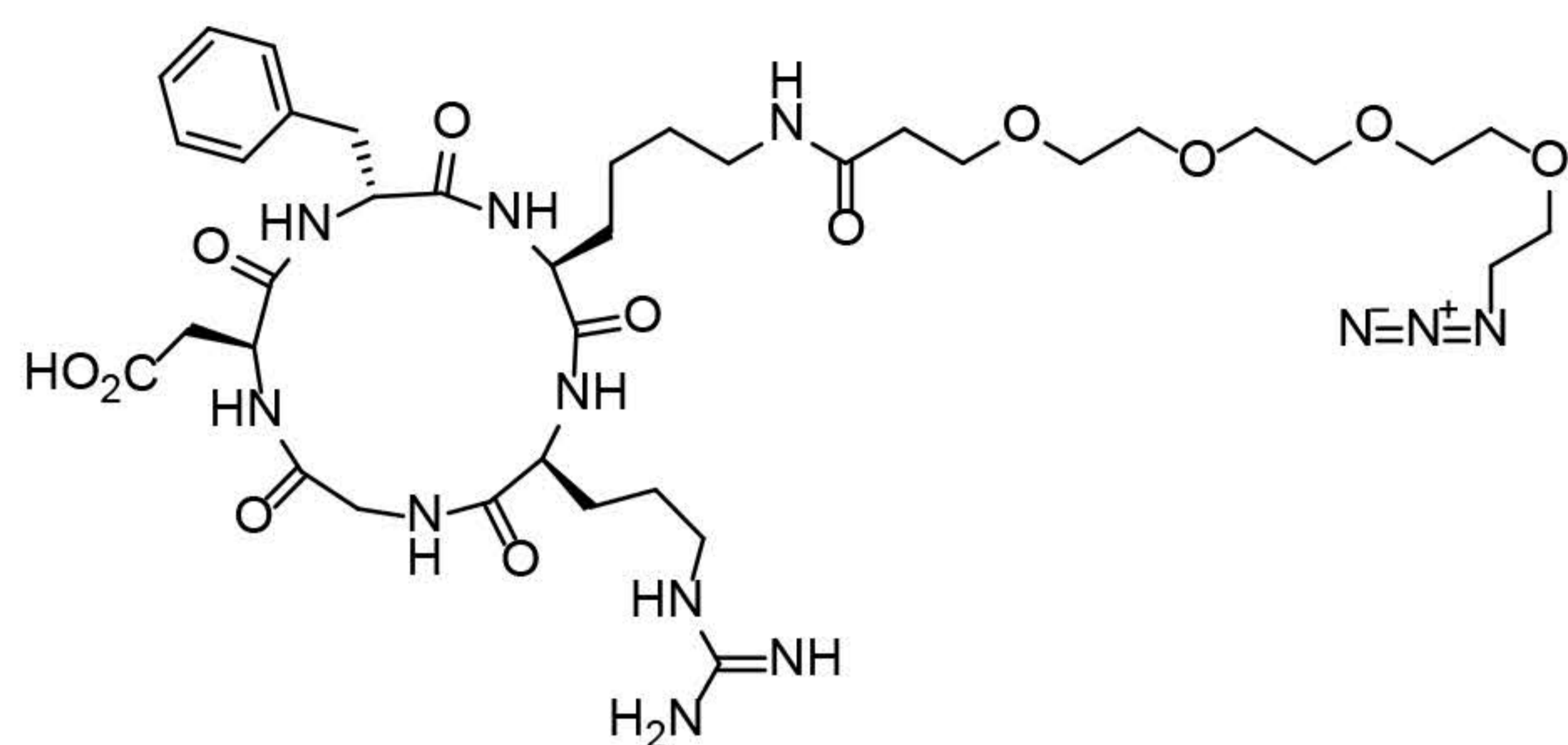
References:

R. Haubner, et al., *J. Nuclear Med.*, 42, 326 (2001).
 X. Chen, et al., *Nucl. Med. Biol.*, 31, 179 (2004).
 X. Chen, et al., *Cancer Res.*, 64, 8009 (2004).



Cyclo (-RGDfK) Azido-PEG4

Cyclo(-Arg-Ala-Asp-D-Phe-Glu-) (ammonium salt)



SKU	Size	Price
RGDP-011A	1mg	\$156

Description:

This peptide binds specifically and with high affinity to α v β 3 receptors on neovascular blood vessel sections of different major human cancers. The integrin α (IIb) β (3)-specific cyclic hexapeptide contains an Arg-Gly-Asp (RGD) sequence.

Molecular Formula: $C_{38}H_{60}N_{12}O_{12}$

Molecular Weight: 876.96

Storage Conditions: -20 ± 5 °C

Research Area: Cancer

Keywords: lactam,
peptide macrocycle

Categories:

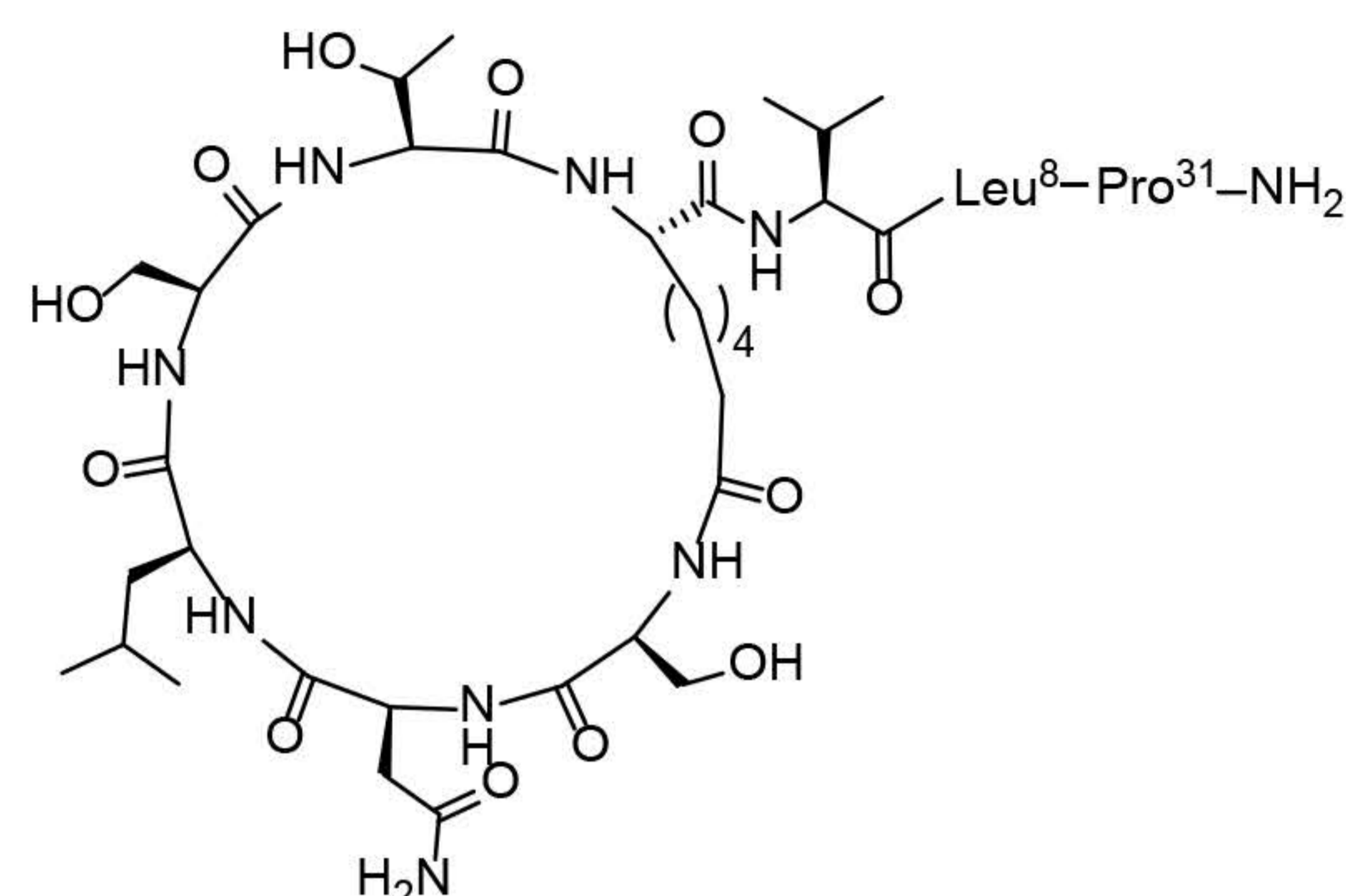
Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

References:

Van Hagen, PM. et al. *Int. J. Cancer* 90, 186 (2000)
Hu, B. et al. *Biochem.* 39, 2284 (2000)

Elcatonin

H-Ser-Asn-Leu-Ser-Thr-Asu-Val-Leu-Gly-Lys-Leu-Ser-Gln-Glu-Leu-His-Lys-Leu-Gln-Thr-Tyr-Pro-Arg-Thr-Asp-Val-Gly-Ala-Gly-Thr-Pro-NH₂ (trifluoroacetate salt)
(Peptide bond Ser1 and Asu6 bridge)



SKU	Size	Price
OSTP-013A	0.5mg	\$125
OSTP-013B	1mg	\$195

Description:

Carbocalcitonin, the amino-suberic acid analog of eel calcitonin, has all the biological properties of the corresponding natural calcitonin. The substitution of the disulfide bond of natural calcitonins with an ethylene bridge in the 1-7 N-terminal position gives elcatonin greater stability and excellent tolerability when used in vivo.

Molecular Formula: $C_{147}H_{242}N_{42}O_{47}$

Molecular Weight: 3363.82

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 60731-46-6

Research Area: Osteoporosis

Keywords: hormone, lactam,
peptide macrocycle

Categories:

Calcitonin and CGRPs, Hormonal, Osteoporosis

References:

A. Caniggia et al., *Minerva Medica*, 74, 993 (1983)
Italian Osteoporosis Network, *Current Therapeutic Res.*, 45, 502 (1989)

Astressin

H-DPhe-His-Leu-Leu-Arg-Glu-Val-Leu-Glu-Nle-Ala-Arg-Ala-Glu-Gln-Leu-Ala-Gln-cyclo(Glu-Ala-His-Lys)-Asn-Arg-Lys-Leu-Nle-Glu-Ile-Ile-NH₂ (trifluoroacetate salt)



SKU	Size	Price
CRFS-003A	0.5mg	\$95
CRFS-003B	1mg	\$165

Description:

A new CRF antagonist (cyclo(30/33)) that, when injected into the CSF at low doses (1-10ug), results in antagonistic action against CRF and stress-related alterations of gastrointestinal motor function, without an intrinsic effect in these in vivo systems.

Molecular Formula: C₁₆₁H₂₆₉N₄₉O₄₂

Molecular Weight: 3563.24

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 170809-51-5

Research Area: Neuropeptides

Keywords: hormone, lactam, peptide macrocycle

Categories:

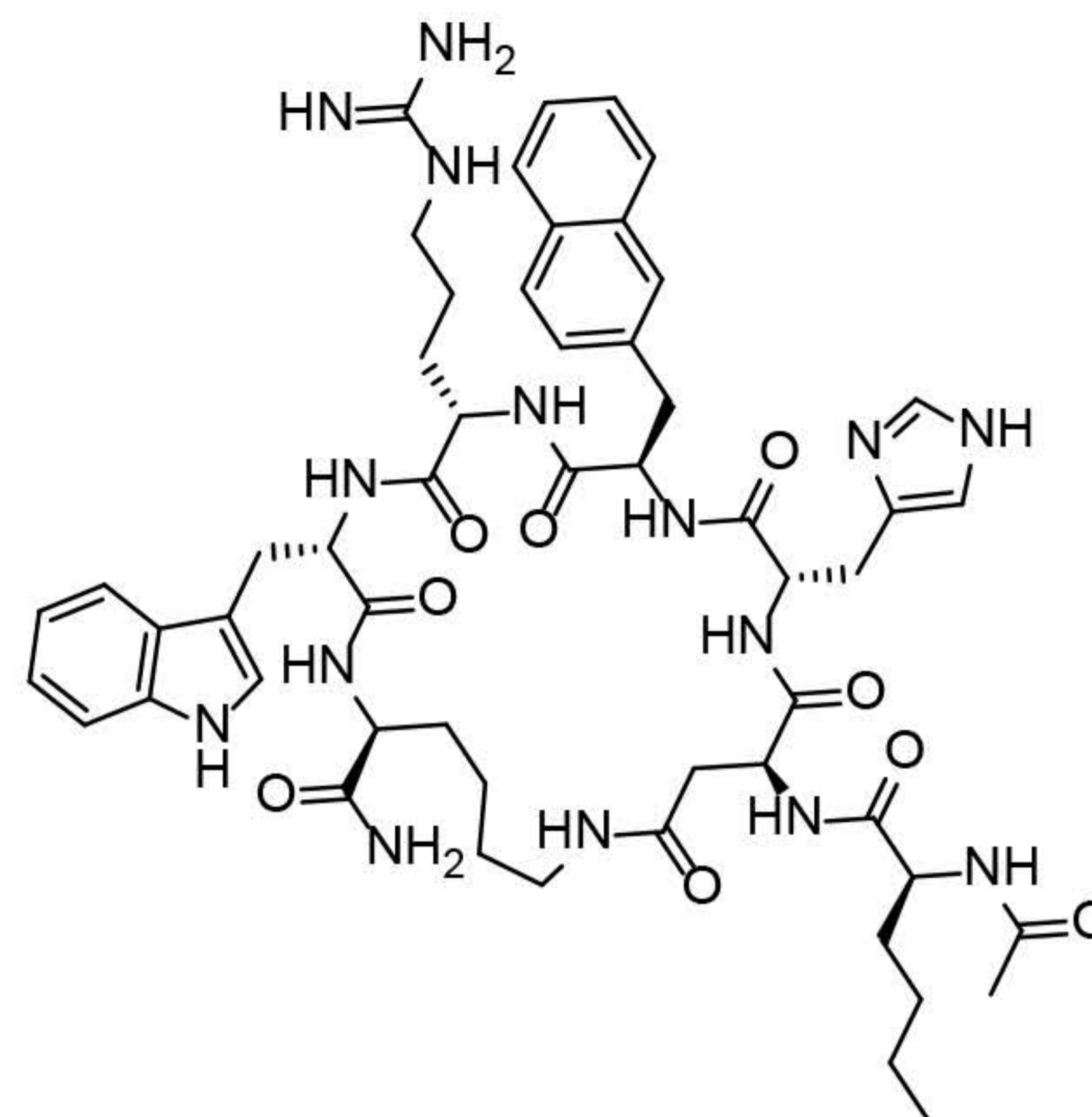
Corticotropin Releasing Factors, Hormonal, Neuropeptides, Peptide Macrocycle

References:

V. Martinez et al., *J. Pharmacol. Exp. Ther.*, 280(2), 754 (1997)

Acetyl-(Nle4,Asp5,D-2-Nal7,Lys10)-cyclo-alpha-MSH (4-10) amide

Ac-Nle-cyclo(-Asp-His-D-2-Nal-Arg-Trp-Lys-NH₂) (trifluoroacetate salt)



SKU	Size	Price
MSH-002A	1mg	\$88
MSH-002B	5mg	\$313

Description:

Screening analogs of the cyclic lactam melanocortin agonist MTII led to the identification of the agoutimimetic SHU9119. The cyclopeptide SHU9119 shares pharmacological properties with the agouti peptide in that it is a potent antagonist of the melanocortin-4 receptor and a less potent antagonist of the melanocortin-3 receptor.

Molecular Formula: C₅₄H₇₁N₁₅O₉

Molecular Weight: 1074.25

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 168482-23-3

Research Area: Hormonal

Keywords: hormone, lactam, peptide macrocycle

Categories:

Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

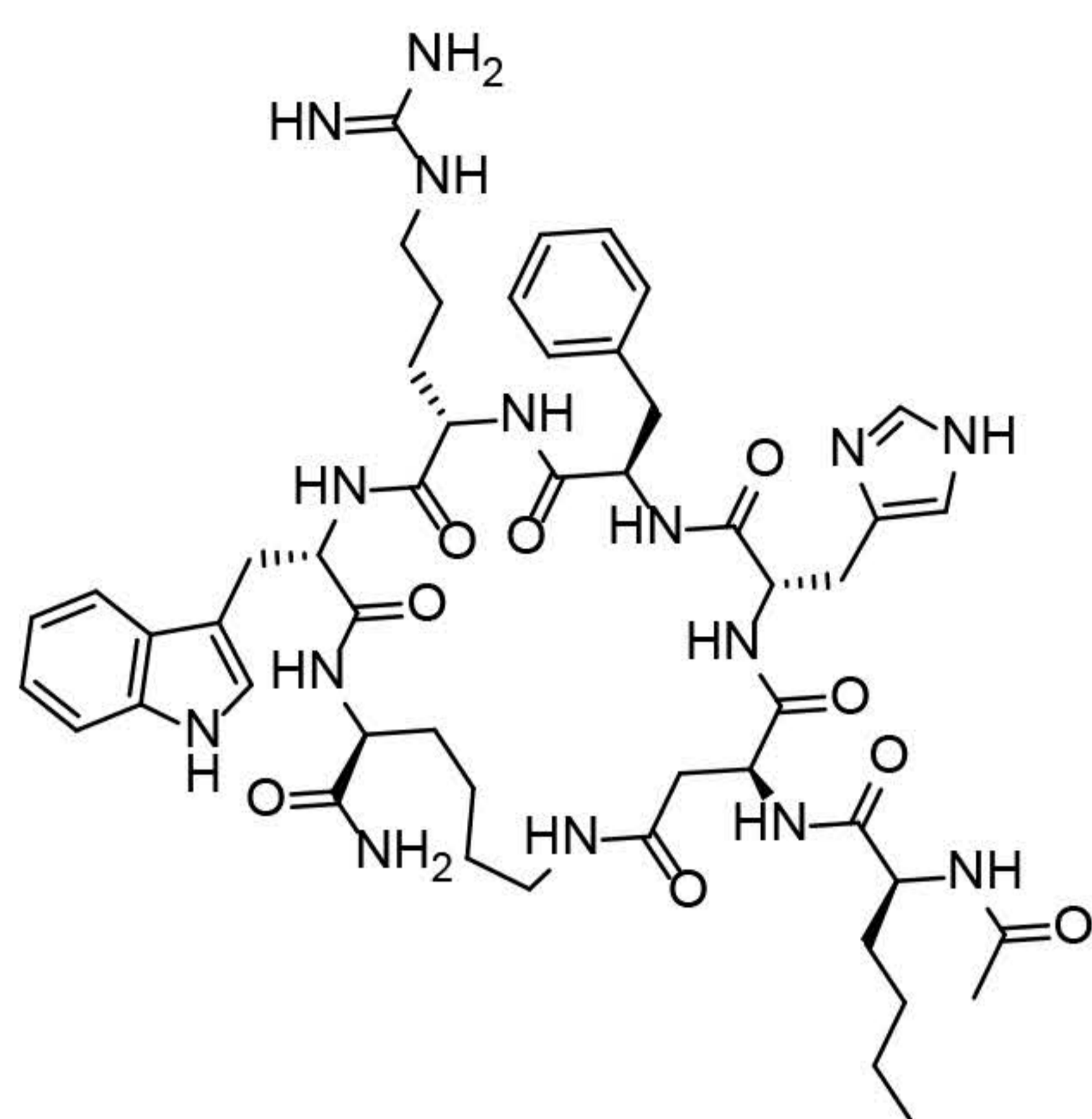
References:

V.J.Hruby et al., *J. Med. Chem.*, 38, 3454 (1995)
W.Fan et al., *Nature*, 385, 165 (1997)



(Ac-Nle4, Asp5, DPhe7, Lys10)-Cyclo-alpha-MSH (4-10) amide, MTII

Ac-Nle-cyclo(Asp-His-DPhe-Arg-Trp-Lys-NH₂)
(Peptide beta bond Asp3 and Lys8 bridge)
(acetate, trifluoroacetate salt)



SKU	Size	Price
SOMA-003A	1mg	\$50
SOMA-003B	2mg	\$95

Description:

Cyclic MSH analog is a potent full agonist of the melanocortin-3 and melanocortin-4 receptors (MC3-R and MC4-R). MTII is a useful tool in the study of the agouti obesity syndrome and the role of melanocortinergic neurons in feeding.

Molecular Formula: C₅₀H₆₉N₁₅O₉

Molecular Weight: 1024.19

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 121062-08-6

Research Area: Gastrointestinal

Keywords: hormone, lactam, peptide macrocycle

Categories:

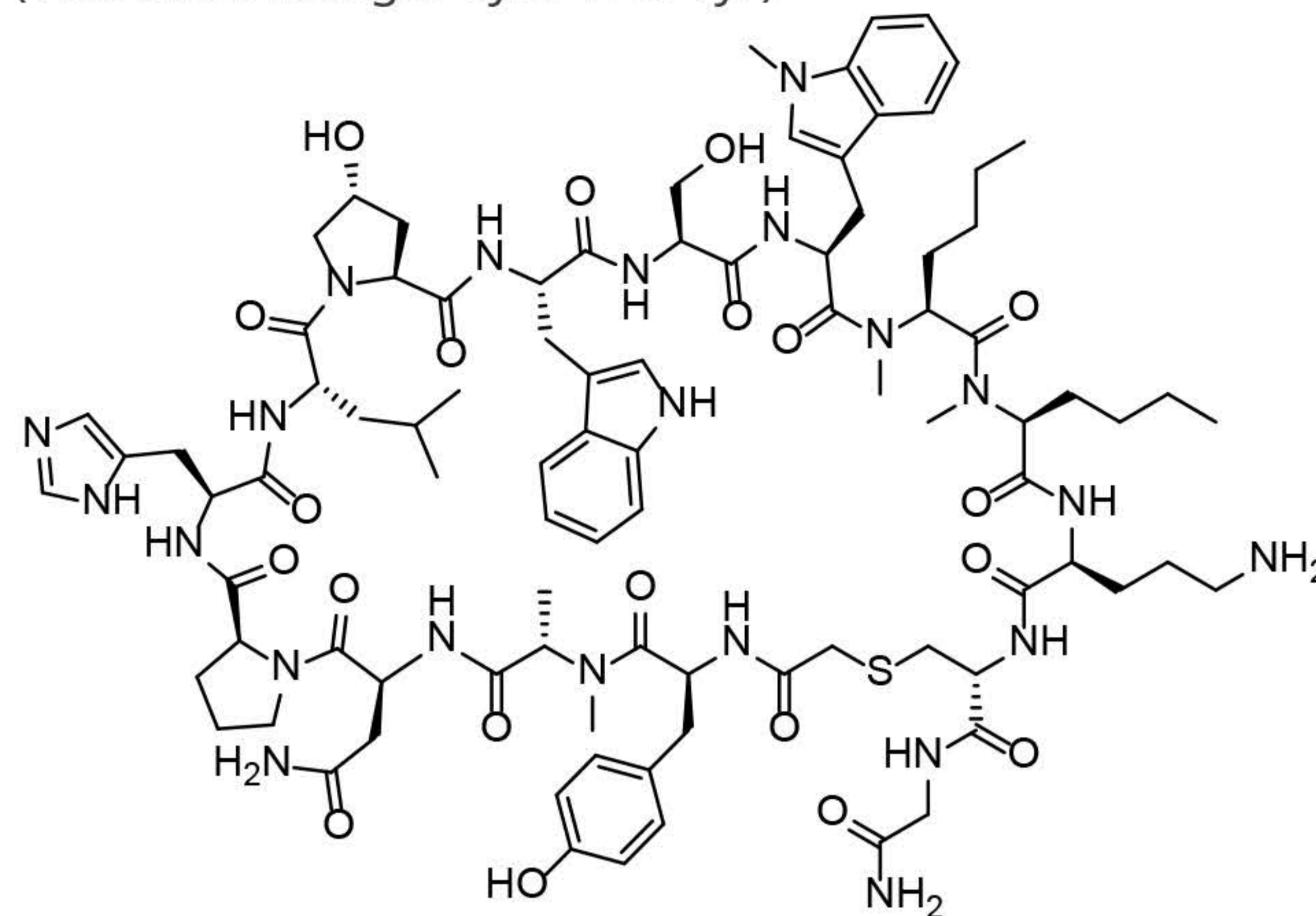
Cancer, Fibronectin and RGD Sequences, Peptide Macrocycle

References:

V.J. Hruby et al., *J. Med. Chem.*, 38, 3435 (1995)

PD-L1 binding peptide WL12

Cyclo(AcTyr-MeAla-Asn-Pro-His-Leu-Hyp-Trp-Ser-Trp(Me)-MeNle-MeNle-Orn-Cys)-Gly-NH₂
(trifluoroacetate salt)
(Thioether bridge: Cys14-Ac-Tyr)



SKU	Size	Price
CANC-022A	0.5mg	\$265
CANC-022B	1mg	\$490

Description:

WL12 peptide selectively binds to programmed death ligand 1 (PD-L1), an immune checkpoint protein that is overexpressed in many cancer cell lines. Tumor PD-L1 expression contributes to immune system depression and is indicative of a tumor's response to PD-L1 and PD-1.

Molecular Formula: C₉₁H₁₂₈N₂₂O₂₀S

Molecular Weight: 1882.19

Storage Conditions: -20 ± 5 °C

Research Area: Cancer

Keywords: thioether, peptide macrocycle

Categories:

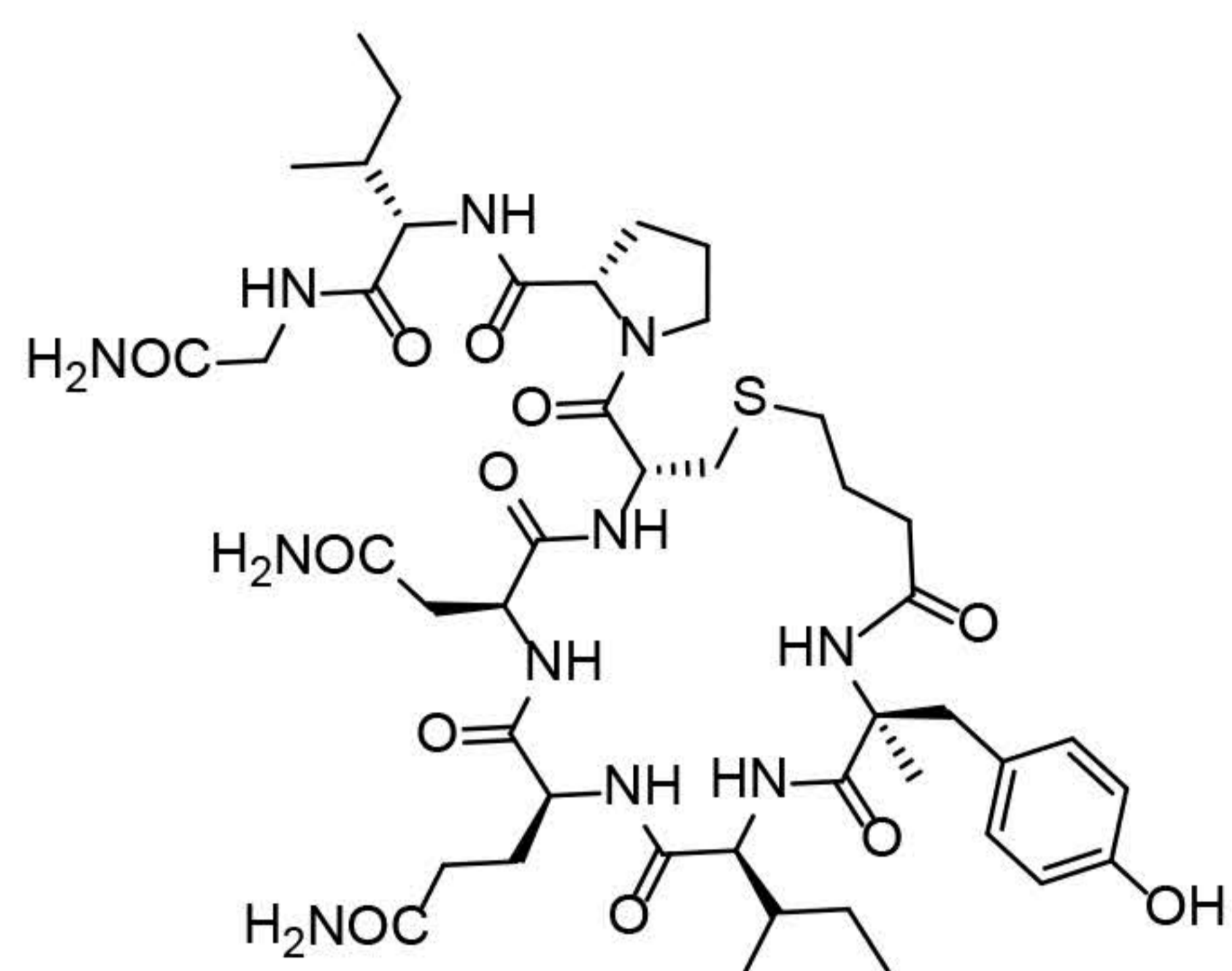
Apoptosis, Cancer, Peptide Macrocycle

References:

Chatterjee, Samit, et al. "Rapid PD-L1 detection in tumors with PET using a highly specific peptide." *Biochemical and Biophysical Research Communications* 483.1 (2017): 258-263.

Carbetocin

Butyryl-Tyr(Me)-Ile-Gln-Asn-Cys-Pro-Leu-Gly-NH₂
(trifluoroacetate salt)
(Sulfide bond between Butyryl-4-yl and Cys)



SKU	Size	Price
OXYT-002A	5mg	\$118
OXYT-002B	25mg	\$471

Description:

Carbetocin shows a prolonged effect due to an increased resistance to enzymatic cleavage. Carbetocin is highly effective in preventing post-partum hemorrhage after vaginal delivery.

Molecular Formula: C₄₅H₆₉N₁₁O₁₂S₁

Molecular Weight: 988.18

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 37025-55-1

Research Area: Hormonal

Keywords: thioether,
peptide macrocycle

Categories:

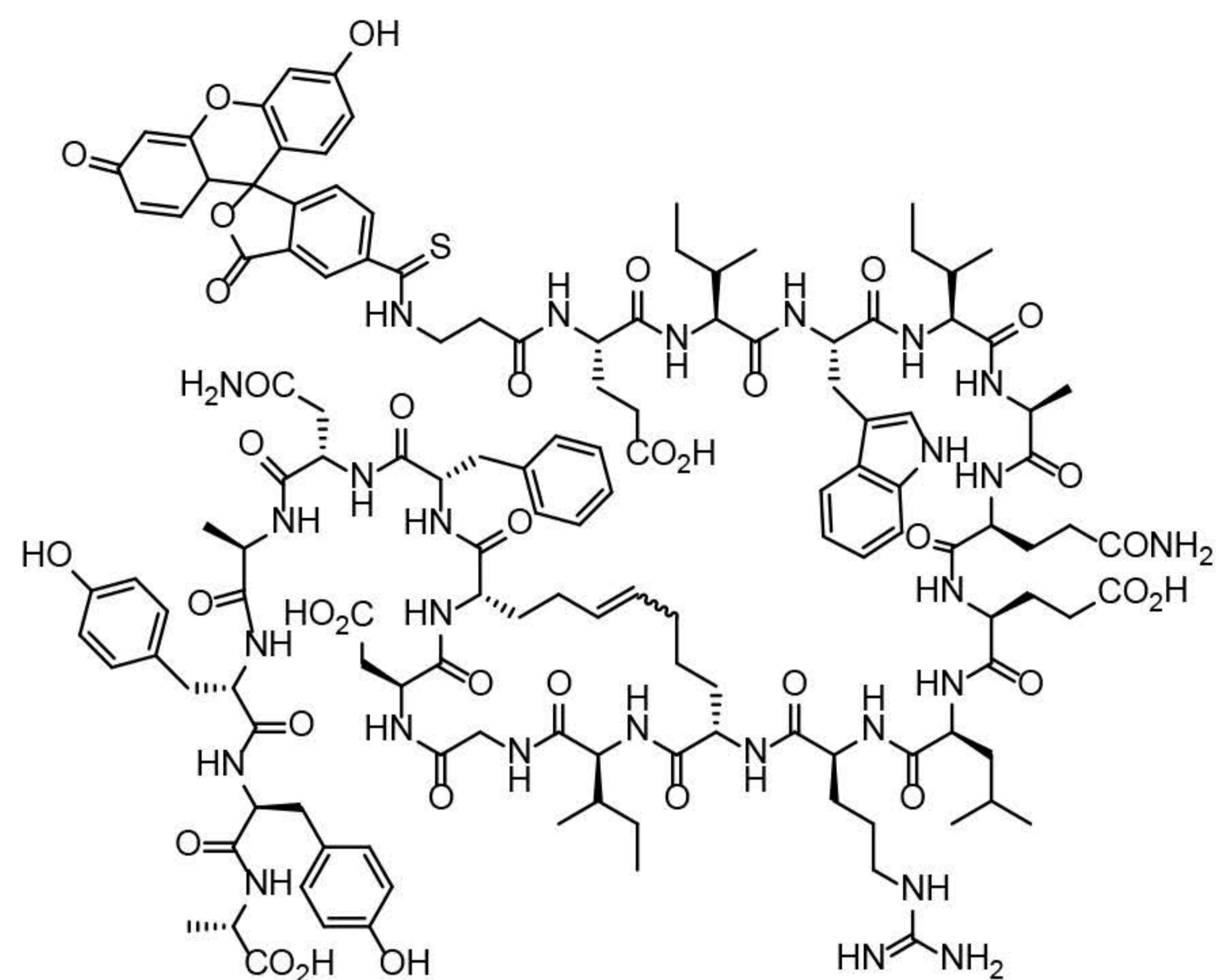
Hormonal, Oxytocin

References:

T.Barth et al., *Coll. Czech. Chem. Commun.*, 46, 2441 (1981)
N.Cort et al., *Am. J. Vet. Res.*, 43, 1283 (1982)
V.Klenerova et al., *J. Physiol. Pharmacol.*, 60, 57 (2009)
N.C.Peters and J.J.Duvekot, *Obstet. Gynecol. Surv.*, 64, 129 (2009)
W.Rath, *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 147, 15 (2009)

BIM (FITC)

FITC-beta-Ala-Glu-Ile-Trp-Ile-Ala-Gln-Glu-Leu-Arg-S5-Ile-Gly-Asp-S5-Phe-Asn-Ala-Tyr-Tyr-Ala-OH
(trifluoroacetate salt)



SKU	Size	Price
CANC-001A	1mg	\$888

Description:

This Bim apoptotic peptide belongs to the Bcl-2 protein family.

Molecular Formula: C₁₃₇H₁₇₇N₂₇O₃₇S

Molecular Weight: 2826.14

Storage Conditions: -20 ± 5 °C

Research Area: Cancer

Keywords: dye-labeled,
peptide macrocycle,
stapled

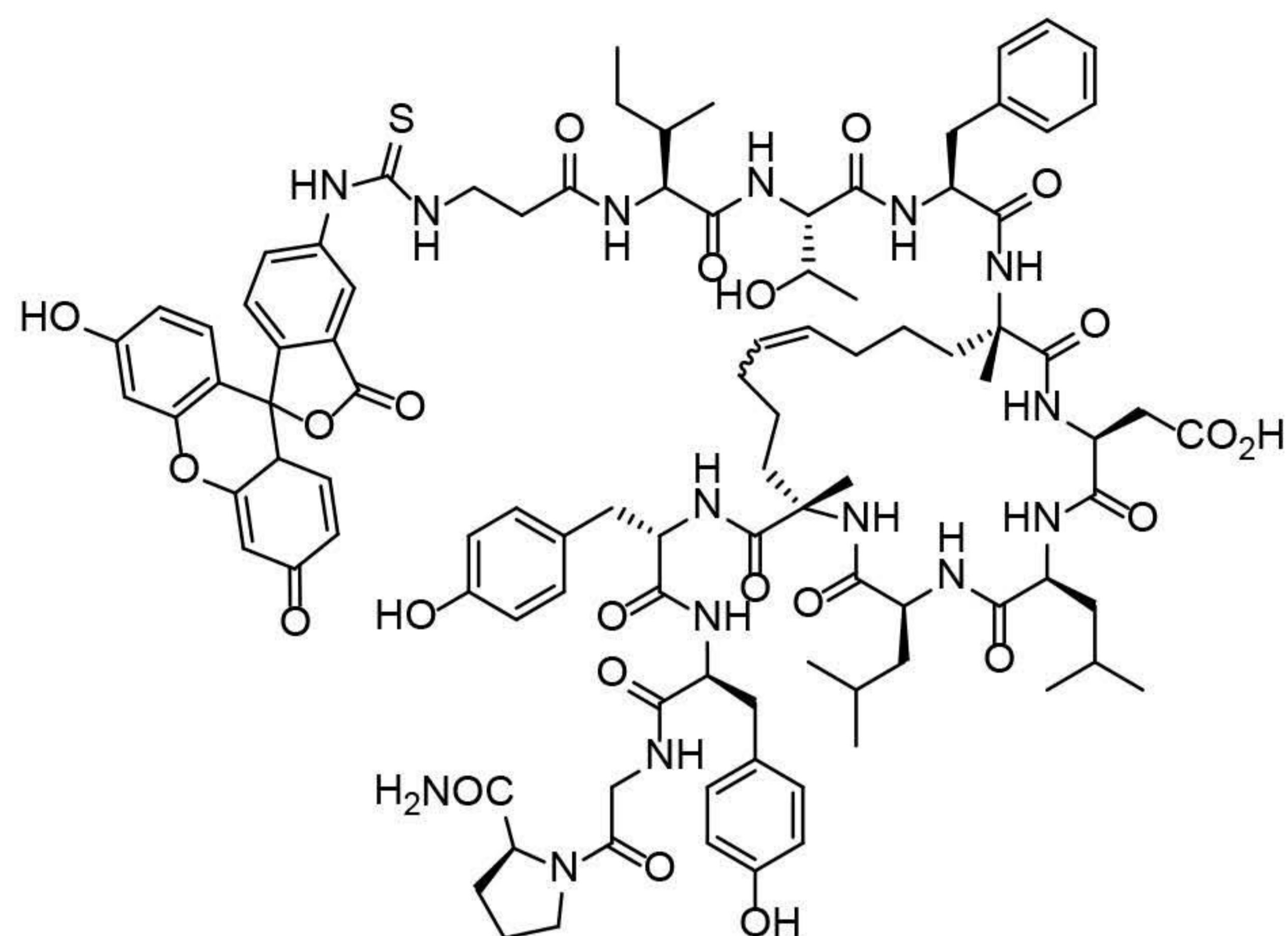
Categories:

Apoptosis, Apoptosis Related Peptides, Cancer



FITC-beta-Ala-NYAD-1 (NYAD-2)

FITC-(beta-Ala)-Ile-Thr-Phe-X-Asp-Leu-Leu-X-Tyr-Tyr-Gly-Pro-NH₂ (olefin metathesis to incorporate double bond, X = (S)-alpha-(2'-pentenyl)alanine)



SKU	Size	Price
STAP-001A	0.25mg	\$381
STAP-001B	1mg	\$850

Description:

This NYAD-2 peptide is NYAD-1 labeled with FITC (Ex/Em=493/517 nm). NYAD-1 is a cell-penetrating alpha-helical peptide used as a potential HIV-1 inhibitor. The hydrocarbon-stapled structure enhances alpha helicity.

Molecular Formula: C₉₈H₁₂₃N₁₅O₂₃S

Molecular Weight: 1911.3

Storage Conditions: -20 ± 5 °C

Research Area: Antimicrobial

Keywords: dye-labeled,
macrocycle, stapled

Categories:

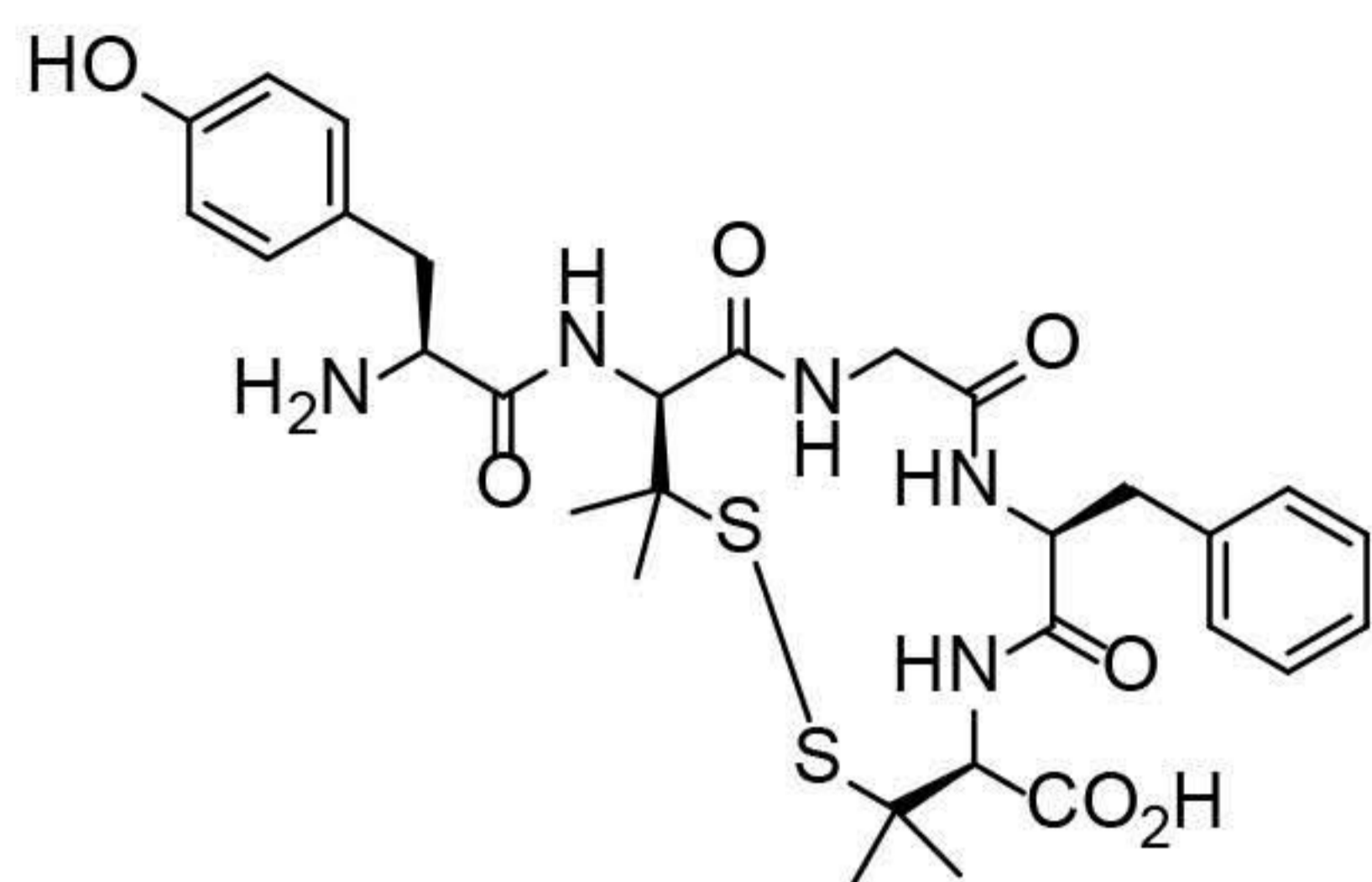
Antimicrobial, Stapled Peptides

References:

Zhang, H. et al. *J. Mol. Biol.* 378, 565 (2008)

DPDPE

H-Tyr-DPen-Gly-Phe-DPen-OH (trifluoroacetate salt)
(DPen2 and DPen5 bridge)



SKU	Size	Price
ENKP-001A	1mg	\$25
ENKP-001B	5mg	\$100

Description:

Peptide that performs direct antinociceptive actions via the delta1-opioid receptor, while modulatory via the delta2-opioid receptor.

Molecular Formula: C₃₀H₃₉N₅O₇S₂

Molecular Weight: 645.8

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 88373-73-3

Research Area: Pain

Keywords: penicillamine,
peptide macrocycle

Categories:

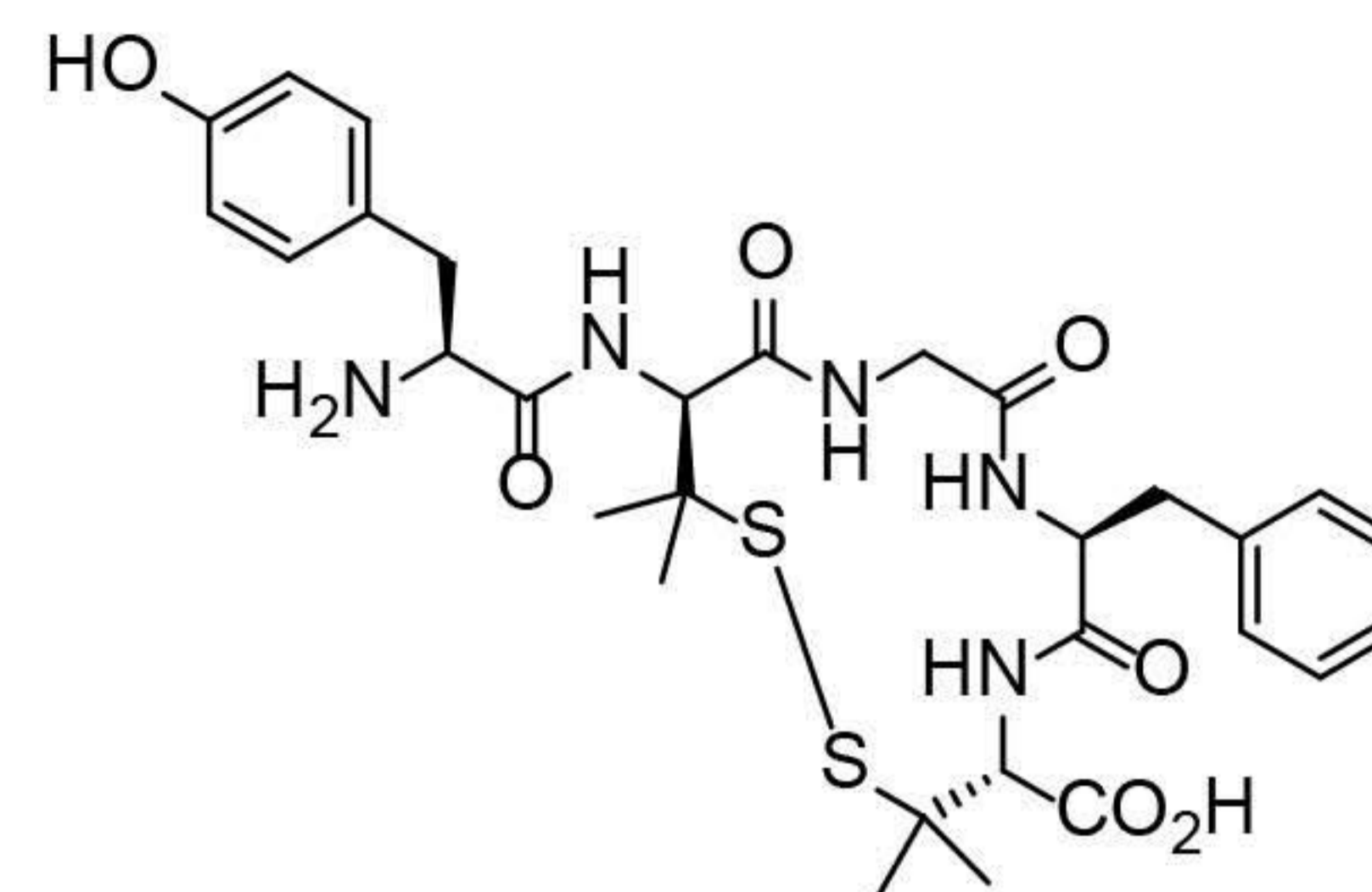
Enkephalins, Pain

References:

H.I. Mosberg et al., *PNAS*, 80, 5871 (1983)

[DPen2, Pen5] Enkephalin

H-Tyr-DPen-Gly-Phe-Pen-OH (trifluoroacetate salt)
(Pen2 and Pen5 bridge)



SKU	Size	Price
ENKP-002A	1mg	\$25
ENKP-002B	5mg	\$100

Molecular Formula: C₃₀H₃₉N₅O₇S₂

Molecular Weight: 645.8

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 88373-72-2

Research Area: Pain

Keywords: dye-labeled,
peptide macrocycle,
stapled

Categories:

Enkephalins, Pain

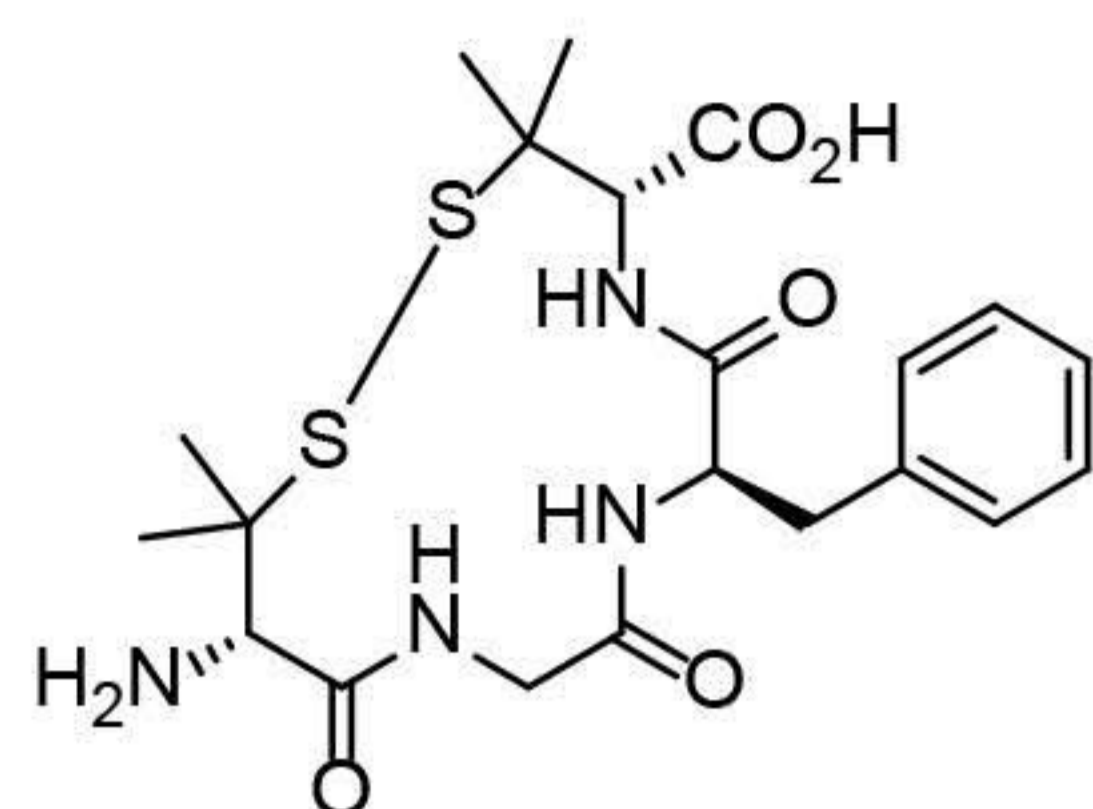
References:

H.I. Mosberg et al., *PNAS*, 80, 5871 (1983)



[Des-Tyr1,DPen2,5] Enkephalin

H-DPen-Gly-Phe-DPen-OH (trifluoroacetate salt)
(DPen and DPen bridge)



SKU	Size	Price
ENKP-003A	1mg	\$25
ENKP-003B	5mg	\$100

Molecular Formula: $C_{21}H_{30}N_4O_5S_2$

Molecular Weight: 482.6

Storage Conditions: -20 ± 5 °C

Research Area: Pain

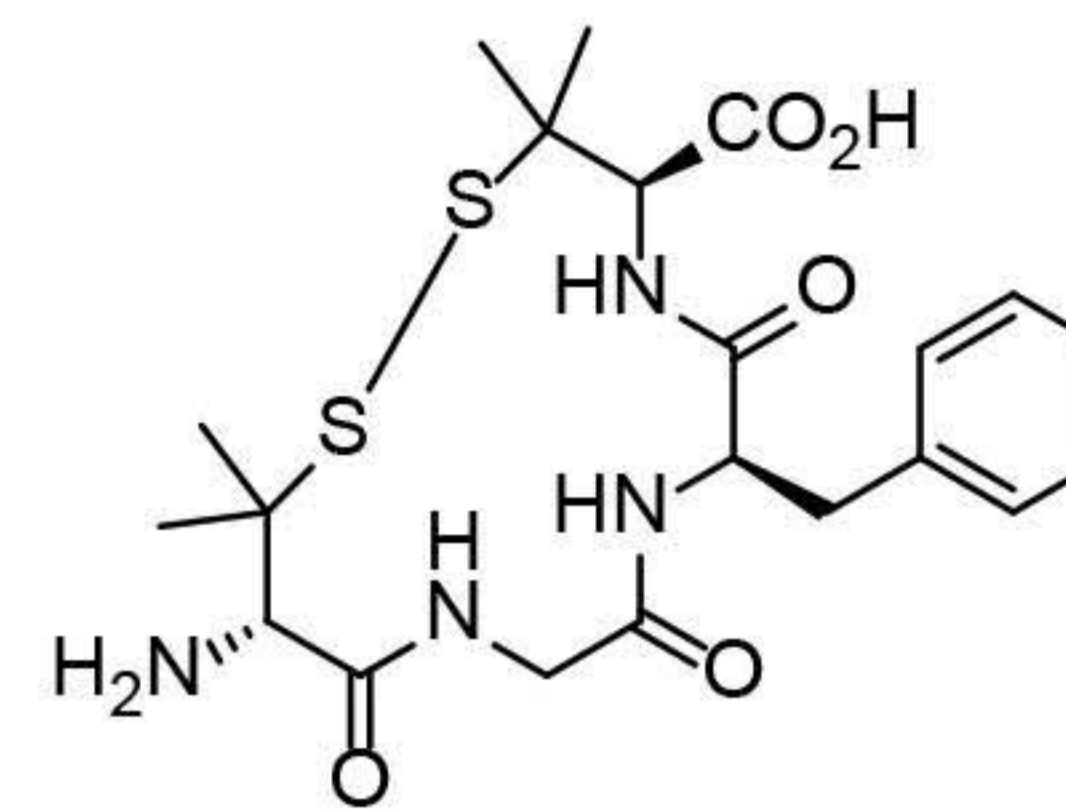
Keywords: penicillamine,
peptide macrocycle

Categories:

Enkephalins, Pain

[Des-Tyr1,DPen2,Pen5] Enkephalin

H-DPen-Gly-Phe-Pen-OH (trifluoroacetate salt)
(Pen1 and Pen4 bridge)



SKU	Size	Price
ENKP-004A	1mg	\$25
ENKP-004B	5mg	\$100

Molecular Formula: $C_{21}H_{30}N_4O_5S_2$

Molecular Weight: 482.6

Storage Conditions: -20 ± 5 °C

Research Area: Pain

Keywords: penicillamine,
peptide macrocycle

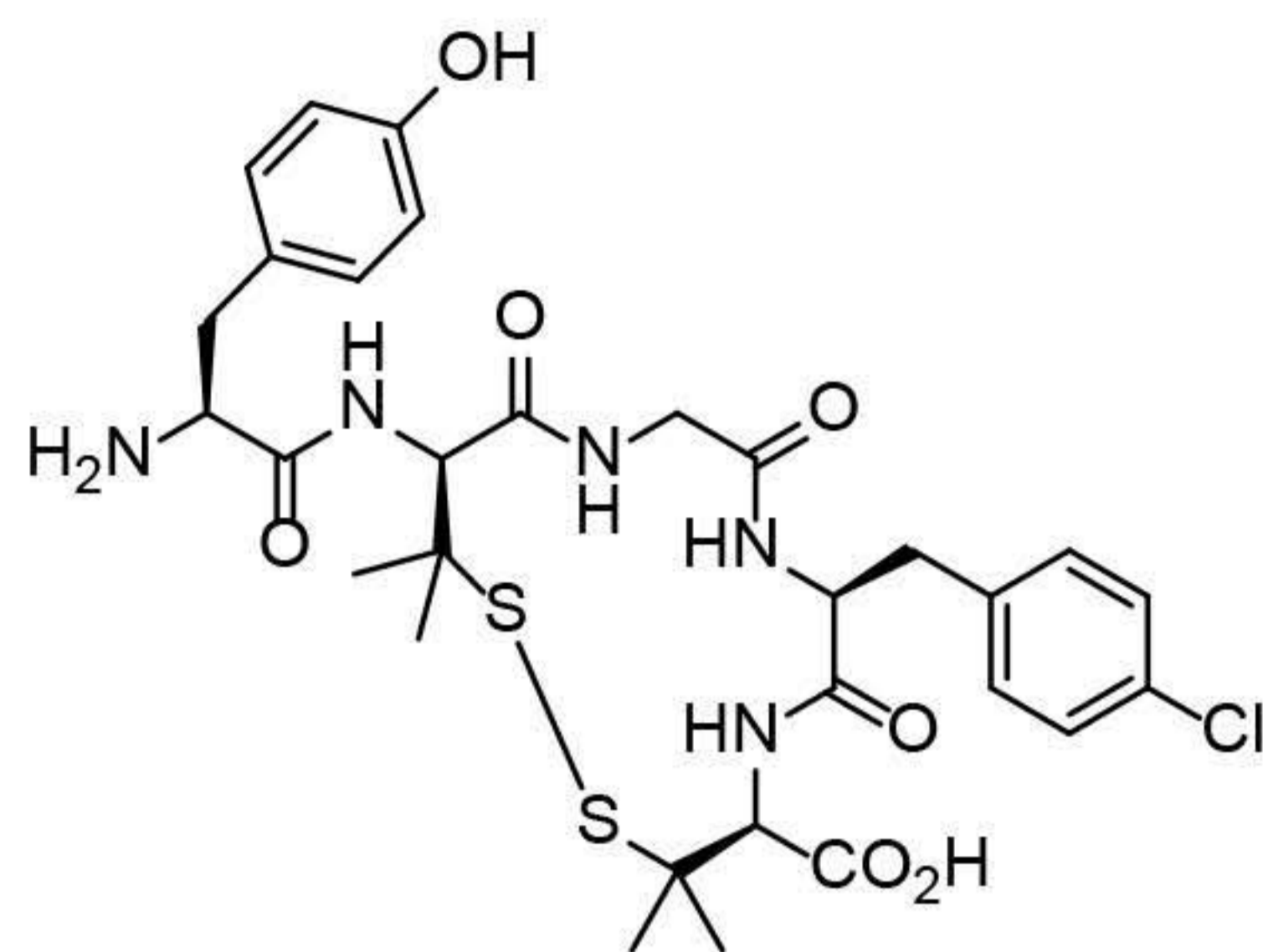
Categories:

Enkephalins, Pain



[DPhe2,5,(pCl)Phe4] Enkephalin

H-Tyr-DPen-Gly-(4Cl)Phe-DPen-OH (trifluoroacetate salt)



SKU	Size	Price
ENKP-005A	1mg	\$25
ENKP-005B	5mg	\$100

Description:

Highly selective ligand with high affinity for the delta-opioid receptor.

Molecular Formula: $C_{30}H_{38}N_5O_7S_2Cl_1$

Molecular Weight: 680.3

Storage Conditions: $-20 \pm 5^\circ C$

Research Area: Pain

Keywords: penicillamine,
peptide macrocycle

Categories:

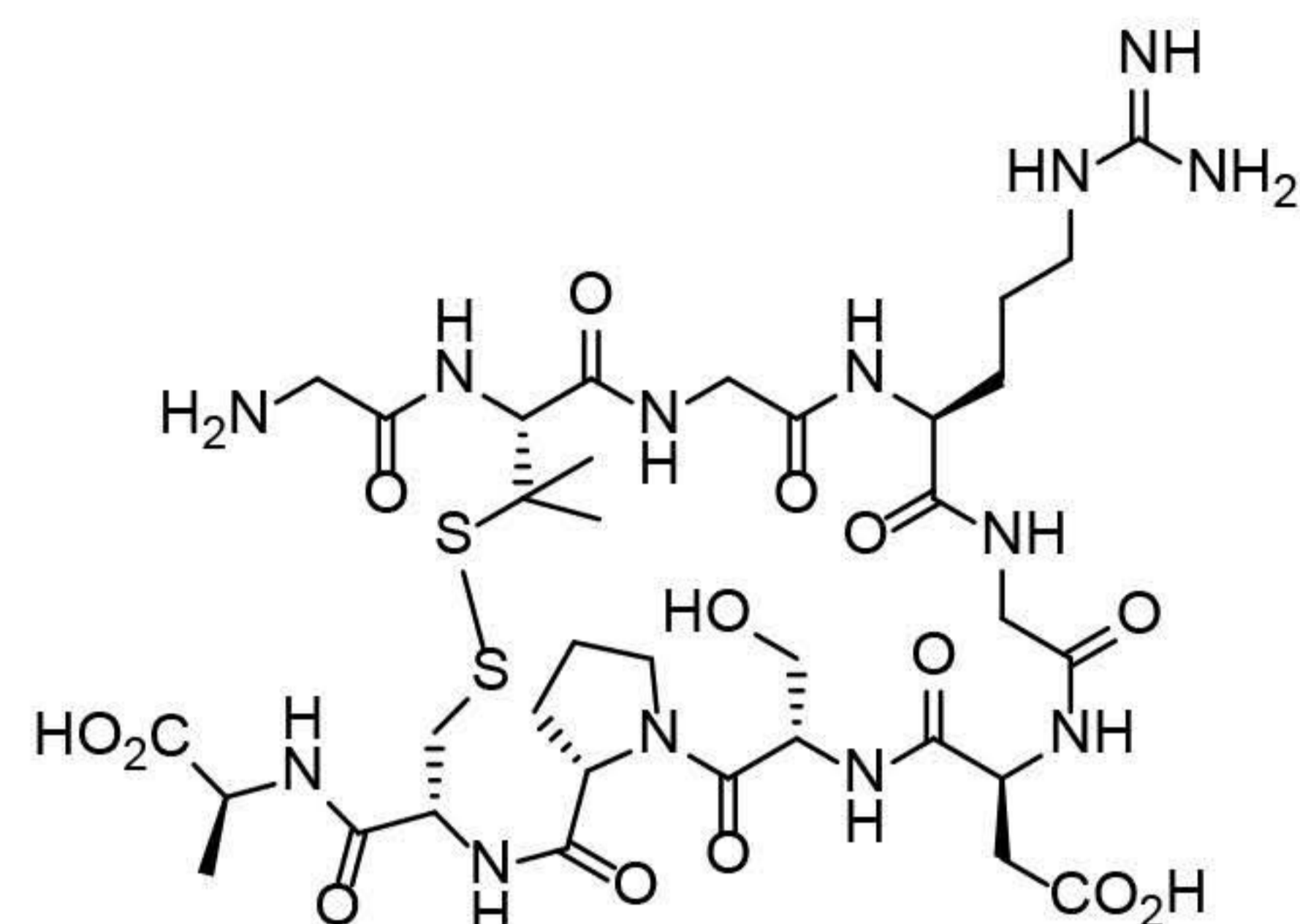
Enkephalins, Pain

References:

L.K. Vaughn et al., *Life Sciences*, 45, 1001 (1989)

G-Pen-G-R-G-D-S-P-C-A

H-Gly-Pen-Gly-Arg-Gly-Asp-Ser-Pro-Cys-Ala-OH
(trifluoroacetate salt)
(Pen2 and 9 bridge)



SKU	Size	Price
FIBN-011A	0.5mg	\$35
FIBN-011B	1mg	\$50

Description:

Cyclic RGD peptide used in the study of vascular wound response that causes vasodilatation when applied to isolated rat cremaster arterioles. Vasodilation is dependent on the interaction of the soluble cRGD peptide with $\alpha v\beta 3$ integrin expressed by smooth muscle cells in arteriolar walls.

Molecular Formula: $C_{35}H_{57}N_{13}O_{14}S_2$

Molecular Weight: 948.04

Storage Conditions: $-20 \pm 5^\circ C$

CAS Registry Number: 126716-28-7

Research Area: Inflammation

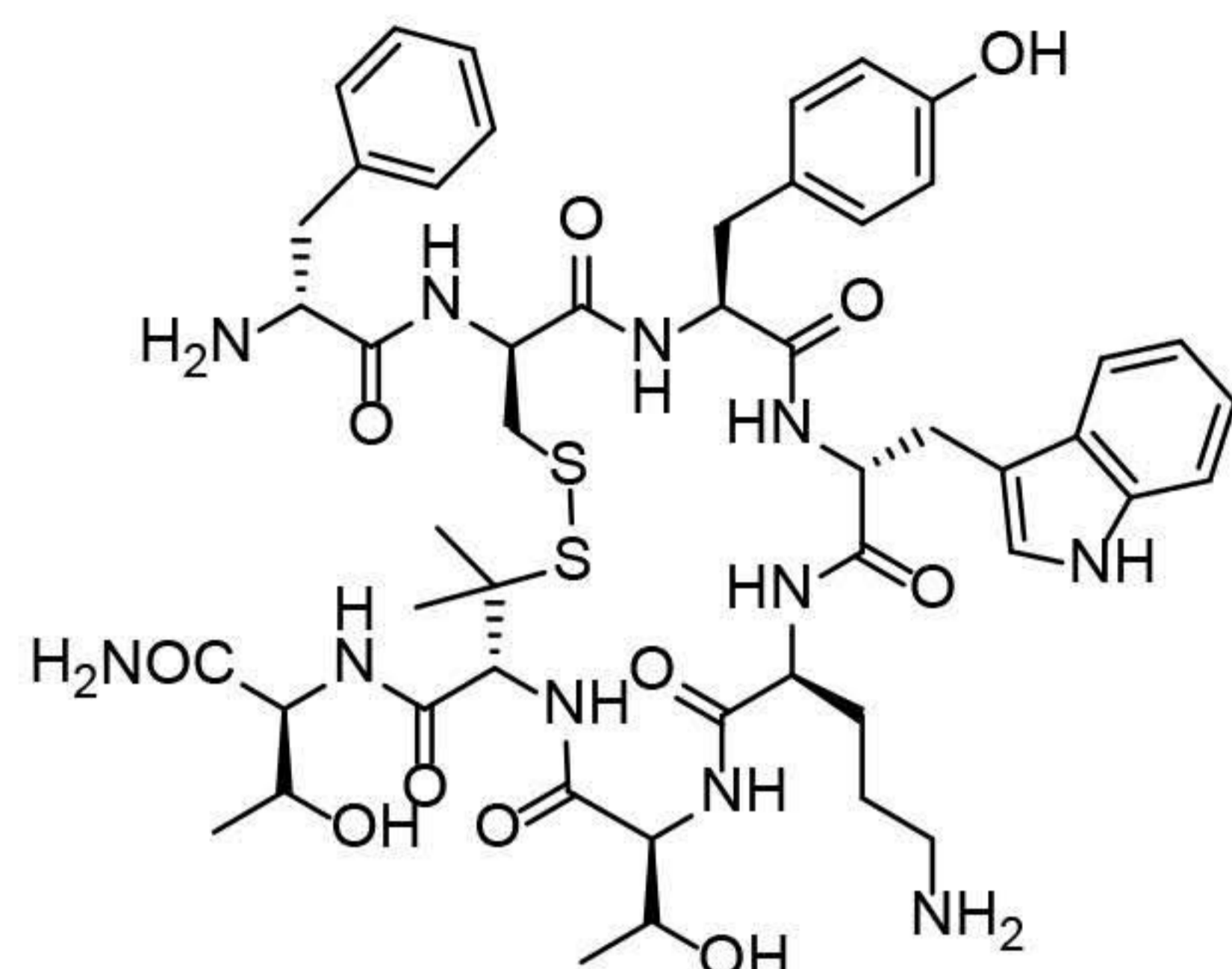
Keywords:

Categories:

Fibronectin and RGD Sequences, Inflammation

NTB (Naltriben)

H-DPhe-Cys-Tyr-DTrp-Orn-Thr-Pen-Thr-NH₂
(trifluoroacetate salt)
(Cys2 and Pen7 Bridge)



SKU	Size	Price
SOMA-005A	0.5mg	\$55
SOMA-005B	1mg	\$85

Description:

[Cys2, Tyr3, Orn5, Pen7]. This somatostatin analog is a very potent and highly selective ligand for m-opioid receptors.

Molecular Formula: C₅₀H₆₈N₁₁O₁₁S₂

Molecular Weight: 1063.3

Storage Conditions: -20 ± 5 °C

CAS Registry Number: 103429-31-8

Research Area: Pain

Keywords: hormone

Categories:

Hormonal, Pain, Somatostatin and Analogs

References:

K.N.Hawkins et al., *J. Pharmacol. Exp. Ther.*, 248, 73 (1989)

K.Gulya et al., *Eur. J. Pharmacol.*, 150, 355 (1988)

L.F. Tseng et al., *The Journal of Pharmacol. and Experim. Therap.*, 280, 600 (1997)



Disulfide Bond(Side chain to-side chain)

SKU	NAME	SEQUENCE	PRICE
ACTH-014	Corticotstatin, human	H-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-OH (trifluoroacetate salt) (Cys2 and 30 bridge, Cys4 and 19 bridge, Cys9 and 29 bridge)	0.1 mg - \$395
ACTH-015	Corticotstatin, rabbit	H-Gly-Ile-Cys-Ala-Cys-Arg-Arg-Arg-Phe-Cys-Pro-Asn-Ser-Glu-Arg-Phe-Ser-Gly-Tyr-Cys-Arg-Val-Asn-Gly-Ala-Arg-Tyr-Val-Arg-Cys-Cys-Ser-Arg-Arg-OH (trifluoroacetate salt) (Cys3 and 31 bridge, Cys5 and 20 bridge, Cys10 and 30 bridge)	0.1 mg - \$395
ADRM-001	Adrenomedullin (1-52), human	H-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 (trifluoroacetate salt) (Cys16 and 21 bridge)	0.5 mg - \$250, 1 mg - \$450
ADRM-004	Adrenomedullin (13-52), human	H-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 (trifluoroacetate salt) (Cys4 and Cys9 bridge)	0.5 mg - \$195, 1 mg - \$350
ADRM-009	Adrenomedullin (1-50), rat	H-Tyr-Arg-Gln-Ser-Met-Asn-Gln-Gly-Ser-Arg-Ser-Thr-Gly-Cys-Arg-Phe-Gly-Thr-Cys-Thr-Met-Gln-Lys-Leu-Ala-His-Gln-Ile-Tyr-Gln-Phe-Thr-Asp-Lys-Asp-Lys-Asp-Gly-Met-Ala-Pro-Arg-Asn-Lys-Ile-Ser-Pro-Gln-Gly-Tyr-NH ₂ (trifluoroacetate salt) (Cys14 and 19 bridge)	0.5 mg - \$125, 1 mg - \$195
ADRM-010	Adrenomedullin (11-50), rat	H-Ser-Thr-Gly-Cys-Arg-Phe-Gly-Thr-Cys-Thr-Met-Gln-Lys-Leu-Ala-His-Gln-Ile-Tyr-Gln-Phe-Thr-Asp-Lys-Asp-Lys-Asp-Gly-Met-Ala-Pro-Arg-Asn-Lys-Ile-Ser-Pro-Gln-Gly-Tyr-NH ₂ (trifluoroacetate salt) (Cys4 and 9 bridge)	0.5 mg - \$195, 1 mg - \$350
ADRM-012	Adrenomedullin (1-52), porcine	H-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-Gly-Val-Ala-Pro-Arg-Ser-Lys-Ile-Ser-Pro-Gln-Gly-Tyr-NH ₂ (trifluoroacetate salt) (Cys16 and 21 bridge)	0.5 mg - \$95, 1 mg - \$165
AGOU-001	Agouti-related Protein (AGRP) (83-132) Amide (human)	H-Ser-Ser-Arg-Arg-Cys-Val-Arg-Leu-His-Glu-Ser-Cys-Leu-Gly-Gln-Gln-Val-Pro-Cys-Cys-Asp-Pro-Cys-Ala-Thr-Cys-Tyr-Cys-Arg-Phe-Phe-Asn-Ala-Phe-Cys-Tyr-Cys-Arg-Lys-Leu-Gly-Thr-Ala-Met-Asn-Pro-Cys-Ser-Arg-Thr-NH ₂ (trifluoroacetate salt) (Cys5-20/Cys12-26/Cys19-37/Cys23-47/Cys28-35 Bridge)	0.1 mg - \$395

AGOU-002	Agouti-related Protein (AGRP) (87-132) human, acetyl	Ac-Cys-Val-Arg-Leu-His-Glu-Ser-Cys-Leu-Gly-Gln-Gln-Val-Pro-Cys-Cys-Asp-Pro-Cys-Ala-Thr-Cys-Tyr-Cys-Arg-Phe-Phe-Asn-Ala-Phe-Cys-Tyr-Cys-Arg-Lys-Leu-Gly-Thr-Ala-Met-Asn-Pro-Cys-Ser-Arg-Thr-OH (trifluoroacetate salt) (Cys1-16/Cys8-22/Cys15-33/Cys19-43/Cys24-31 Bridge)	0.1 mg - \$395
AMYD-028	beta-Amyloid / A4 Protein Precursor (APP) (96-110), analog	Ac-Asn-Trp-Cys-Lys-Arg-Gly-Arg-Lys-Gln-Cys-Lys-Thr-His-Pro-His-NH2 (trifluoroacetate salt) (disulfide bridge)	0.5 mg - \$55, 1 mg - \$95
AMYD-037	Amyloid BRI Protein (1-23)	Glu-Ala-Ser-Asn-Cys-Phe-Ala-Ile-Arg-His-Phe-Glu-Asn-Lys-Phe-Ala-Val-Glu-Thr-Leu-Ile-Cys-Ser (trifluoroacetate salt) (Cys5 and 22 bridge)	0.5 mg - \$105, 1 mg - \$195
AMYD-039	Amyloid Dan Protein (1-34)	Glp-Ala-Ser-Asn-Cys-Phe-Ala-Ile-Arg-His-Phe-Glu-Asn-Lys-Phe-Ala-Val-Glu-Thr-Leu-Ile-Cys-Phe-Asn-Leu-Phe-Leu-Asn-Ser-Gln-Glu-Lys-His-Tyr-OH (trifluoroacetate salt) (Cys5 and 22 bridge)	0.5 mg - \$105, 1 mg - \$195
AMYN-001	Amylin, human	H-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-OH (trifluoroacetate salt) (Cys2 and 7 bridge)	0.5 mg - \$125, 1 mg - \$195
AMYN-002	Amylin (1-13), human	H-Lys-Cys-Asn-Thr-Ala-Thr-Cys-Ala-Thr-Gln-Arg-Leu-Ala-OH (trifluoroacetate salt) (Cys2 and 7 bridge)	0.5 mg - \$55, 1 mg - \$95
AMYN-004	Amylin, rat	H-Lys-Cys-Asn-Thr-Ala-Thr-Cys-Ala-Thr-Gln-Arg-Leu-Ala-Asn-Phe-Leu-Val-Arg-Ser-Ser-Asn-Asn-Leu-Gly-Pro-Val-Leu-Pro-Pro-Thr-Asn-Val-Gly-Ser-Asn-Thr-Tyr-NH2 (trifluoroacetate salt) (Cys2 and 7 bridge)	0.5 mg - \$95, 1 mg - \$165
AMYN-006	Amylin, human amidated	H-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-NH2 (trifluoroacetate salt) (Cys2 and 7 bridge)	0.5 mg - \$125, 1 mg - \$195
APAM-001	Apamin	H-Cys-Asn-Cys-Lys-Ala-Pro-Glu-Thr-Ala-Leu-Cys-Ala-Arg-Arg-Cys-Gln-Gln-His-NH2 (trifluoroacetate salt) (Cys1 and Cys11, Cys3 and Cys15 Bridge)	0.5 mg - \$203, 1 mg - \$366
ATPE-001	Atriopeptin I (rat)	H-Ser-Ser-Cys-Phe-Gly-Gly-Arg-Ile-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-OH (trifluoroacetate salt) (disulfide bridge)	0.5 mg - \$157, 1 mg - \$275
ATPE-002	Atriopeptin II (rat)	H-Ser-Ser-Cys-Phe-Gly-Gly-Arg-Ile-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg-OH (trifluoroacetate salt) (disulfide bridge)	0.5 mg - \$246, 1 mg - \$329

ATPE-003	Atriopeptin III (rat)	H-Ser-Ser-Cys-Phe-Gly-Gly-Arg-Ile-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg-Tyr-OH (trifluoroacetate salt) (disulfide bridge)	0.5 mg - \$152, 1 mg - \$266
CART-001	CART (55-76), rat	H-Ile-Pro-Ile-Tyr-Glu-Lys-Lys-Tyr-Gly-Gln-Val-Pro-Met-Cys-Asp-Ala-Gly-Glu-Gln-Cys-Ala-Val-OH (trifluoroacetate salt) (Cys14 and 20 bridge)	0.5 mg - \$75, 1 mg - \$135
CART-002	CART (55-102), rat	H-Ile-Pro-Ile-Tyr-Glu-Lys-Lys-Tyr-Gly-Gln-Val-Pro-Met-Cys-Asp-Ala-Gly-Glu-Gln-Cys-Ala-Val-Arg-Lys-Gly-Ala-Arg-Ile-Gly-Lys-Leu-Cys-Asp-Cys-Pro-Arg-Gly-Thr-Ser-Cys-Asn-Ser-Phe-Leu-Leu-Lys-Cys-Leu-OH (trifluoroacetate salt) (Cys20 and 40, Cys14 and 32, Cys34 and 47)	0.5 mg - \$395, 1 mg - \$725
CART-003	CART (62-76), rat, human	H-Tyr-Gly-Gln-Val-Pro-Met-Cys-Asp-Ala-Gly-Glu-Gln-Cys-Ala-Val-OH (trifluoroacetate salt) (Cys68 and 74 bridge)	0.5 mg - \$45, 1 mg - \$80
CART-004	CART (55-102), human	H-Val-Pro-Ile-Tyr-Glu-Lys-Lys-Tyr-Gly-Gln-Val-Pro-Met-Cys-Asp-Ala-Gly-Glu-Gln-Cys-Ala-Val-Arg-Lys-Gly-Ala-Arg-Ile-Gly-Lys-Leu-Cys-Asp-Cys-Pro-Arg-Gly-Thr-Ser-Cys-Asn-Ser-Phe-Leu-Leu-Lys-Cys-Leu-OH (trifluoroacetate salt) (Cys20 and 40, Cys14 and 32, Cys34 and 47 bridge)	0.1 mg - \$150, 0.5 mg - \$475
CART-005	CART (62-102), human, rat	H-Tyr-Gly-Gln-Val-Pro-Met-Cys-Asp-Ala-Gly-Glu-Gln-Cys-Ala-Val-Arg-Lys-Gly-Ala-Arg-Ile-Gly-Lys-Leu-Cys-Asp-Cys-Pro-Arg-Gly-Thr-Ser-Cys-Asn-Ser-Phe-Leu-Leu-Lys-Cys-Leu-OH (trifluoroacetate salt) (Cys13 and 33 bridge, Cys7 and 25 bridge, Cys27 and 40 bridge)	0.5 mg - \$395, 1 mg - \$725
CASP-092	T3 Peptide / Tumstatin (69-88), human	H-Leu-Gln-Arg-Phe-Thr-Thr-Met-Pro-Phe-Leu-Phe-Cys-Asn-Val-Asn-Asp-Val-Cys-Asn-Phe-OH (trifluoroacetate salt) (Cys12 and 18 bridge)	0.5 mg - \$75, 1 mg - \$135
CASP-093	T7 Peptide / Tumstatin (74-98), human	H-Thr-Met-Pro-Phe-Leu-Phe-Cys-Asn-Val-Asn-Asp-Val-Cys-Asn-Phe-Ala-Ser-Arg-Asn-Asp-Tyr-Ser-Tyr-Trp-Leu-OH (trifluoroacetate salt) (Cys7 and 13 bridge)	0.5 mg - \$75, 1 mg - \$135
CHAT-001	Charybdotoxin	Glp-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-OH (trifluoroacetate salt) (Cys7 and Cys28/Cys13 and Cys33/Cys17 and Cys35 Bridge)	0.1 mg - \$157, 0.5 mg - \$628, 1.0 mg - \$1180
CLTX-001	Chlorotoxin	H-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 (trifluoroacetate salt) (disulfide bridge: Cys1-Cys4, Cys2-Cys6, Cys3-Cys7, Cys5-Cys8)	0.5 mg - \$95, 1 mg - \$378

CORT-001	Cortistatin 29	Glp-Glu-Arg-Pro-Pro-Leu-Gln-Gln-Pro-Pro-His-Arg-Asp-Lys-Lys-Pro-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Ser-Ser-Cys-Lys-OH (trifluoroacetate salt) (Cys17 and 28 bridge)	0.5 mg - \$95, 1 mg - \$165
CORT-002	Cortistatin 14	H-Pro-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Ser-Ser-Cys-Lys-OH (trifluoroacetate salt) (Cys2 and 13 bridge)	0.5 mg - \$45, 1 mg - \$75
DEFS-001	Defensin (human) HNP-2	H-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-OH (trifluoroacetate salt) (Cys1 and 29 bridge, Cys3 and 18 bridge, Cys8 and 28 bridge)	0.1 mg - \$125, 0.5 mg - \$495
DEFS-002	Defensin-1 (human) HNP-1	H-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-OH (trifluoroacetate salt) (Cys2 and 30 bridge, Cys4 and 19 bridge, Cys 9 and 29 bridge)	0.1 mg - \$125, 0.5 mg - \$495
DEFS-003	beta-Defensin-1, human	H-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-OH (trifluoroacetate salt) (Cys5 and 34 bridge, Cys12 and 27 bridge, Cys17 and 35 bridge)	0.1 mg - \$195, 0.5 mg - \$795
DEFS-004	beta-Defensin-2, human	H-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-OH (trifluoroacetate salt) (Cys8 and 37 bridge, Cys20 and 38 bridge, Cys15 and 30 bridge)	0.1 mg - \$195, 0.5 mg - \$595, 1.0 mg - \$1095
DEFS-005	beta-Defensin-3, human	H-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-OH (trifluoroacetate salt) (Cys11 and 40 bridge, Cys18 and 33 bridge, Cys23 and 41 bridge)	0.1 mg - \$195, 0.5 mg - \$795
DEFS-006	beta-Defensin-4, human	H-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-OH (trifluoroacetate salt) (Cys6 and 33 bridge, Cys13 and 27 bridge, Cys17 and 34 bridge)	0.5 mg - \$195, 1 mg - \$795
DEFS-007	Defensin HNP-3 (human)	H-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-OH (trifluoroacetate salt) (Cys2 and Cys30/Cys4 and Cys19/Cys9 and Cys29 Bridge)	0.1 mg - \$141, 0.5 mg - \$566, 1.0 mg - \$1020



DEFS-008	alpha-Defensin 6	H-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-OH (trifluoroacetate salt) (Cys4 and Cys31/Cys6 and Cys20/Cys10 and Cys30 disulfide bridges)	0.1 mg - \$197, 0.5 mg - \$785, 1.0 mg - \$1260
ENDT-001	Endothelin-1, human	H-Cys-Ser-Cys-Ser-Ser-Leu-Met-Asp-Lys-Glu-Cys-Val-Tyr-Phe-Cys-His-Leu-Asp-Ile-Ile-Trp-OH (ammonium acetate salt) (Cys1 and 15 bridge, Cys3 and 11 bridge)	0.5 mg - \$132, 1 mg - \$245, 5 mg - \$990
ENDT-004	Endothelin-2, human	H-Cys-Ser-Cys-Ser-Ser-Trp-Leu-Asp-Lys-Glu-Cys-Val-Tyr-Phe-Cys-His-Leu-Asp-Ile-Ile-Trp-OH (trifluoroacetate salt) (Cys1 and 15 bridge, Cys3 and 11 bridge)	0.5 mg - \$175, 1 mg - \$285
ENDT-005	Endothelin-3, human	H-Cys-Thr-Cys-Phe-Thr-Tyr-Lys-Asp-Lys-Glu-Cys-Val-Tyr-Tyr-Cys-His-Leu-Asp-Ile-Ile-Trp-OH (trifluoroacetate salt) (Cys1 and 15 bridge, Cys3 and 11 bridge)	0.5 mg - \$175, 1 mg - \$285
ENDT-006	Big Endothelin-1 (1-38), human	H-Cys-Ser-Cys-Ser-Ser-Leu-Met-Asp-Lys-Glu-Cys-Val-Tyr-Phe-Cys-His-Leu-Asp-Ile-Ile-Trp-Val-Asn-Thr-Pro-Glu-His-Val-Val-Pro-Tyr-Gly-Leu-Gly-Ser-Pro-Arg-Ser-OH (trifluoroacetate salt) (Cys1 and 15 bridge, Cys3 and 11 bridge)	0.5 mg - \$285, 1 mg - \$495
ENDT-010	Vasoactive Intestinal Con- tractor [VIC]	H-Cys-Ser-Cys-Asn-Ser-Trp-Leu-Asp-Lys-Glu-Cys-Val-Tyr-Phe-Cys-His-Leu-Asp-Ile-Ile-Trp-OH (trifluoroacetate salt) (Cys1 and 15 bridge, Cys3 and 11 bridge)	0.5 mg - \$175, 1 mg - \$285
GRFF-006	alpha-TGF (34-43), rat	H-Cys-His-Ser-Gly-Tyr-Val-Gly-Val-Arg-Cys-OH (trifluoroace- tate salt) (Cys1 and 10 bridge)	0.5 mg - \$35, 1 mg - \$50
GRFF-007	N-Acetyl, alpha-TGF (34-43), Methyl Ester, rat	Ac-Cys-His-Ser-Gly-Tyr-Val-Gly-Val-Arg-Cys-OMe (trifluoroace- tate salt) (Cys1 and 10 bridge)	0.5 mg - \$50, 1 mg - \$80
GUAN-001	Guanylin, human	H-Pro-Gly-Thr-Cys-Glu-Ile-Cys-Ala-Tyr-Ala-Ala-Cys-Thr-Gly-Cys-OH (trifluoroacetate salt) (Cys4 and 12 bridge, Cys7 and 15 bridge)	0.5 mg - \$125, 1 mg - \$195
GUAN-002	Guanylin, rat, mouse	H-Pro-Asn-Thr-Cys-Glu-Ile-Cys-Ala-Tyr-Ala-Ala-Cys-Thr-Gly-Cys-OH (trifluoroacetate salt) (Cys4 and 12 bridge, Cys7 and 15 bridge)	0.5 mg - \$125, 1 mg - \$195
GUAN-003	Uroguanylin, human	H-Asn-Asp-Asp-Cys-Glu-Leu-Cys-Val-Asn-Val-Ala-Cys-Thr-Gly-Cys-Leu-OH (Cys4 and 12 bridge, Cys7 and 15 bridge)	0.5 mg - \$125, 1 mg - \$195
GVIA-001	omega-Conotoxin GVIA	H-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-NH2 (trifluoroacetate salt) (disulfide bridges: Cys1-Cys16, Cys8-Cys19, Cys15-Cys26)	0.5 mg - \$218, 1 mg - \$356

HEPC-001	Hepcidin-25 (human)	H-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-OH (trifluoroacetate salt) (disulfide bridges: Cys ⁷ and Cys ²³ /Cys ¹⁰ and Cys ¹³ /Cys ¹¹ and Cys ¹⁹ /Cys ¹⁴ and Cys ²²)	0.1 mg - \$160, 0.5 mg - \$475, 1.0 mg - \$825
MCDP-003	Mast Cell Degranulating Peptide	H-Ile-Lys-Cys-Asn-Cys-Lys-Arg-His-Val-Ile-Lys-Pro-His-Ile-Cys-Arg-Lys-Ile-Cys-Gly-Lys-Asn-NH ₂ (trifluoroacetate salt) (Cys ³ and 15 bridge, Cys ⁵ and 19 bridge)	0.5 mg - \$95, 1 mg - \$165
MISC-015	Transdermal Peptide TD-1	H-Ala-Cys-Ser-Ser-Ser-Pro-Ser-Lys-His-Cys-Gly-OH (disulfide bridge)	0.5 mg - \$35, 1 mg - \$55, 5 mg - \$210
MISC-016	Transdermal Peptide TD-1 Amide	H-Ala-Cys-Ser-Ser-Ser-Pro-Ser-Lys-His-Cys-Gly-NH ₂ (disulfide bridge)	0.5 mg - \$35, 1 mg - \$55, 5 mg - \$210
MMPS-010	MMP-2/MMP-9 Inhibitor III	H-Cys-Thr-Thr-His-Trp-Gly-Phe-Thr-Leu-Cys-OH (trifluoroacetate salt) (Cys ¹ and 10 bridge)	0.5 mg - \$35, 1 mg - \$50
MSHS-005	[Ac-Cys ⁴ ,D-Phe ⁷ ,Cys ¹⁰] alpha-MSH (4-13), amide	Ac-Cys-Glu-His-DPhe-Arg-Trp-Cys-Lys-Pro-Val-NH ₂ (trifluoroacetate salt) (Cys ¹ and 7 bridge)	0.5 mg - \$40, 1 mg - \$55
MVIIC-001	omega-Conotoxin MVIIC	H-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 (trifluoroacetate salt) (disulfide bridge: Cys ¹ -Cys ¹⁶ , Cys ⁸ -Cys ²⁰ , and Cys ¹⁵ -Cys ²⁶)	0.1 mg - \$129, 0.5 mg - \$525
NATR-001	ANP (1-28), human	H-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-OH (Cys ⁷ and 23 bridge)	0.5 mg - \$78, 1 mg - \$142
NATR-002	Atrial Natriuretic Peptide (3-28), human	H-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-OH (trifluoroacetate salt) (Cys ⁵ and 21 bridge)	0.5 mg - \$125, 1 mg - \$195
NATR-003	Atrial Natriuretic Peptide (1-28), rat	H-Ser-Leu-Arg-Arg-Ser-Ser-Cys-Phe-Gly-Gly-Arg-Ile-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg-Tyr-OH (trifluoroacetate salt) (Cys ⁷ and 23 bridge)	0.5 mg - \$125, 1 mg - \$195
NATR-004	Urodilatin (95-126)	H-Thr-Ala-Pro-Arg-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-OH (trifluoroacetate salt) (Cys ¹¹ and 27 bridge)	0.5 mg - \$125, 1 mg - \$195
NATR-009	BNP (1-32), human	H-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-OH (Cys ¹⁰ and 26 bridge)	0.5 mg - \$85, 1 mg - \$155, 5 mg - \$675

NATR-010	Fam-BNP (1-32), human	5FAM-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-OH (trifluoroacetate salt) (Cys10 and 26 bridge)	0.5 mg - \$175, 1 mg - \$295
NATR-011	Tamra-BNP (1-32), human	TAMRA-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-OH (trifluoroacetate salt) (Cys10 and 26 bridge)	0.5 mg - \$195, 1 mg - \$350
NATR-012	[Tyr0] BNP (1-32), human	H-Tyr-Ser-Pro-Lys-Met-Val-Gln-Gly-Ser-Gly-Cys-Phe-Gly-Arg-Lys-Met-Asp-Arg-Leu-Ser-Ser-Ser-Ser-Gly-Leu-Gly-Cys-Lys-Val-Leu-Arg-Arg-His-OH (trifluoroacetate salt) (Cys11 and 27 bridge)	0.5 mg - \$150, 1 mg - \$250
NATR-013	BNP (1-32), rat	H-Asn-Ser-Lys-Met-Ala-His-Ser-Ser-Ser-Cys-Phe-Gly-Gln-Lys-Ile-Asp-Arg-Ile-Gly-Ala-Val-Ser-Arg-Leu-Gly-Cys-Asp-Gly-Leu-Arg-Leu-Phe-OH (trifluoroacetate salt) (Cys10 and 26 bridge)	0.5 mg - \$125, 1 mg - \$195
NATR-014	BNP (1-45), rat	H-Ser-Gln-Asp-Ser-Ala-Phe-Arg-Ile-Gln-Glu-Arg-Leu-Arg-Asn-Ser-Lys-Met-Ala-His-Ser-Ser-Ser-Cys-Phe-Gly-Gln-Lys-Ile-Asp-Arg-Ile-Gly-Ala-Val-Ser-Arg-Leu-Gly-Cys-Asp-Gly-Leu-Arg-Leu-Phe-OH (trifluoroacetate salt) (Cys23 and 39 bridge)	0.5 mg - \$195, 1 mg - \$375
NATR-015	BNP (1-32), porcine	H-Ser-Pro-Lys-Thr-Met-Arg-Asp-Ser-Gly-Cys-Phe-Gly-Arg-Arg-Leu-Asp-Arg-Ile-Gly-Ser-Leu-Ser-Gly-Leu-Gly-Cys-Asn-Val-Leu-Arg-Arg-Tyr-OH (trifluoroacetate salt) (Cys10 and 26 bridge)	0.5 mg - \$125, 1 mg - \$195
NATR-016	BNP (7-32), porcine	H-Asp-Ser-Gly-Cys-Phe-Gly-Arg-Arg-Leu-Asp-Arg-Ile-Gly-Ser-Leu-Ser-Gly-Leu-Gly-Cys-Asn-Val-Leu-Arg-Arg-Tyr-OH (trifluoroacetate salt) (Cys4 and 20 bridge)	0.5 mg - \$125, 1 mg - \$195
NATR-017	Vasonatin Peptide (1-27)	H-Gly-Leu-Ser-Lys-Gly-Cys-Phe-Gly-Leu-Lys-Leu-Asp-Arg-Ile-Gly-Ser-Met-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg-Tyr-OH (trifluoroacetate salt) (Cys6 and 22 bridge)	0.5 mg - \$125, 1 mg - \$195
NATR-018	BNP (1-45), mouse	H-Ser-Gln-Gly-Ser-Thr-Leu-Arg-Val-Gln-Gln-Arg-Pro-Gln-Asn-Ser-Lys-Val-Thr-His-Ile-Ser-Ser-Cys-Phe-Gly-His-Lys-Ile-Asp-Arg-Ile-Gly-Ser-Val-Ser-Arg-Leu-Gly-Cys-Asn-Ala-Leu-Lys-Leu-Leu-OH (trifluoroacetate salt) (Cys23 and 39 bridge)	0.5 mg - \$195, 1 mg - \$375
NATR-019	(Tyr0)-C-Type Natriuretic Peptide (32-53) (human, porcine)	H-Tyr-Gly-Leu-Ser-Lys-Gly-Cys-Phe-Gly-Leu-Lys-Leu-Asp-Arg-Ile-Gly-Ser-Met-Ser-Gly-Leu-Gly-Cys-OH (trifluoroacetate salt) (disulfide bridge)	0.5 mg - \$105, 1 mg - \$191



NATR-020	C-Type Natriuretic Peptide (32-53) (human, porcine, rat)	H-Gly-Leu-Ser-Lys-Gly-Cys-Phe-Gly-Leu-Lys-Leu-Asp-Arg-Ile-Gly-Ser-Met-Ser-Gly-Leu-Gly-Cys-OH (disulfide bridge)	0.5 mg - \$124, 1 mg - \$218
NEUP-118	Neuron Specific Peptide	H-Asp-Val-Ser-Asp-Gly-Ser-Ala-Glu-Arg-Arg-Pro-Tyr-Thr-Arg-Met-Gly-Ser-Gly-Gly-Leu-Lys-Leu-His-Cys-Val-His-Pro-Ala-Asn-Cys-Pro-Gly-Gly-Leu-Met-Val-Thr-OH (trifluoroacetate salt) (Cys24 and 30 bridge)	0.5 mg - \$125, 1 mg - \$195
OREX-001	Orexin A, human	Glp-Pro-Leu-Pro-Asp-Cys-Cys-Arg-Gln-Lys-Thr-Cys-Ser-Cys-Arg-Leu-Tyr-Glu-Leu-Leu-His-Gly-Ala-Gly-Asn-His-Ala-Ala-Gly-Ile-Leu-Thr-Leu-NH ₂ (trifluoroacetate salt) (Cys6 and 12 bridge, Cys7 and 14 bridge)	0.5 mg - \$250, 1 mg - \$450
OREX-006	Heavy Orexin A, human	Glp-Pro-Leu(U13C6,15N)-Pro-Asp-Cys-Cys-Arg-Gln-Lys-Thr-Cys-Ser-Cys-Arg-Leu(U13C6,15N)-Tyr-Glu-Leu-Leu-His-Gly-Ala-Gly-Asn-His-Ala-Ala-Gly-Ile-Leu-Thr-Leu-NH ₂ (Cys6 and Cys12/Cys7 and Cys14 Bridges) (trifluoroacetate salt)	0.5 mg - \$395, 1 mg - \$695
OSTP-001	Osteocalcin (1-49), human	H-Tyr-Leu-Tyr-Gln-Trp-Leu-Gly-Ala-Pro-Val-Pro-Tyr-Pro-Asp-Pro-Leu-Gla-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-OH (Cys23 and 29 bridge)	0.1 mg - \$250, 0.5 mg - \$950
OSTP-010	(Glu13•17•20)-Osteocalcin (1-46) (mouse)	H-Tyr-Leu-Gly-Ala-Ser-Val-Pro-Ser-Pro-Asp-Pro-Leu-Glu-Pro-Thr-Arg-Glu-Gln-Cys-Glu-Leu-Asn-Pro-Ala-Cys-Asp-Glu-Leu-Ser-Asp-Gln-Tyr-Gly-Leu-Lys-Thr-Ala-Tyr-Lys-Arg-Ile-Tyr-Gly-Ile-Thr-Ile-OH (Disulfide bond)	0.5 mg - \$306, 1 mg - \$549
OSTP-012	Calcitonin, salmon	H-Cys-Ser-Asn-Leu-Ser-Thr-Cys-Val-Leu-Gly-Lys-Leu-Ser-Gln-Glu-Leu-His-Lys-Leu-Gln-Thr-Tyr-Pro-Arg-Thr-Asn-Thr-Gly-Ser-Gly-Thr-Pro-NH ₂ (disulfide bridge)	0.5 mg - \$50, 1 mg - \$80, 25 mg - \$430, 5 mg - \$1750
OSTP-014	Calcitonin, human	H-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 (trifluoroacetate salt) (Cys1 and 7 bridge)	0.5 mg - \$75, 1 mg - \$125
OSTP-015	Calcitonin, rat	H-Cys-Gly-Asn-Leu-Ser-Thr-Cys-Met-Leu-Gly-Thr-Tyr-Thr-Gln-Asp-Leu-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ser-Ile-Gly-Val-Gly-Ala-Pro-NH ₂ (trifluoroacetate salt) (Cys1 and 7 bridge)	0.5 mg - \$75, 1 mg - \$125
OSTP-016	Calcitonin, chicken	H-Cys-Ala-Ser-Leu-Ser-Thr-Cys-Val-Leu-Gly-Lys-Leu-Ser-Gln-Glu-Leu-His-Lys-Leu-Gln-Thr-Tyr-Pro-Arg-Thr-Asp-Val-Gly-Ala-Gly-Thr-Pro-NH ₂ (trifluoroacetate salt) (Cys1 and 7 bridge)	0.5 mg - \$75, 1 mg - \$125



OSTP-018	Calcitonin Gene Related Peptide, human	H-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 (disulfide bridge)	0.5 mg - \$95, 1 mg - \$165
OSTP-019	[Tyr ⁰] Calcitonin Gene Related Peptide, human	H-Tyr-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 (trifluoroacetate salt) (Cys ³ and 8 bridge)	0.5 mg - \$125, 1 mg - \$195
OSTP-021	Calcitonin Gene Related Peptide II, human	H-Ala-Cys-Asn-Thr-Ala-Thr-Cys-Val-Thr-His-Arg-Leu-Ala-Gly-Leu-Leu-Ser-Arg-Ser-Gly-Gly-Met-Val-Lys-Ser-Asn-Phe-Val-Pro-Thr-Asn-Val-Gly-Ser-Lys-Ala-Phe-NH ₂ (trifluoroacetate salt) (Cys ² and 7 bridge)	0.5 mg - \$95, 1 mg - \$165
OSTP-022	[Tyr ⁰] Calcitonin Gene Related Peptide II, human	H-Tyr-Ala-Cys-Asn-Thr-Ala-Thr-Cys-Val-Thr-His-Arg-Leu-Ala-Gly-Leu-Leu-Ser-Arg-Ser-Gly-Gly-Met-Val-Lys-Ser-Asn-Phe-Val-Pro-Thr-Asn-Val-Gly-Ser-Lys-Ala-Phe-NH ₂ (trifluoroacetate salt) (Cys ² and 8 bridge)	0.5 mg - \$125, 1 mg - \$195
OSTP-023	Calcitonin Gene Related Peptide, rat	H-Ser-Cys-Asn-Thr-Ala-Thr-Cys-Val-Thr-His-Arg-Leu-Ala-Gly-Leu-Leu-Ser-Arg-Ser-Gly-Gly-Val-Val-Lys-Asp-Asn-Phe-Val-Pro-Thr-Asn-Val-Gly-Ser-Glu-Ala-Phe-NH ₂ (trifluoroacetate salt) (Cys ² and 7 bridge)	0.5 mg - \$125, 1 mg - \$195
OSTP-024	[Tyr ⁰] Calcitonin Gene Related Peptide, rat	H-Tyr-Ser-Cys-Asn-Thr-Ala-Thr-Cys-Val-Thr-His-Arg-Leu-Ala-Gly-Leu-Leu-Ser-Arg-Ser-Gly-Gly-Val-Val-Lys-Asp-Asn-Phe-Val-Pro-Thr-Asn-Val-Gly-Ser-Glu-Ala-Phe-NH ₂ (trifluoroacetate salt) (Cys ³ and 8 bridge)	0.5 mg - \$125, 1 mg - \$195
OXYT-001	Oxytocin	H-Cys-Tyr-Ile-Gln-Asn-Cys-Pro-Leu-Gly-NH ₂ (trifluoroacetate salt) (Cys ¹ and 6 bridge)	1 mg - \$25
OXYT-003	(Deamino-Cys ¹ , D-Tyr(Et) ² , Thr ⁴ , Orn ⁸)-Oxytocin, Atosiban	3-Mercaptopropionyl-D-Tyr(Et)-Ile-Thr-Asn-Cys-Pro-Orn-Gly-NH ₂ (acetate salt) (Disulfide bond)	50 mg - \$157, 250 mg - \$628
OXYT-004	(Ser ⁴ , Ile ⁸)-Oxytocin, Isotocin	H-Cys-Tyr-Ile-Ser-Asn-Cys-Pro-Ile-Gly-NH ₂ (trifluoroacetate salt) (Disulfide bond)	1 mg - \$56, 5 mg - \$236
OXYT-005	(Arg ⁸)-Vasotocin	H-Cys-Tyr-Ile-Gln-Asn-Cys-Pro-Arg-Gly-NH ₂ (disulfide bridge)	5 mg - \$125, 25 mg - \$502

PACR-001	M65	H-Cys-Asp-Ala-Thr-Cys-Gln-Phe-Arg-Lys-Ala-Ile-Asp-Asp-Cys-Gln-Lys-Gln-Ala-His-His-Ser-Asn-Val-Pro-Gly-Asn-Ser-Val-Phe-Lys-Glu-Cys-Met-Lys-Gln-Lys-Lys-Glu-Phe-Lys-Ala-NH ₂ (trifluoroacetate salt) (Disulfide bond Cys1 and Cys5/Cys14 and Cys32)	0.5 mg - \$266, 1 mg - \$495
RGDP-008	RGD-4C	H-Ala-Cys-Asp-Cys-Arg-Gly-Asp-Cys-Phe-Cys-Gly-OH (trifluoroacetate salt) (disulfide bridge: 2-10 and 4-8)	1 mg - \$381, 5 mg - \$1570
RGDP-009	RGD-targeted Proapoptotic Peptide	H-Ala-Cys-Asp-Cys-Arg-Gly-Asp-Cys-Phe-Cys-Gly-Gly-DLys-DLeu-DAla-DLys-DLeu-DAla-DLys-DLys-DLeu-DAla-DLys-DLeu-DAla-DLys-NH ₂ (trifluoroacetate salt) (disulfide bridge Cys1-Cys4 and Cys2-Cys3)	1 mg - \$158, 5 mg - \$327
SOMA-001	Somatostatin 14	H-Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH (disulfide bridge)	1 mg - \$25, 5 mg - \$62, 25 mg - \$248
SOMA-004	Octreotide (SMS 201-995)	H-DPhe-Cys-Phe-DTrp-Lys-Thr-Cys-Thr-ol (disulfide bridge)	0.5 mg - \$50, 1 mg - \$80
SOMA-008	Somatostatin 28	H-Ser-Ala-Asn-Ser-Asn-Pro-Ala-Met-Ala-Pro-Arg-Glu-Arg-Lys-Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH (trifluoroacetate salt) (Cys17 and 28 bridge)	0.5 mg - \$85, 1 mg - \$150
SOMA-011	DO-TA-(Tyr3)-Octreotate	4,7,10-Tricarboxymethyl-1,4,7,10-tetraaza-cyclododecan-1-yl-acetyl-D-Phe-Cys-Tyr-D-Trp-Lys-Thr-Cys-Thr-OH (Disulfide bond)	1 mg - \$290, 5 mg - \$1105
SOMA-015	DOTA-Octreotide	DOTA-DPhe-Cys-Phe-DTrp-Lys-Thr-Cys-Thr-ol (trifluoroacetate salt) (Cys2 and 7 bridge)	0.5 mg - \$175, 1 mg - \$295
SOMA-016	[Tyr1]-Somatostatin 14	H-Tyr-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH (trifluoroacetate salt) (disulfide bridge: Cys3-Cys14)	1 mg - \$49
SOMA-017	DO-TA-[Tyr3]-Octreotide	DOTA-DPhe-Cys-Tyr-DTrp-Lys-Thr-Cys-Thr-ol (trifluoroacetate salt) (Cys2 and 7 bridge)	0.5 mg - \$175, 1 mg - \$295, 5 mg - \$1050
TF-001	(Cys39)-Tissue Factor (33-53)	H-Val-Tyr-Thr-Val-Gln-Ile-Cys-Thr-Lys-Ser-Gly-Asp-Trp-Lys-Ser-Lys-Cys-Phe-Tyr-Thr-Thr-OH (trifluoroacetate salt) (disulfide bridge)	0.5 mg - \$340, 1 mg - \$600
TOXI-002	omega-Conotoxin MVIIA	H-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 (acetate salt) (disulfide bridge: Cys1-Cys16, Cys8-Cys20, and Cys15-Cys25)	0.5 mg - \$327, 1 mg - \$598
UROT-002	Urotensin II, goby	H-Ala-Gly-Thr-Ala-Asp-Cys-Phe-Trp-Lys-Tyr-Cys-Val-OH (trifluoroacetate salt) (Cys6 and 11 bridge)	1 mg - \$85



UROT-003	Urotensin II, human	H-Glu-Thr-Pro-Asp-Cys-Phe-Trp-Lys-Tyr-Cys-Val-OH (trifluoroacetate salt) (Cys5 and 10 bridge)	0.5 mg - \$65, 1 mg - \$95
UROT-004	Orn8, Urotensin II, human	H-Glu-Thr-Pro-Asp-Cys-Phe-Trp-Orn-Tyr-Cys-Val-OH (trifluoroacetate salt) (Cys5 and 10 bridge)	0.5 mg - \$65, 1 mg - \$95
VASP-001	[Arg8] Vasopressin / AVP	H-Cys-Tyr-Phe-Gln-Asn-Cys-Pro-Arg-Gly-NH2 (trifluoroacetate salt) (Cys1 and 6 bridge)	1 mg - \$25
VASP-002	[Lys8] Vasopressin	H-Cys-Tyr-Phe-Gln-Asn-Cys-Pro-Lys-Gly-NH2 (trifluoroacetate salt) (Cys1 and Cys6 bridge)	1 mg - \$25





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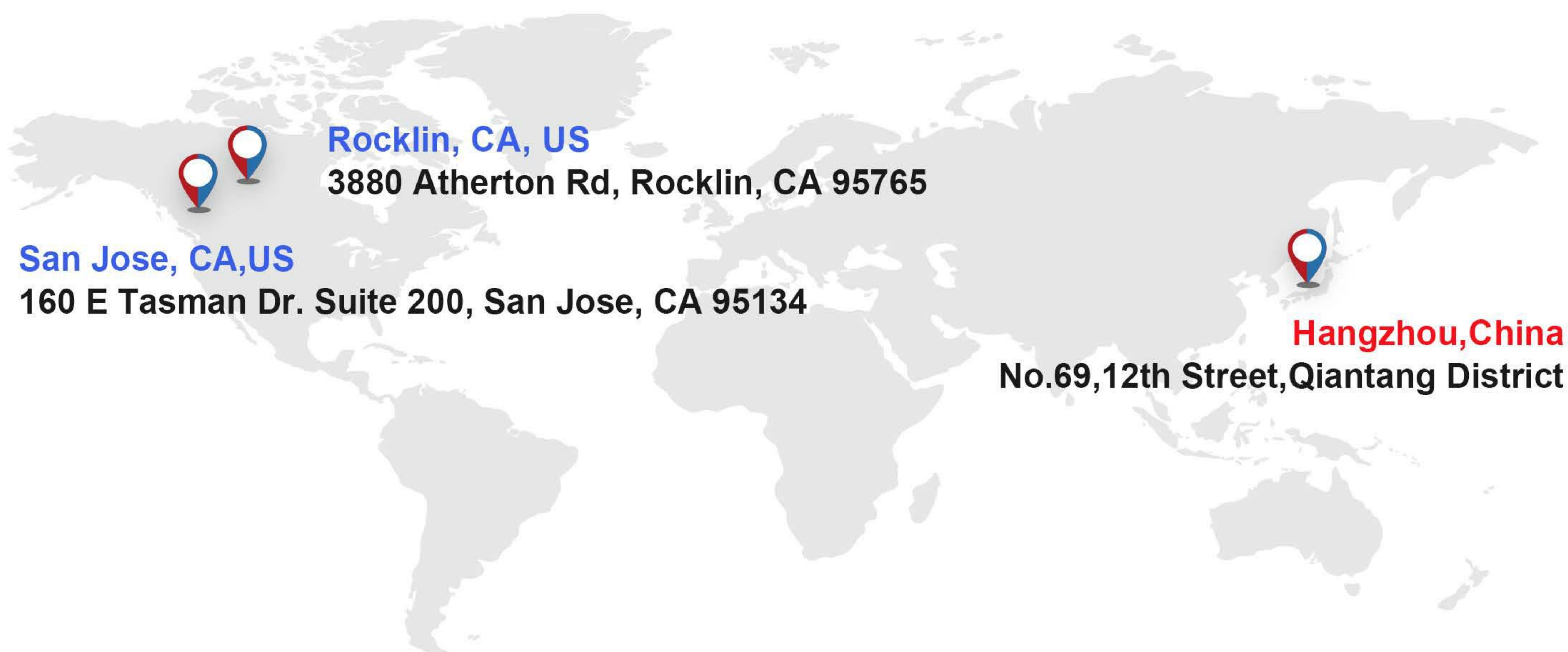
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