PEPTIDES INTERNATIONAL

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Diabetes Research Products

(also see our Feeding Regulatory and Research Exemption Product brochures)

Feeding Regulatory Peptides Series

Diabetes is a prevalent disease, affecting approximately 30.3million Americans (9.4% of the population).[1] A hallmark of diabetes is the body's inability to control its blood sugar, with resulting complications. The reasons for why this happens define the different types of diabetes. About 80-90% of all diabetics have type 2 diabetes, which is characterized by insulin resistance and the body's inability to secrete enough insulin. Type 1 diabetes is typically an autoimmune process by which the body no longer makes insulin or only makes it in small amounts. Lastly, gestational diabetes is a form of short-term diabetes that is brought about by pregnancy.[2]

Peptides International offers a unique non-recombinant insulin, high purity, free of zinc, and in a lypohlized amorphous powder form. Using porcine insulin as the raw material, the *C*-terminal amino acid of B-chain (B30) is replaced from Ala to Thr using an enzymatic method followed by chemical ligation. Peptides International also offers C-Peptide, GIP, Glucagon, Extendin (5-39), ShK and GsTxI toxins, obestatin, truncated obestatin, full length acyl and des-acyl ghrelin and ghrelin fragments, and several ghrelin antagonists to complete your diabetes and feeding regulatory research needs.

1. *https://www.cdc.gov/media/releases/2017/p0718-diabetes-report.html*
2. *https://dtc.ucsf.edu/types-of-diabetes/*

Please note: Vialed products with codes ending in -v or -s are net peptide weights, which are precisely determined by amino acid analysis, HPLC analysis and/or UV absorption measurement, and are clearly indicated on the label of each vial.

CODE	PRODUCTS	QTY	USD
INSULIN	E. Dorzbach (ed.), *Insulin I, Handbook of Experimental Pharmacology*, **Vol. 32 (1)**, Springer-Verlag, Berlin, 1971. *(Review)* A. Hasselblatt and F.V. Bruchhausen (eds.), *Insulin II, Handbook of Experimental Pharmacology*, **Vol. 32 (2)**, Springer-Verlag, Berlin, 1975. *(Review)*		
PIN-4088-s	**Insulin (Human)** Enzymatically Derived from Porcine Insulin	0.1 mg vial	$166
PIN-4088-v	**A-chain:** Gly-Ile-Val-Glu-Gln-Cys-Cys-Thr-Ser-Ile-Cys-Ser-Leu-Tyr-Gln-Leu-Glu-Asn-Tyr-Cys-Asn **B-chain:** Phe-Val-Asn-Gln-His-Leu-Cys-Gly-Ser-His-Leu-Val-Glu-Ala-Leu-Tyr-Leu-Val-Cys-Gly-Glu-Arg-Gly-Phe-Phe-Tyr-Thr-Pro-Lys-Thr (Disulfide bonds between Cys^{A6}-Cys^{A11},Cys^{A7}-Cys^{B7}, and Cys^{A20}-Cys^{B19}) (M.W. 5807.6) $C_{257}H_{383}N_{65}O_{77}S_6$ [11061-68-0]	0.5 mg vial	$562
	K. Morihara, *et al.*, *Biochem. Biophys. Res. Commun.*, **92**, 396 (1980). (*Semi-Synthesis*) K. Morihara, *et al.*, *Nature*, **280**, 412 (1979). (*Semi-Synthesis*)		
PLP-3404-v	**4-[D_{10}]Leu-Insulin (Human)** **[$^2H_{10}$]$Leu^{B6,B11,B15,B17}$]-Insulin (Human)** (Trifluoroacetate Form) **A-chain:** Gly-Ile-Val-Glu-Gln-Cys-Cys-Thr-Ser-Ile-Cys-Ser-Leu-Tyr-Gln-Leu-Glu-Asn-Tyr-Cys-Asn **B-chain:** Phe-Val-Asn-Gln-His-[$^2H_{10}$]Leu-Cys-Gly-Ser-His-[$^2H_{10}$]Leu-Val-Glu-Ala-[$^2H_{10}$]Leu-Tyr-[$^2H_{10}$]Leu-Val-Cys-Gly-Glu-Arg-Gly-Phe-Phe-Tyr-Thr-Pro-Lys-Thr (Disulfide bonds between Cys^{A6}-Cys^{A11}, Cys^{A7}-Cys^{B7}, and Cys^{A20}-Cys^{B19}) (M.W. 5847.8) $C_{257}H_{343}D_{40}N_{65}O_{77}S_6$ *Stable Isotope-Labeled Peptide Useful for Standardization of Insulin Immunoassays*	20 µg vial	$236
	K. Van Uytfanghe, *et al.*, *Rapid Commun. Mass Spectrom.*, **21**, 819 (2007). D. Rodríguez-Cabaleiro, *et al.*, *Clin. Chem.*, **53**, 1462 (2007). W.G. Miller, *et al.*, *Clin. Chem.*, **55**, 1011 (2009).		
PIN-4501-v	**Insulin I (Rat, Mouse)** **Ins1** **A-chain:** Gly-Ile-Val-Asp-Gln-Cys-Cys-Thr-Ser-Ile-Cys-Ser-Leu-Tyr-Gln-Leu-Glu-Asn-Tyr-Cys-Asn **B-chain:** Phe-Val-Lys-Gln-His-Leu-Cys-Gly-Pro-His-Leu-Val-Glu-Ala-Leu-Tyr-Leu-Val-Cys-Gly-Glu-Arg-Gly-Phe-Phe-Tyr-Thr-Pro-Lys-Ser (Disulfide bonds between Cys^{A6}-Cys^{A11}, Cys^{A7}-Cys^{B7}, and Cys^{A20}-Cys^{B19}) (M.W. 5803.6) $C_{259}H_{387}N_{65}O_{75}S_6$ [90092-10-7]	50 µg vial	$230
	L.F. Smith, *Am. J. Med.*, **40**, 662 (1966). (*Original*) H.F. Bünzli and R.E. Humbel, *Hoppe-Seyler's Z. Physiol. Chem.*, **353**, 444 (1972). H.F. Bünzli, *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, **353**, 451 (1972).		
PIN-4502-v	**Insulin II (Rat, Mouse)** **Ins2** **A-chain:** Gly-Ile-Val-Asp-Gln-Cys-Cys-Thr-Ser-Ile-Cys-Ser-Leu-Tyr-Gln-Leu-Glu-Asn-Tyr-Cys-Asn **B-chain:**Phe-Val-Lys-Gln-His-Leu-Cys-Gly-Ser-His-Leu-Val-Glu-Ala-Leu-Tyr-Leu-Val-Cys-Gly-Glu-Arg-Gly-Phe-Phe-Tyr-Thr-Pro-Met-Ser (Disulfide bonds between Cys^{A6}-Cys^{A11}, Cys^{A7}-Cys^{B7}, and Cys^{A20}-Cys^{B19}) (M.W. 5796.6) $C_{256}H_{382}N_{64}O_{76}S_7$ [90092-07-2]	50 µg vial	$250
	L.F. Smith, *Am. J. Med.*, **40**, 662 (1966). (*Original*) H.F. Bünzli and R.E. Humbel, *Hoppe-Seyler's Z. Physiol. Chem.*, **353**, 444 (1972). H.F. Bünzli, *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, **353**, 451 (1972).		

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CODE	PRODUCTS	QTY	USD
NAY-8370-v	**Anti Insulin (Human) Serum**	50 µg vial	$428
IDE-3798-PI	**IDE Inhibitor 6bK** (Fumaryl-Lys-Cha-D-Bpa)-Lys-NH_2 (M.W. 757.94) $C_{41}H_{55}N_7O_7$ *Inhibitor of IDE or Insulin-Degrading Enzyme; Blocks Insulin Breakdown*	1 mg 5 mg	$428 $1,712
CYT-614	**Insulin Human, Yeast** Insulin Human Recombinant, Yeast Greater than 98.0% as determined by: (a) Analysis by RP-HPLC. (b) Analysis by SDS-PAGE.	2 mg 10 mg 1000 mg	$50 $130 $600
CYT-468	**Insulin Porcine** Insulin Porcine Recombinant Greater than 97.0% as determined by SEC-HPLC.	25 mg 250 mg 1000 mg	$110 $310 $1,000
CYT-270	**Insulin Human** Insulin Human Recombinant Greater than 98.0% as determined by: (a) Analysis by RP-HPLC. (b) Analysis by SDS-PAGE.	25 mg 250 mg 1000 mg	$110 $310 $1,000
ANT-100	**Insulin, Mouse Anti-Human Monoclonal** Insulin decreases blood glucose concentration. It increases cell permeability to monosaccharides, amino acids and fatty acids. It accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver. These clones have been derived from hybridization of X63-Ag8-653 myeloma cells with spleen cells of Balb/c mice immunised with purified human insulin.	200 µg 500 µg 1000 µg	$175 $300 $550
ANT-062	**Insulin-Like Growth Factor-1, Mouse Anti-Human** Somatomedin C, IGF-I, IGFI, IGF1, IGF-IA, Mechano growth factor, MGF Direct ELISA, Western Blot, Immuneprecipitation	500 µg 1000 µg	$155 $290
PKA-237	**Insulin-Like Growth Factor-1 Receptor (Human) (Recombinant)**	2 µg 5 µg 10 µg	$175 $270 $490
CYT-216	**IGF1 Human** Insulin-Like Growth Factor 1 Human Recombinant; Somatomedin C; IGF-I; IGFI;IGF1; IGF-IA; Mechano Growth Factor; MGF; GPETLCGAEL VDALQFVCGD RGFYFNKPTG YGSSSRRAPQ TGIVDECCFR SCDLRRLEMY CAPLKPAKSA	20 µg 100 µg 1000 µg	$50 $130 $270
CYT-518	**IGF1 Human Des1-3** Insulin-Like Growth Factor 1 Des (1-3) Human Recombinant Somatomedin C; IGF-I; IGFI; IGF1; IGF-IA; Mechano Growth Factor; MGF; Des(1-3); Des1-3; Des 1-3; Des (1-3); IGF-1 (4-70)	20 µg 100 µg 1000 µg	$50 $130 $270
PRO-1432	**IGF-Like Family Receptor 1 Human (Recombinant)**	2 µg 10 µg 1000 µg	$50 $130 $5,200

ADROPIN

K.G. Kumar, *et al.*, *Cell Metab.*, **8**, 468 (2008). (*Original: Primary Structure / Pharmacol.*)

Peptides secreted from peripheral organs regulate lipid metabolism in key insulin-target tissues and are important for energy homeostasis and maintaining insulin sensitivity. Much attention has been given to adipokines secreted by adipocytes. While receiving less attention, liver-secreted factors are also critical for energy homeostasis.

Adropin, initially identified during microarray analysis of liver gene expression in mouse models of obesity, is a 76-residue peptide encoded by the energy homeostasis associated gene Enho1. Bioinformatics analysis suggested that the peptide is most likely secreted with a probable cleavage site between residues 33 and 34. Thus, disulfide-linked Adropin (34-76) was chemically synthesized for biological tests; glucose homeostasis and hepatic lipid metabolism were improved in mouse with 90 or 900 nmol/kg/day through intraperitoneal administration. These effects were independent of adiposity or food intake. Considering the alteration of adropin mRNA level associated with obesity, adropin (34-76) may be a powerful peptide in the study of obesity-associated hepatosteatosis and hyperinsulinemia.

PAP-4456-s	**Adropin (Human, 34-76) (Rat, Mouse)** 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 (Disulfide bond between Cys^1-Cys^{23}) (M.W. 4499.8) $C_{190}H_{293}N_{55}O_{68}S_2$ Synthetic Product *Regulatory Factor in Energy Homeostasis*	0.1 mg vial	$364

AMYLIN

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	$541

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CODE	PRODUCTS	QTY	USD
PAM-4220-v	**Amylin (Rat)** 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-NH_2; APP: Islet Amyloid Polypeptide; DAP: Diabetes-Associated Peptide (M.W. 3920.4) $C_{167}H_{272}N_{52}O_{53}S_2$ [124447-81-0] (Disulfide bond between Cys^2 and Cys^7) J.D. Leffert, *et al.*, *Proc. Natl. Acad. Sci. USA*, **86**, 3127 (1989). (*Original; cDNA*) J. Asai, *et al.*, *Biochem. Biophys. Res. Commun.*, **164**, 400 (1989). (*Original; Isolation and Structure*)	0.5 mg vial	$503
NAM-14220-v	**Amylin (Rat) Antiserum** Our undiluted antisera are suitable for immuno-histochemical use, for application to radioimmunoassay (RIA), or other non-isotopic immunoassay systems. These antisera are partially characterized by either of the following two methods: 1) (EIA) or 2) ELISA.	50 µg	$418
PAM-3824-PI	**Pramlintide** 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-Pro-Ile-Leu-Pro-Pro-Thr-Asn-Val-Gly-Ser-Asn-Thr-Tyr-NH_2; [Pro25,28,29]-Amylin (Human, 1-37); Triproamylin, Symlin (M.W. 3949.47) $C_{171}H_{267}N_{51}O_{53}S_2$ [151126-32-8] (Disulfide bonds between Cys^2 and Cys^7)	1 mg 5 mg	$268 $1,070
C-PEPTIDES			
PCP-3725-PI	**C-Peptide (Human)** H-Glu-Ala-Glu-Asp-Leu-Gln-Val-Gly-Gln-Val-Glu-Leu-Gly-Gly-Gly-Pro-Gly-Ala-Gly-Ser-Leu-Gln-Pro-Leu-Ala-Leu-Glu-Gly-Ser-Leu-Gln-OH (M.W. 3020.33) $C_{129}H_{211}N_{35}O_{48}$ [33017-11-7] *Insulin Precursor (57-87) (Human)* A.S.C.Ko and D.G.Smyth, *Eur. J. Biochem.*, **20**, 190 (1971). P.E.Oyer, *et al.*, *J. Biol. Chem.*, **246**, 1375 (1971). J.P.Palmer, *et al.*, *Diabetes*, **53**, 250 (2004). K.Igano, *et al.*, *Bull. Chem. Soc. Jpn.*, **54**, 3088 (1981). J.Wahren, *et al.*, *Exp. Diabesity Res.*, **5**, 15 (2004).	1 mg 5 mg	$209 $835
PCP-3724-PI	**[Tyr0]-C-Peptide (Human)** Tyrosyl Human C-Peptide, H-Tyr-Glu-Ala-Glu-Asp-Leu-Gln-Val-Gly-Gln-Val-Glu-Leu-Gly-Gly-Gly-Pro-Gly-Ala-Gly-Ser-Leu-Gln-Pro-Leu-Ala-Leu-Glu-Gly-Ser-Leu-Gln-OH (M.W. 3183.50) $C_{138}H_{220}N_{36}O_{50}$ [57327-90-9] *C-Peptide Derivative for Radioimmunoassay* V.K. Naithani, *et al., Hoppe Seylers Z. Physiol. Chem.*, **356**, 1305 (1975). N. Yanaihara, *et al., Hoppe Seylers Z. Physiol. Chem.*, **362**, 775 (1981). H. Sun, *et al.*, *Appl. Biochem. Biotechnol.*, **55**, 167 (1995).	1 mg 5 mg	$696 $2,782
NAY-8221-v	**Anti C-Peptide I (Rat) Serum**	50 µg	$428
NAY-8220-v	**Anti C-Peptide II (Rat) Serum**	50 µg	$428
DPP IV INHIBITORS AND SUBSTRATES			
IDP-4132	**Diprotin A** Ile-Pro-Ile • H_2O, L-Isoleucyl-L-Propyl-L-Isoleucine • H_2O (341.45 • 18.02) $C_{17}H_{31}N_3O_4$ • H_2O [90614-48-5] *Inhibitor for Dipeptidyl Aminopeptidase IV*	25 mg 100 mg	$81 $182
IDP-4132-v	H. Umezawa, *et al., J. Antibiotics*, **37**, 422 (1984). (*Original; IC_{50}; Chem. Structure*)	0.5 mg vial	$24
MGP-3090-v	**Gly-Pro-MCA** GP-AMC; Gly-Pro-AMC; Glycyl-L-Proline 4-Methyl-Coumaryl-7-Amide (M.W. 329.35) $C_{17}H_{19}N_3O_4$ [67341-42-8] *Substrate for X-prolyl Dipeptidyl-Aminopeptidase* T. Kato, *et al.*, *Biochem. Med.*, **19**, 351 (1978).	5 mg	$43
SGP-3074-v	**Gly-Pro-pNA • Tos [GPNT]** GPNT; Glycyl-L-Proline *p*-Nitroanilide • Monotosylate (M.W. 292.29 • 172.20) $C_{13}H_{16}N_4O_4$ • $C_7H_8O_3S$ [65096-46-0] *Substrate for X-prolyl Dipeptidyl-Aminopeptidase* T. Nagatsu, *et al., Anal. Biochem.*, **74**, 466 (1976). K. Fujita, *et al.*, *Clin. Chim. Acta*, **88**, 15 (1978).	10 mg	$35

GHRELINS

Growth hormone releasing peptide 6 (GHRP-6) was the first synthetic peptide that was shown to release growth hormone (GH) and stimulate weight gain by binding to growth hormone secretagogue receptor type 1a (GSR1a).[1-2] **Ghrelin**, the endogenous ligand for GSR1a, was later isolated.[3] This orexigenic and GH releasing peptide is derived from ghrelin preproprotein. It is expressed primarily in the stomach and has been shown to decrease insulin levels and increase appetite, body weight gain, fat accumulation, and glucose and GH levels, suggesting this peptide plays a highly important physiological role in metabolism.[3,4-7] In addition, it may also modulate cell proliferation of cancer cells and cardiomyocytes. [8-9]

CODE	PRODUCTS	QTY	USD

Two forms of ghrelin can be found in circulation: an acylated form and a non-acylated form. The acylated form of ghrelin contains an *n*-octanoyl at the Ser[3] residue that is required for activation of GSR1a. Therefore, it was originally believed that des-acyl ghrelin, which lacks this acyl group at Ser[3], is an inactive form though it is the predominant one found in circulation. Accumulating evidence, however, indicates that des-acyl ghrelin can counteract some metabolic responses of acylated ghrelin in humans, and mice injected with or over expressed with the des-acyl form were found to decrease food intake and gastric emptying.[4, 5, 10] Other studies showed both forms of ghrelin mediate cell proliferation and fat accumulation.[8, 9, 11] Collectively, these studies suggest an alternative receptor exists for ghrelin that is not dependent on n-octanoylation of Ser[3] for activation. Studying des-acyl ghrelin may offer new insight into the regulation of homeostasis and energy balance.

Currently, in addition to ghrelin, a number of gastrointestinal hormones have been identified that control appetite by either stimulating food intake and gastric emptying or inhibiting these responses. Zhang *et al*. has recently identified one of the newest members of this family by using bioinformatic predictions about enzyme cleavage of the prepropeptide of ghrelin.[12] The newly identified 23 amino acid, ghrelin-associated peptide was named **obestatin** (*PGH-3890-PI* and *PGH-3891-PI*). Though both peptides originate from the same precursor prepropeptide, they have opposing physiological roles.

Peptides International offers obestatin, truncated obestatin, full length acyl and des-acyl ghrelin and ghrelin fragments, and several ghrelin antagonists to complete your research needs. Our acyl and des-acyl ghrelin fragments consisting of the first 5, 10, 14 or 18 amino acids and contain the core amino acids required for proper binding and activation of GHSR1a.[13] **[Dap[3]]-Ghrelin (Rat)** (*PGH-3680-PI*) and **[Dap[3]]-Ghrelin (Human, Rat, 1-5)** (*PGH-3681-PI*) analogs are replaced with 2,3-diaminopropionic acid (Dap) at Ser[3]. This substitution should make the analogs more stable and less susceptible to esterases and acyl migration.[13] Ghrelin analogs with the Dap substitution have been shown to activate growth hormone secretagogues receptor 1a (GHSR1a) just as efficiently as the parent peptide.[13] The variety of research tools we offer at Peptides International may help scientists elucidate the complex regulation of appetite and weight gain.

1. A.D. Howard *et al.*, *Science*, **273**, 974 (1996).
2. C.Y. Bowers, *et al.*, *Endocrinology*, **114**, 1537 (1984).
3. M. Kojima, *et al.*, *Nature*, **402**, 656 (1999).
4. F. Broglio, *et al.*, *J. Clin. Endoc. and Metabolism*, **89**, 3062 (2004).
5. C. Gauna *et al.*, *J. Clin. Endoc. and Metabolism*, **89**, 5035 (2004).
6. M. Tschop, *et al.*, *Nature*, **407**, 908 (2000).
7. A. Asakawa, *et al.*, *Gastroenterology*, **120**, 337 (2001).
8. P. Cassoni, *et al.*, *Eur. J. Endoc.*, **150**, 173 (2004).
9. G. Baldanzi, *et al.*, *J. Cell Biol.*, **159**, 1029 (2002).
10. A. Asakawa, *et al.*, *Gut*, **54**, 18 (2005).
11. N.M. Thompson, *et al.*, *Endoc.*, **145**, 234 (2004).
12 J.V. Zhang, *et al.*, *Science*, **310**, 996 (2005).
13. M.A. Bednarek, *et al.*, *J. Med. Chem.*, **43**, 4370 (2000).

PGH-3741-PI	**Ghrelin (Human)** (Trifluoroacetate Form) H-Gly-Ser-Ser(*n*-Octanoyl)-Phe-Leu-Ser-Pro-Glu-His-Gln-Arg-Val-Gln-Gln-Arg-Lys-Glu-	1 mg 5 mg	$242 $968
PGH-4372-s	Ser-Lys-Lys-Pro-Pro-Ala-Lys-Leu-Gln-Pro-Arg-OH (M.W. 3370.90) $C_{149}H_{249}N_{47}O_{42}$ [258279-04-8] *Appetite Stimulating Peptide with Energy Homeostasis Regulation*	0.1 mg vial	$289
	M. Kojima, *et al.*, **402**, 656 (1999). (*Original*) G. Wang, *et al.*, *Regul. Pept.*, **105**, 75 (2002). (*Review*) C. Dieguez and F.F. Casanueva, *Eur. J. Endocrinol.*, **440**, 235 (2002). (*Review*)		
HOR-294	**Ghrelin Human (Recombinant)**	5 µg 25 µg 1000 µg	$50 $130 $2,250
PGH-4373-s	**Ghrelin (Rat)** (Trifluoroacetate Form) Gly-Ser-Ser(*n*-Octanoyl)-Phe-Leu-Ser-Pro-Glu-His-Gln-Lys-Ala-Gln-Gln-Arg-Lys-Glu-Ser-Lys-Lys-Pro-Pro-Ala-Lys-Leu-Gln-Pro-Arg (M.W. 3314.80) $C_{147}H_{245}O_{45}N_{42}$ [258338-12-4] *Appetite Stimulating Peptide with Energy Homeostasis Regulation*	0.1 mg vial	$289
	M. Kojima, *et al.*, *Nature*, **402**, 656 (1999). (*Original*) G. Muccioli, *et al.*, *Eur. J. Pharmacol.*, **440**, 235 (2002). G. Wang, *et al.*, *Regul. Pept.*, **105**, 75 (2002). (*Review*) C. Dieguez and F.F. Casanueva, *Eur. J. Endocrinol.*, **440**, 235 (2002). (*Review*)		
PGH-3653-PI	**Des-*n*-Octanoyl-[Ser[3]]-Ghrelin (Human)** Non-Acylated Ghrelin (Human) H-Gly-Ser-Ser-Phe-Leu-Ser-Pro-Glu-His-Gln-Arg-Val-Gln-Gln-Arg-Lys-Glu-Ser-Lys-Lys-Pro-Pro-Ala-Lys-Leu-Gln-Pro-Arg-OH (M.W. 3244.74) $C_{141}H_{235}N_{47}O_{41}$ *Counteracts metabolic effects of acylated ghrelin*	0.5 mg	$156
	F. Broglio, *et al.*, *J. Clin. Endoc. and Metabolism*, **89**, 3062 (2004). A. Asakawa, *et al.*, *Gut*, **54**, 18 (2005). C. Gauna, *et al.*,, *J. Clin. Endoc. and Metabolism*, **89**, 5035 (2004).		

CODE	PRODUCTS	QTY	USD
PGH-3654-PI	**Des-*n*-Octanoyl-[Ser^3]-Ghrelin (Rat)** Non-Acylated Ghrelin (Rat) H-Gly-Ser-Ser-Phe-Leu-Ser-Pro-Glu-His-Gln-Lys-Ala-Gln-Gln-Arg-Lys-Glu-Ser-Lys-Lys-Pro-Pro-Ala-Lys-Leu-Gln-Pro-Arg-OH (M.W. 3188.67) $C_{139}H_{231}N_{45}O_{41}$ *Counteracts Metabolic Effects of Acylated Ghrelin* F. Broglio, *et al.*, *J. Clin. Endoc. and Metabolism*, **89**, 3062 (2004). C. Gauna, *et al.*, *J. Clin. Endoc. and Metabolism*, **89**, 5035 (2004). A. Asakawa, *et al.*, *Gut*, **54**, 18 (2005). H. Hosoda, *et al.*, *Biochem. Biophys. Res. Commun.*, **279**, 909 (2000).	0.5 mg	$156
PGH-4437-s	**Des-Acyl Ghrelin (Rat)** (Trifluoroacetate Form) Gly-Ser-Ser-Phe-Leu-Ser-Pro-Glu-His-Gln-Lys-Ala-Gln-Gln-Arg-Lys-Glu-Ser-Lys-Lys-Pro-Pro-Ala-Lys-Leu-Gln-Pro-Arg; Des-Acyl; Ghrelin (Rat); Des-*n*-Octanoyl Ghrelin (Rat) (M.W. 3188.6) $C_{139}H_{231}N_{45}O_{41}$ [307950-60-3] *Des-Octanoylated Ghrelin with Distinct Effect on Food Intake* M. Kojima, H. Hosoda, *et al.*, *Nature*, **402**, 656 (1999). (*Original; Ghrelin*) H. Hosoda, *et al*, *Biochem. Biophys. Res. Commun.*, **279**, 909 (2000). (*Endogeneous Form*) F. Broglio, *et al.*, *J. Clin. Endocrinol. Metab.*, **89**, 3062 (2004). (*Pharmacol.; Antagonistic Effect*)	0.1 mg vial	$140
PGH-4436-s	**Des-Acyl Ghrelin (Human)** (Trifluoroacetate Form) Gly-Ser-Ser-Phe-Leu-Ser-Pro-Glu-His-Gln-Arg-Val-Gln-Gln- Arg-Lys-Glu-Ser-Lys-Lys-Pro-Pro-Ala-Lys-Leu-Gln-Pro-Arg (M.W. 3244.7) $C_{141}H_{235}N_{47}O_{41}$ [313951-59-6] *Des-Octanoylated Ghrelin with Distinct Effect on Food Intake* M. Kojima, H. Hosoda, *et al.*, *Nature*, **402**, 656 (1999). (*Original; Ghrelin*) H. Hosoda, *et al*, *Biochem. Biophys. Res. Commun.*, **279**, 909 (2000). (*Endogeneous Form*) F. Broglio, *et al.*, *J. Clin. Endocrinol. Metab.*, **89**, 3062 (2004). (*Pharmacol.; Antagonistic Effect*)	0.1 mg vial	$130
PGH-3902-PI	**[Trp^3, Arg^5]-Ghrelin (1-5)** H-Gly-Ser-Trp-Phe-Arg-OH (M.W. 651.73) $C_{31}H_{41}N_9O_7$ *Growth-Hormone Secretogue (GHS) Receptor Agonist / Stimulates Food-Intake* K. Ohinata, *et al.*, *Peptides*, **27**, 1632 (2006).	1 mg 5 mg	$89 $353
PGH-3652-PI	**[D-Arg^1,D-Phe^5,D-Trp^{7,9},Leu^{11}]-Substance P** H-D-Arg-Pro-Lys-Pro-D-Phe-Gln-D-Trp-Phe-D-Trp-Leu-Leu-NH_2 (M.W. 1516.87) $C_{79}H_{109}N_{14}O_{12}$ *Ghrelin Antagonist / Potent Ghrelin Inverse Agonist / Bombesin Antagonist* P.J. Woll and E. Rozengurt, *Proc. Natl. Acad. Sci. USA*, **85**, 1859 (1988). (*Original: Bombesin Antagonist*) B. Holst, *et al.*, *Mol. Endocrin.*, **17**, 2201 (2003). (*Original: Ghrelin Antagonist*)	1 mg	$59
PGH-3792-PI	**GO-CoA-Tat (Rat, Mouse)** H-Gly-Ser-α-Dap-ß-(2-CoA-Octanoyl)-Phe-Leu-Ser-Pro-Glu-His-Gln-Ahx-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-OH (M.W. 3633.92) $C_{146}H_{245}N_{54}O_{47}P_3S$ *Inhibitor of Ghrelin O-Acyl Transferase (GOAT)*	0.5 mg 1 mg	$883 $1,605
PGH-3908-PI	**H-Lys-D-Trp-Phe-D-Trp-Leu-Leu-NH_2** (M.W. 891.14) $C_{49}H_{66}N_{10}O_6$ *Potent Full Inverse Agonist for Ghrelin Receptor* B. Holst, *et al.*, *Mol. Pharmacol.*, **70**, 936 (2006).	1 mg 5 mg	$49 $198
PGH-3911-PI	**H-D-Ala-D-Nal(2')-Ala-Trp-D-Phe-Lys-NH_2** GHRP-2 or KP102; H-D-Ala-D-Nal(2')-Ala-Trp-D-Phe-Lys-NH_2; GHRP-2 (M.W. 818) $C_{45}H_{55}N_9O_6$ *Ghrelin Agonist Growth Hormone Releasing Peptide 2*	1 mg 5 mg	$49 $198
GHRELIN ACTIVE FRAGMENTS M.A. Bednarek, *et al.*, *J. Med. Chem.*, **43**, 4370 (2000).			
PGH-3625-PI	**Ghrelin (Human, 1-18) Amide** H-Gly-Ser-Ser(*n*-Octanoyl)-Phe-Leu-Ser-Pro-Glu-His-Gln-Arg-Val-Gln-Gln-Arg-Lys-Glu-Ser-NH_2 (M.W. 2225.51) $C_{96}H_{157}N_{31}O_{30}$ *Ghrelin Active Fragment*	1 mg 5 mg	$102 $305
PGH-3626-PI	**Ghrelin (Human, 1-14)** H-Gly-Ser-Ser(*n*-Octanoyl)-Phe-Leu-Ser-Pro-Glu-His-Gln-Arg-Val-Gln-Gln-OH (M.W. 1725.94) $C_{76}H_{120}N_{22}O_{24}$ *Ghrelin Active Fragment*	1 mg 5 mg	$81 $241
PGH-3627-PI	**Ghrelin (Human, Rat 1-10) Amide** H-Gly-Ser-Ser(*n*-Octanoyl)-Phe-Leu-Ser-Pro-Glu-His-Gln-NH_2 (M.W. 1213.37) $C_{55}H_{84}N_{14}O_{17}$ *Ghrelin Active Fragment*	1 mg 5 mg	$65 $193

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PGH-3628-PI	**Ghrelin (Human, Rat, 1-5) Amide** H-Gly-Ser-Ser(*n*-Octanoyl)-Phe-Leu-NH_2 (M.W. 634.78) $C_{31}H_{50}N_6O_8$ *Ghrelin Active Fragment*	1 mg 5 mg	$49 $145
DES-ACYL-GHRELIN FRAGMENTS			
PGH-3645-PI	**Des-*n*-Octanoyl-[Ser^3]-Ghrelin (Human, 1-18) Amide** H-Gly-Ser-Ser-Phe-Leu-Ser-Pro-Glu-His-Gln-Arg-Val-Gln-Gln-Arg-Lys-Glu-Ser-NH_2 (M.W. 2099.31) $C_{88}H_{143}N_{31}O_{29}$ *Nonacylated Ghrelin Fragment (Human, 1-18)*	1 mg 5 mg	$70 $209
PGH-3646-PI	**Des-*n*-Octanoyl-[Ser^3]-Ghrelin (Human, 1-14)** H-Gly-Ser-Ser-Phe-Leu-Ser-Pro-Glu-His-Gln-Arg-Val-Gln-Gln-OH (M.W. 1599.74) $C_{68}H_{106}N_{22}O_{23}$ *Nonacylated Ghrelin Fragment (Human, 1-14)*	1 mg 5 mg	$59 $166
PGH-3647-PI	**Des-*n*-Octanoyl-[Ser^3]-Ghrelin (Human, Rat, 1-10) Amide** H-Gly-Ser-Ser-Phe-Leu-Ser-Pro-Glu-His-Gln-NH_2 (M.W. 1087.172) $C_{47}H_{70}N_{14}O_{16}$ *Nonacylated Ghrelin Fragment (Human, Rat, 1-10)*	1 mg 5 mg	$49 $134
PGH-3648-PI	**Des-*n*-Octanoyl-[Ser^3]-Ghrelin (Human, Rat, 1-5) Amide** H-Gly-Ser-Ser-Phe-Leu-NH_2 (M.W. 508.58) $C_{23}H_{36}N_6O_7$ *Nonacylated Ghrelin Fragment (Human, Rat, 1-5)*	1 mg 5 mg	$38 $102
(DAP^3) GHRELIN ANALOGS M.A. Bednarek, *et al.*, *J. Med. Chem.*, **43**, 4370-4376 (2000).			
PGH-3681-PI	**[Dap^3]-Ghrelin (Human, Rat, 1-5) Amide** H-Gly-Ser-Dap(*n*-Octanoyl)-Phe-Leu-NH_2 Dap = 2,3-diaminopropionic acid (M.W. 633.79) $C_{31}H_{51}N_7O_7$ [100929-50-8] *Growth-Hormone Releasing Peptide / Ghrelin Analog Active Fragment*	1 mg 5 mg	$59 $204
PGH-3680-PI	**[Dap^3]-Ghrelin (Rat)** H-Gly-Ser-Dap(*n*-Octanoyl)-Phe-Leu-Ser-Pro-Glu-His-Gln-Lys-Ala-Gln-Gln-Arg-Lys-Glu-Ser-Lys-Lys-Pro-Pro-Ala-Lys-Leu-Gln-Pro-Arg-OH Dap = 2,3-diaminopropionic acid (M.W. 3313.88) $C_{147}H_{246}N_{46}O_{41}$ *Growth-Hormone Releasing Peptide / Ghrelin Analog*	0.5 mg	$165
GHRP (GROWTH HORMONE RELEASING PEPTIDE)			
PGH-3694-PI	**H-His-D-Trp-Ala-Trp-D-Phe-Lys-NH_2** [His^1,Lys^6]-Growth Hormone Releasing Peptide (M.W. 873.04) $C_{46}H_{56}N_{12}O_6$ [87616-84-0] C.Y. Bowers, *et al.*, *Endocrinol.*, **114**, 1537 (1984).	1 mg 5 mg	$27 $70
PGH-3656-PI	**H-His-D-Trp-D-Lys-Trp-D-Phe-Lys-NH_2** [D-Lys^3]-Growth Hormone Releasing Peptide-6 (GHRP-6) (M.W. 930.13) $C_{49}H_{63}N_{13}O_6$ *Ghrelin Antagonist* K. Fujino, *et al.*, *J. Physiol.*, **550**, 227 (2003).	1 mg 5 mg	$27 $53
GIP (GASTRIC INHIBITORY POLYPEPTIDE)			
PGR-4178-s PGR-4178-v	**GIP (Human)** Gastric Inhibitory Polypeptide (Human); Glucose-dependent Insulinotropia Polypeptide (Human); Tyr-Ala-Glu-Gly-Thr-Phe-Ile-Ser-Asp-Tyr-Ser-Ile-Ala-Met-Asp-Lys-Ile-His-Gln-Gln-Asp-Phe-Val-Asn-Trp-Leu-Leu-Ala-Gln-Lys-Gly-Lys-Lys-Asn-Asp-Trp-Lys-His-Asn-Ile-Thr-Gln (M.W. 4983.5) $C_{226}H_{338}N_{60}O_{66}S$ [100040-31-1] A.J. Moody, *et al.*, *FEBS Lett.*,**172**, 142 (1984). *(Original)* N. Fujii, M. *et al.*, *Chem. Pharm. Bull.*, **34**, 2397 (1986). *(Glucose-dependent Insulinotropic Polypeptide)*	0.1 mg vial 0.5 mg vial	$156 $525
PRO-1438	**GIP Human (Recombinant)** Gastric Inhibitory Polypeptide Human (Recombinant)	2 µg 10 µg 1000 µg	$50 $130 $5,200
NAY-8110-v	**Anti Gastrin 34 (1-15) (Human) Serum**	50 µg	$428
NAY-8100-v	**Anti GIP (1-30)-OH (Porcine) Serum**	50 µg	$428
NAY-8101-v	**Anti GIP (Human) Serum**	50 µg	$428

CODE	PRODUCTS	QTY	USD
NAY-8102-v	**Anti GIP (Rat) Serum**	50 µg	$350
NAY-8102-v	**Anti GIP (18–42) (Rat) Serum**	50 µg	$350

GLUCAGON-LIKE PEPTIDES & RELATED

E. Blázquez, E. Alvarez, *et al.*, *Mol. Neurobiol.*, **18**, 157 (1998). *(Review)*
G. van Dijk and T.E. Thiele, *Neuropeptides*, **33**, 406 (1999). *(Review)*
D.J. Drucker, *Gut*, **50**, 428 (2002). *(Review)*

Glucagon-like peptide-1 (GLP-1) is derived from the transcription product of the proglucagon gene. The major source of GLP-1 in the body is the intestinal L cell that secretes GLP-1 as a gut hormone. The biologically active forms of GLP-1 are: **GLP-1-(7-37)** and **GLP-1-(7-36)NH_2**.

GLP-1 secretion by L cells is dependent on the presence of nutrients in the lumen of the small intestine. The secretagogues (agents that causes or stimulates secretion) of this hormone include major nutrients like carbohydrate, protein and lipid. Once in the circulation, GLP-1 has a half-life of less than two minutes, due to rapid degradation by the enzyme dipeptidyl peptidase-IV.

GLP-1 possesses several physiological properties that make it a subject of intensive investigation as a potential treatment of diabetes mellitus. The known physiological functions of GLP-1 include: Increased insulin secretion from the pancreas in a glucose-dependent manner, decreased glucagon secretion from the pancreas, increased beta cells mass and insulin gene expression, inhibition of acid secretion and gastric emptying in the stomach, and decreased food intake by increasing satiety.

HOR-009	**Glucagon-like Peptide 1 (1-37) (Human)** His-Asp-Glu-Phe-Glu-Arg-His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-Gly; GLP1; GLP2; GRPP	2 µg 10 µg 1000 µg	$50 $130 $5,200
HOR-236	**Glucagon-like Peptide 1 (Human, 7-37) (Recombinant)** Glucagon Like Peptide-1 (31 AA) Human Recombinant HAEGTFTSDV SSYLEGQAAK EFIAWLVKGR G	10 µg 50 µg 1000 µg	$50 $130 $1,350
HOR-284	**Glucagon-like Peptide 1 (7-36) Amide (Human)** GLP1; GLP-1; Glucagon-Like Peptide 1; Incretin Hormone; Human Glucagon-Like Peptide 1; His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-NH_2 Glucagon Like Peptide-1 is a single, glycosylated, polypeptide chain containing 30 amino acids and having a molecular mass of 3297.7 Dalton. It is recommended to reconstitute the lyophilized Glucagon Like Peptide-1 in sterile 20mM AcOH at 1mg/ml, which can then be further diluted to other aqueous solutions. C.Y. Hsu, *et al., British Journal of Pharmacology,* **172.1**, 38-49 (2015).	1 mg 5 mg 100 mg	$50 $130 $1,950
PEX-3784-PI	**Exendin-4** H-His-Gly-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Leu-Ser-Lys-Gln-Met-Glu-Glu-Glu-Ala-Val-Arg-Leu-Phe-Ile-Glu-Trp-Leu-Lys-Asn-Gly-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Pro-Ser-NH_2; Exenatide (M.W. 4186.66) $C_{184}H_{282}N_{50}O_{60}S$ [141758-74-9] *GLP-1 (Glucagon-Like Peptide-1) Receptor Agonist* R Göke, *et al., J Biol Chem.*, **26**, 19650 (1993). B. Thorens, *et al., Diabetes*, **42**, 1678, (1993). A. Alcántara, *et al., Arch Biochem Biophys.*, **341**, 1, (1997). Sequence originally isolated from venom derived from the modified salivary glands of the Gila monster (*Heloderma suspectum*)	1 mg 5 mg	$482 $1,926

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PEX-4345-v	**Exendin (5-39)** **(Lizard, *Heloderma horridum*)** Thr-Phe-Thr-Ser-Asp-Leu-Ser-Lys-Gln-Met-Glu-Glu-Glu-Ala-Val-Arg-Leu-Phe-Ile-Glu-Trp-Leu-Lys-Asn-Gly-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Pro-Ser-NH_2 (M.W. 3806.2) $C_{169}H_{262}N_{44}O_{54}S$ *GLP-1 Receptor Antagonist* C. Montrose-Rafizadeh, *et al.*, *J. Biol. Chem.*, **272**, 21201 (1997). *(Original; Potent Antagonist)* J.-I. Oka, *et al.*, *Brain Res.*, **878**, 194 (2000). (*Pharmacol.*)	0.5 mg vial	$380

Liraglutide is a long-acting analog of GLP-1 that has been developed for type-2 diabetes. Palmitoylation of a side chain elongated Lys residue facilitates binding to albumin. Circulating plasma albumin serves as a central slow-release reservoir for the noncovalently-bound Liraglutide which improves its half-life by reducing degradation by DPP IV and neutral endopeptidase (NEP). This GLP-1 agonist acts in a glucose-dependent manner and has been shown in studies to decrease appetite and maintain body weight. It may play an important role in the treatment of type 2 diabetes.

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CODE	PRODUCTS	QTY	USD
PGL-3781-PI	**Liraglutide** Agonist of GLP-1 (Lys(γ-Glu-palmitoyl)26,Arg34)-GLP-1(7-37) H-His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys(γ-Glu-palmitoyl)-Glu-Phe-Ile-Ala-Trp-Leu-Val-Arg-Gly-Arg-Gly-OH (M.W. 3751.29) $C_{172}H_{265}N_{43}O_{51}$ [204656-20-2] *Glucagon-Like-Peptide-1 (GLP-1) Receptor Agonist*	1 mg 5 mg	$241 $963

Semaglutide is a glucagon-like peptide (GLP-1) analogue and a GLP-1 receptor agonist. Not only does it have a half-life of up to one week, it has been used in type 2 diabetes research for its ability to stimulate insulin production while suppressing glucagon secretion in a glucose-dependent manner. Semaglutide has an increased albumin affinity and exhibits a three-fold decrease in GLP-1 receptor affinity when compared to liraglutide.[1] Recent studies in patients with type II diabetes suggest that semaglutide may also have an improved cardiovascular outcome in those patients who are at risk for a cardiac event.[2]

1. J. Lau, *et al., J. Med. Chem.*, **58**, 7370 (2015). Retrieved from *http://pubs.acs.org/doi/abs/10.1021/acs.jmedchem.5b00726*
2. S.P. Marso, *et al., N. Engl. J. Med.*, 375, 1834 (2016). Retrieved from *http://www.nejm.org/doi/full/10.1056/NEJMoa1607141#t=article*

GLP-3875-PI	**Semaglutide** H-His-Aib-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-(AEEAc-AEEAc-ϒ-Glu-17-carboxyheptadecanoyl)-Glu-Phe-Ile-Ala-Trp-Leu-Val-Arg-Gly-Arg-Gly-OH (M.W. 4113.67) $C_{187}H_{291}N_{45}O_{59}$ [910463-68-2] *Glucagon-like peptide-1 (GLP-1) Analog Shown to Stimulate Insulin and Suppress Glucagon Secretion in a Glucose-Dependent Manner* S.P. Marso, *et al., N. Engl. J. Med.*, **375**, 1834 (2016). J. Lau, *et al., J. Med. Chem.*, **58**, 7370 (2015). C.F. Gotfredsen, *et al., Diabetes*, **63**, 2486 (2014).	1 mg 5 mg	$260 $1,040
PGL-4344-v	**Glucagon-Like Peptide 1 (Human, 7-36 Amide)** GLP-1 (Human, 7-36 Amide) (Bovine, Canine, Rat, Guinea pig) His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-NH_2 (M.W. 3297.6) $C_{149}H_{226}N_{40}O_{45}$ [107444-51-9] M.D. Turton, *et al.*, *Nature*, **379**, 69 (1996). *(Orginial-CNS Effect on Feeding)* G. van Dijk, *et al.*, *Nature*, **385**, 214 (1997). *(Correspondence)* M. Tang-Christensen, *et al., Am. J. Physiol.*, **271**, R848 (1996). *(Original, CNS Effect on Drinking)*	0.5 mg vial	$375
PGP-4280-v	**Glucagon-Like Peptide 1 (Human, 7-37)** GLP-1 (Human, 7-37) (Bovine, Canine, Rat, Guinea pig) His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-Gly (M.W. 3355.7) $C_{151}H_{228}N_{40}O_{47}$ [106612-94-6] G.G. Holz IV, *et al.*, *Nature*, **361**, 362 (1993). *(Original)* G.S. Meneilly, *et al.*, *Diabetes Care,* **24**, 964 (2001). (*Pharmacol.*)	0.5 mg vial	$375
PGL-3723-PI	**Glucagon-Like Peptide 1 (Human, 7-36)-Lys(Biotinyl)-Amide** GLP-1 (7-36)-Lys(Biotin)-Amide H-His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-Lys(Biotinyl)-NH_2 (M.W. 3652.18) $C_{165}H_{252}N_{44}O_{48}S$ H. John, *et al.*, *Eur. J. Med Res.*, **13**, 73 (2008). B. Ahrén, *et al.*, *Diabetes Care*, **25**, 869 (2002). D. Elahi, *et al.*, *Obesity*, **16**, 1501 (2008) C.F. Deacon,*et al.*, *Am. J. Physiol. Endocrinol. Metab.*, **282**, E873 (2002). B. Rolin, *et al.*, *Eur. J. Pharmacol.*, **494**, 283 (2004).	1 mg 5 mg	$400 $1,600
PGL-3722-PI	**Glucagon-Like Peptide 1 (Human, 9-36 Amide)** GLP-1 metabolite; GLP-1 (Human, 9-36 Amide) H-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-NH_2 (M.W. 3089.48) $C_{140}H_{214}N_{36}O_{43}$ [161748-29-4]	1 mg 5 mg	$290 $1,160

The proglucagon gene encodes glucagon, glucagon-like peptide 1 (GLP-1) and **GLP-2** tandemly. Among these, the location and function of GLP-1 have long been studied, showing that GLP-1 is one of the typical brain-gut peptides and has pleiotropic functions, including stimulation of insulin gene expression, regulation of food and water intake, etc. The chemical structure of GLP-2 in human ileum was reported to be identical to the 33 amino acid residue peptide corresponding to proglucagon (126-158).[1] GLP-2 is present in human plasma, the concentration of which was shown to be elevated 3- to 4-fold after ingestion of a meal.[1] Further studies revealed that GLP-2's immunoreactivity was distributed in rat brain, especially in the ventral part of the dorsomedial hypothalamic nucleus (DMH) (and also found in the paraventricular and arcuate nuclei). Central administration of GLP-2 decreases food intake in *ad libitum*-fed rats at concentrations above 5 µg.[2] This inhibition is effective for a short-duration. Surprisingly the GLP-1 receptor antagonist, exendin (9-39), reverses the GLP-2 induced anorexia, although the GLP-2 receptor is expressed in the compact part of the DMH. In addition, GLP-2 decreases NPY-induced food intake by 40%, but this peptide does not affect angiotensin II-induced drinking behavior.[2]

1. B. Hartmann, *et al., Peptides*, **21**, 73 (2000). (*Pharmacol.*) 2. M. Tang-Christensen, *et al.*, *Nat. Med.*, **6**, 802 (2000). (*Pharmacol.*)

NAY-8320-v	**Anti GLP-1 (7-36)-NH2 (Human) Serum**	50 µg	$428

CODE	PRODUCTS	QTY	USD
PGL-4376-v	**Glucagon-Like Peptide 2 (Human)** GLP-2 (Human) His-Ala-Asp-Gly-Ser-Phe-Ser-Asp-Glu-Met-Asn-Thr-Ile-Leu-Asp-Asn-Leu-Ala-Ala-Arg-Asp-Phe-Ile-Asn-Trp-Leu-Ile-Gln-Thr-Lys-Ile-Thr-Asp (M.W. 3766.1) $C_{165}H_{254}N_{44}O_{55}S$ [223460-79-5] D.J. Drucker, *Gut,* **50**, 4289 (2002). *(Review)* B. Hartmann, *et al.*, *Peptides*, **21**, 73 (2000). *(Pharmacol.)* M. Tang-Christensen, *et al.*, *Nat. Med.*, **6**, 802 (2000). *(Pharmacol.)*	0.5 mg vial	$396
CKG-23002-v	**2-NBDG** 2-[*N*-(7-Nitrobenz-2-Oxa-1,3-Diazol-4-yl)Amino]-2- Deoxy-D-Glucose (M.W. 342.26) $C_{12}H_{14}N_4O_8$ [186689-07-6] *Reagent for Monitoring Glucose Uptake into Single, Living Cells*	0.5 mg vial	$50
CKG-23003-v	**2-NBDLG** 2-[*N*-(7-Nitrobenz-2-Oxa-1,3-Diazol-4-yl)Amino]-2-Deoxy-L-Glucose (M.W. 342.26) $C_{12}H_{14}N_4O_8$ [1092935-76-6] *Control Substrate for 2-NBDG* T. Yamamoto, , *Tetrahedron Lett.*, **49**, 6876 (2008). (*Original*) K. Yamada, *et al.*, *Nature Protocols*, **2**, 753 (2007). (*Protocols for Measurement*) • *This compound is distributed through Peptide Institute, Inc. under the license of Hirosaki University Graduate School of Medicine, Tokyo University of Agriculture and Technology, and the Peptide Institute, Inc.*	0.5 mg vial	$150
CKG-23006-v	**CDG** 2-Deoxy-2-(2-Oxo-2H-Chromen-7-yl)Amino-D-Glucose (M.W. 323.30) $C_{15}H_{17}NO_7$ [1817808-01-7] *Reagent for Monitoring Glucose Uptake into Single, Living Cells* Y. Otsuka, *et al., Org. Lett.,* **18**, 1338 (2016). (*Chem. Synthesis & Glucose Uptake in Living Cells*)	0.5 mg vial	$150
CAR-24004-v	**D-Glucaro-δ-Lactam** (*2S,3R,4S,5R*)-3,4,5-Trihydroxy-6-Oxo-2-Piperidinecarboxylic Acid (Potassium Salt) (M.W. 191.14) $C_6H_9NO_6$ [31675-02-2] Microbial Product *Inhibitor for Bovine Liver β-Glucuronidase* T. Niwa, *et al.*, *J. Biochem.*, **72**, 207 (1972). (*Original*)	0.5 mg vial	$65
HOR-305	**Glucagon-Like Peptide 2 (1-34) (Human)** His-Ala-Asp-Gly-Ser-Phe-Ser-Asp-Glu-Met-Asn-Thr-Ile-Leu-Asp-Asn-Leu-Ala-Ala-Arg-Asp-Phe-Ile-Asn-Trp-Leu-Ile-Gln-Thr-Lys-Ile-Thr-Asp-Arg; GLP2; GLP-2; Glucagon Like Peptide-2 GLP-2 functions as an intestinal growth factor, which stimulates intestinal epithelial growth. GLP2 is involved in diabetes-associated bowel growth. GLP2 enhances cell differentiation, playing a role as a cytokine and in tissue regeneration, and mediating cytoprotection. GLP2 is involved in numerous therapeutic applications. GLP2 regulates signaling pathways coupled to cell proliferation and cell death by apoptosis. GLP-2 is produced by specific post-translational proteolytic cleavage of proglucagon GLP-2 is manufactured by the intestinal endocrine L cell and by several neurons in the central nervous system.	1 mg 5 mg 100 mg	$50 $130 $1,950
NAY-8321-v	**Anti GLP-2 (14-33) (Rat) Serum**	50 µg	$428
NAY-8322-v	**Anti GLP-2 (Rat) Serum**	50 µg	$428
NAY-8323-v	**Anti GLP-2 (Mouse) Serum**	50 µg	$428
PGL-3826-PI	**Oxyntomodulin, Glucagon-37 (Human, Mouse, Rat)** (Trifluoroacetate Form) Preproglucagon (53-89); Proglucagon (33-69); OXM; H-His-Ser-Gln-Gly-Thr-Phe-Thr-Ser-Asp-Tyr-Ser-Lys-Tyr-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-Lys-Arg-Asn-Arg-Asn-Asn-Ile-Ala-OH (M.W. 4449.93) $C_{192}H_{295}N_{61}O_{60}S$ [159002-68-3] *Inhibitor of Gastric Acid Secretion and Pancreatic Enzyme Secretion; Shown to Reduce Food Intake and Increase Energy Expenditure in Humans*	1 mg 5 mg	$642 $2,568
PGL-3827-PI	**Oxyntomodulin, Glucagon-37 (Porcine)** (Trifluoroacetate Form) Glucagon 37; Oxyntomodulin; Glucagon 1-37; EnteroGlucagon; Oxyntomodulin (Porcine); Glucagon (1-37) (Porcine); H-His-Ser-Gln-Gly-Thr-Phe-Thr-Ser-Asp-Tyr-Ser-Lys-Tyr-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-Lys-Arg-Asn-Lys-Asn-Asn-Ile-Ala-OH (M.W. 4421.92) $C_{192}H_{295}N_{59}O_{60}S$ [62340-29-8] D. Batialle, *et al., Peptides*, **2**, 41 (1981). D.Bataille, *et al., Ann. N.Y. Acad. Sci.*, **527**, 168 (1988). M.A.Cohen, *et al., J. Clin. Endocrinol. Metab.*, **88**, 4696 (2003). A. Pocai, *Mol. Meta.*, **b3**, 241 (2014).	1 mg 5 mg	$642 $2,568
HOR-237	**Glucagon (Human) (Recombinant)** The activity is determind by comparing, under certain conditions, the hyperglycemic effect it produces with that produced by the international standard or by reference preparation calibrated in IU and is found to be 1 IU/mg.	100 µg 500 µg 1000 µg	$50 $130 $250

CODE	PRODUCTS	QTY	USD
PGL-4098-s	**Glucagon (Human)** His-Ser-Gln-Gly-Thr-Phe-Thr-Ser-Asp-Tyr-Ser-Lys-Tyr-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr (M.W. 3482.7) $C_{153}H_{225}N_{43}O_{49}S$ [16941-32-5] P.J. Lefebvre and R.H. Unger (eds.), *Glucagon*, Pergamon Press, Oxford, 1972. *(Review)*	0.1 mg vial	$156
HOR-301	**Glucagon (Human) (Recombinant), His Tag** MGSSHHHHHH SSGLVPRGSH MKRHDEFERH AEGTFTSDVS SYLEGQAAKE FIAWLVKGRG RRDFPEEVAI VEELGRRHAD GSFSDEMNTI LDNLAARDFI NWLIQTKITD RK	5 µg 20 µg 1000 µg	$50 $130 $2,700

GRP (HUMAN) GASTRIN RELEASING PEPTIDE (HUMAN)

PGR-4164-v	**GRP (Human)** Gastrin Releasing Peptide (Human) Val-Pro-Leu-Pro-Ala-Gly-Gly-Gly-Thr-Val-Leu-Thr-Lys-Met-Tyr-Pro-Arg-Gly-Asn-His-Trp-Ala-Val-Gly-His-Leu-Met-NH_2 (M.W. 2859.4) $C_{130}H_{204}N_{38}O_{31}S_2$ [93755-85-2] E.R. Spindel, *et al.*, *Proc. Natl. Acad. Sci. USA*, **81**, 5699 (1984). *(Original; cDNA)*	0.5 mg vial	$418
NGR-14164-v	**GRP (Human) Antiserum** Gastrin Releasing Peptide (Human) Antiserum (Rabbit) Antiserum	0.5 mg vial	$418
NAY-8160-v	**Anti GRP (Porcine) Serum**	0.5 mg vial	$418

GsTx (GUANGXITOXIN)

Recent efforts for identifying new drugs for Type II Diabetes have focused on inhibitors that target the delayed-rectifier K^+ current (I_{DR}), found in insulin secreting β-cells and believed to aide in repolarizing action potentials.[1] Such inhibitors may increase cytosolic calcium levels and insulin secretion.[2,3] A novel peptide toxin, guangxitoxin **(GxTX)-1E** (*PGX-4433-s*), was found to inhibit mouse I_{DR} by 90%, selectively block $K_v2.1/K_v2.2$ channels (IC_{50} ~1 nmol/l), and shift the voltage-dependence for channel activation to more positive potentials, acting as a gating modifier peptide.[4] Furthermore, GxTX-1E was able to increase the duration of action potentials (30% ± 6%), calcium oscillations, and insulin secretion (3.5 fold) in a glucose dependent manner in β-cell I_{DR}.[2,3,4,5] This novel peptide may help determine the mechanism and role of β-cell I_{DR} in insulin secretion and lead to better glucose-dependent methods for treatment of Type II Diabetes.

1. P.A. Smith, *et al., J. Gen. Physiol.*, **95**, 1041 (1990).
2. P.E. MacDonald, *et al.*, *J. Biol. Chem.*, **277**, 44938 (2002).
3. P.E. MacDonald, *et al.*, *Mol. Endocrinol.*, **15**, 1423 (2001).
4. J. Herrington, *et al.*, *Diabetes*, **55**,1034 (2006).
5. L. Yan, *et al.*, *Diabetes*, **53**, 597 (2004).

PGX-4433-s	**Guangxitoxin-1E** **GxTX-1E** **(Tarantula, *Pleisiophrictus guangxiensis sp. nov.*)** (Trifluoroacetate Form) Glu-Gly-Glu-Cys-Gly-Gly-Phe-Trp-Trp-Lys-Cys-Gly-Ser-Gly-Lys-Pro-Ala-Cys- Cys-Pro-Lys-Tyr-Val-Cys-Ser-Pro-Lys-Trp-Gly-Leu-Cys-Asn-Phe-Pro-Met-Pro (Reported disulfide bonds between Cys^4-Cys^{19}, Cys^{11}-Cys^{24} and Cys^{18}-Cys^{31}) (M.W. 3948.6) $C_{178}H_{248}N_{44}O_{45}S_7$ *$Kv2.1/Kv2.2$ Channel Blocker / Enhancer of Glucose-Dependent Insulin Secretion* J. Herrington, *et al. Diabetes,*, **55**, 1034-1042 (2006). J. Herrington, *Toxicon*, **49**, 231 (2007). (*Review*) P.E. MacDonald, *et al.*, *J. Biol. Chem.*, **277**, 44938 (2002). (*Pharmacol.; Role of $K_v2.1$ in Glucose-Dependent Insulin Secretion*) N.A. Tamarina,*et al.*, *Am. J. Physiol. Endocrinol. Metab.*, **289**, E578 (2005). (*Pharmacol.; Role of $K_v2.1$ in Glucose-Dependent Ca^{2+} response*) S. Lee, *et al.*, *Biochemistry*, **49**, 5134 (2010). (*Solution Structure & S-S Bond*)	0.1 mg vial	$279

NESFATINS

NES-3863-PI	**Nesfatin-1 (Human)** (Trifluoroacetate Form) NEFA Encoded Satiety and Fat-influencing protein 1; Nucleobindin-2 (25-106) (Human); NUCB2 (25-106) (Human); DNA-Binding Protein NEFA (25-106) (Human); Gastric Cancer Antigen Zg4 (25-106) (Human); H-Val-Pro-Ile-Asp- Ile-Asp-Lys-Thr-Lys-Val-Gln-Asn-Ile-His-Pro-Val-Glu-Ser-Ala-Lys-Ile-Glu-Pro-Pro-Asp-Thr-Gly-Leu-Tyr-Tyr-Asp- Glu-Tyr-Leu-Lys-Gln-Val-Ile-Asp-Val-Leu-Glu-Thr-Asp-Lys-His-Phe-Arg-Glu-Lys-Leu-Gln-Lys-Ala-Asp-Ile-Glu- Glu-Ile-Lys-Ser-Gly-Arg-Leu-Ser-Lys-Glu-Leu-Asp-Leu-Val-Ser-His-His-Val-Arg-Thr-Lys-Leu-Asp-Glu-Leu-OH (M.W. 9551.95) $C_{427}H_{691}N_{113}O_{134}$ *NEFA Encoded Satiety and Fat-Influencing Protein* I.S. Oh, *et al., Nature*, **443**, 709 (2006). M.G.Myers, Jr., *Nat Med*, **12**, 1248 (2006).	0.5 mg 1 mg	$2,568 $4,494
NES-3865-PI	**Nesfatin-1 Like Peptide (Mouse)** (Trifluoroacetate Form) H-Val-Pro-Val-Asp-Arg-Ala-Ala-Pro-Pro-Gln-Glu-Asp-Ser-Gln-Ala-Thr-Glu-Thr-Pro-Asp-Thr-Gly-Leu-Tyr-Tyr-His-Arg-Tyr-Leu-Gln- Glu-Val-Ile-Asn-Val-Leu-Glu-Thr-Asp-Gly-His-Phe-Arg-Glu-Lys-Leu-Gln-Ala-Ala-Asn-Ala-Glu-Asp-Ile-Lys-Ser- Gly-Lys-Leu-Ser-Gln-Glu-Leu-Asp-Phe-Val-Ser-His-Asn-Val-Arg-Thr-Lys-Leu-Asp-Glu-Leu-OH (M.W. 8738.67) $C_{382}H_{599}N_{107}O_{128}$ *Insulinotropic Peptide Encoded in NUCB1; Upregulated Preproinsulin mRNA Expression and Insulin Secretion; Nesfatin-1 Like Peptide (NLP)* N. Ramesh, *et al., Gen. Comp. Endocrinol.,* **216**, 182 (2015).	0.5 mg 1 mg	$2,568 $4,494

CODE	PRODUCTS	QTY	USD
NES-3864-PI	**Nesfatin-1 (Rat)** (Trifluoroacetate Form) NEFA Encoded Satiety and Fat-Influencing Protein 1; Nucleobindin-2 (1-82) (Rat); NUCB2 (1-82) (Rat); DNA-Binding Protein NEFA (1-82) (Rat); H-Val-Pro-Ile-Asp-Val-Asp-Lys-Thr-Lys-Val-His-Asn-Val-Glu-Pro-Val-Glu-Ser-Ala-Arg-Ile-Glu-Pro-Pro-Asp-Thr-Gly-Leu-Tyr-Tyr-Asp-Glu-Tyr-Leu-Lys-Gln-Val-Ile-Glu-Val-Leu-Glu-Thr-Asp-Pro-His-Phe-Arg-Glu-Lys-Leu-Gln-Lys-Ala-Asp-Ile-Glu-Glu-Ile-Arg-Ser-Gly-Arg-Leu-Ser-Gln-Glu-Leu-Asp-Leu-Val-Ser-His-Lys-Val-Arg-Thr-Arg-Leu-Asp-Glu-Leu-OH (M.W. 9582.88) $C_{424}H_{684}N_{116}O_{136}$ *NEFA Encoded Satiety and Fat-Influencing Protein 1* I.S. Oh, *et al., Nature*, **443**, 709 (2006). M.G.Myers, Jr., *Nat Med*, **12**, 1248 (2006).	0.5 mg 1 mg	$2,568 $4,494
NES-3740-PI	**Nesfatin-1 (30-59) (Human)** H-Tyr-Asp-Glu-Tyr-Leu-Lys-Gln-Val-Ile-Asp-Val-Leu-Glu-Thr-Asp-Lys-His-Phe-Arg-Glu-Lys-Leu-Gln-Lys-Ala-Asp-Ile-Glu-Glu-Ile-OH (M.W. 3709.20) $C_{167}H_{263}N_{41}O_{54}$ *Active Fragment of Nesfatin-1; Anorexigenic Peptide* A.Stengel, *et al., Peptides*, **35**, 143 (2012). M.Goebel, *et al., Peptides*, **32**, 36 (2011). I.S. Oh, *et al., Nature*, **443**, 709 (2006). M.G.Myers, Jr., *Nat Med*, **12**, 1248 (2006).	1 mg 5 mg	$200 $800
PGH-3890-PI PGH-4429-s	**Obestatin (Human)** H-Phe-Asn-Ala-Pro-Phe-Asp-Val-Gly-Ile-Lys-Leu-Ser-Gly-Val-Gln-Tyr-Gln-Gln-His-Ser-Gln-Ala-Leu-NH_2 (M.W. 2546.89) $C_{116}H_{176}N_{32}O_{33}$ [1081110-72-6] *Suppressor of Food Intake and Gastric Emptying; Food Intake Suppressor / Ligand for GPR39* J.V. Zhang, *et al.*, *Science*, **310**, 996 (2005). M. Kojima, *et al.*, *Nature*, **402**, 656 (1999).	1 mg 5 mg 0.1 mg	$428 $1,712 $86
PGH-3891-PI PGH-4430-s	**Obestatin (Rat, Mouse)** H-Phe-Asn-Ala-Pro-Phe-Asp-Val-Gly-Ile-Lys-Leu-Ser-Gly-Ala-Gln-Tyr-Gln-Gln-His-Gly-Arg-Ala-Leu-NH_2 (M.W. 2516.87) $C_{114}H_{174}N_{34}O_{31}$ [869705-22-6] *Suppressor of Food Intake and Gastric Emptying; Food Intake Suppressor / Ligand for GPR39* J.V. Zhang, *et al.*, *Science*, **310**, 996 (2005). M. Kojima, *et al.*, *Nature*, **402**, 656 (1999).	1 mg 5 mg 0.1 mg	$428 $1,712 $86
PGH-3892-PI	**Des 1-10 Obestatin (Human)** H-Leu-Ser-Gly-Val-Gln-Tyr-Gln-Gln-His-Ser-Gln-Ala-Leu-NH_2; Obestatin (Human, 11-23) (M.W. 1457.62) $C_{63}H_{100}N_{20}O_{20}$ *Truncated Analog of Obestatin* J.V. Zhang, *et al.*, *Science*, **310**, 996 (2005). M. Kojima, *et al.*, *Nature*, **402**, 656 (1999).	1 mg 5 mg	$64 $246
PGH-3893-PI	**Des 1-10 Obestatin (Rat, Mouse)** H-Leu-Ser-Gly-Ala-Gln-Tyr-Gln-Gln-His-Gly-Arg-Ala-Leu-NH_2 (M.W. 1427.60) $C_{61}H_{98}N_{22}O_{18}$ *Truncated Analog of Obestatin* J.V. Zhang, *et al.*, *Science*, **310**, 996 (2005). M. Kojima, *et al.*, *Nature*, **402**, 656 (1999).	1 mg 5 mg	$64 $246

OTHER MISCELLANEOUS DIABETES-RELATED PRODUCTS

NAY-8072-v	**Anti Peptide YY (PYY) (Human) Serum**	50 µl	$428
NAY-8070-v	**Anti Peptide YY (PYY) (Porcine, Rat) Serum**	50 µl	$428
IAP-3754-PI	**Cpp-AAF-pAb** *N*-[(*R/S*)-1-Carboxy-3-phenyl-propyl]-Ala-Ala-Phe-4-Abz-OH (M.W. 588.67) $C_{32}H_{37}N_4O_7$ [116560-97-5] *Neprilysin (Endopeptidase-2, EC 3.4.24.11) converts this compound to a potent inhibitor of angiotensin-converting enzyme (ACE)* M. Orlowski, *et al.*, *Biochemistry*, **27**, 597 (1988). D.T.O.Martins, *et al.*, Br. J. Pharmacol., **103**, 1851 (1991). C.H.Williams, *et al., Biochem. J.*, **294**, 681 (1993). R.Yamin, *et al.*, *J. Biol. Chem.*, **274**, 18777 (1999).		
GUR-3810-PI	**Gurmarin** (Acetate Form) Pyr-Gln-Cys-Val-Lys-Lys-Asp-Glu-Leu-Cys-Ile-Pro-Tyr-Tyr-Leu-Asp-Cys-Cys-Glu-Pro-Leu-Glu-Cys-Lys-Lys-Val-Asn-Trp-Trp-Asp-His-Lys-Cys-Ile-Gly-OH (M.W. 4208.95) $C_{187}H_{276}N_{46}O_{53}S_6$ J.I. Fletcher, *et al.*, *Eur. J. Biochem.*, **264**, 525 (1999). Y. Ninomiya, *et al.*, *Am J Physiol.*, **274**, R1324 (1998). M. Sigoillot, *et al.*, *Appl. Microbiol. Biotechnol.*, **96**, 619 (2012). A. Shiyovich, *et al.*, Am. J. Med. Sci., **340**, 514 (2010).	1 mg 5 mg	$696 $2,782
PKS-4389-v	**Kisspeptin-10 (Human) / Metastin (Human, 45-54)** Kp-10 (Human) / KiSS-1 Gene Product (Human, 112-121 Amide) Tyr-Asn-Trp-Asn-Ser-Phe-Gly-Leu-Arg-Phe-NH_2 (M.W. 1302.4) $C_{63}H_{83}N_{17}O_{14}$ [374675-21-5] *Ligand for OT7T175 / GPR54* T. Ohtaki, *et al.*, *Nature*, 411, 613 (2001). (*Original; Metastin*) A.I. Muir, *et al.*, *J. Biol. Chem.*, 276, 28969-28975 (2001). (*Original*) M. Kotani, *et al.*, *J. Biol. Chem*,. **276**, 34631 (2001). (*Original; Kisspeptin*) A. Hori, *et al.*, *Biochem. Biophys. Res. Commun.*, **286**, 958 (2001). (Pharmacol.) M. Kinoshita, *et al.*, *Endocrinology*, **146**, 4431 (2005). (*Pharmacol.*) S. Ramaswamy, *et al.*, *Endocrinology*, **148**, 3364 (2007). (*Pharmacol.*) S.B. Seminara and U.B. Kaiser, *Endocrinology*, **146**, 1686 (2005). (*Minireview*) K.I. Maeda, *et al.*, *Rev. Endocrinol. Metab. Disord.*, **8**, 21 (2007). (*Review*)	0.5 mg vial	$97

CODE	PRODUCTS	QTY	USD
CYT-228	**Leptin Human (Recombinant)** Leptin Human Recombinant; OB Protein; Obesity Protein; OBS; Obesity Factor	1000 µg 5000 µg	$130 $450
LIX-3799-PI	**Lixisenatide** (Trifluoroacetate Form) (Des-Pro^{38})-Exendin-4-(-Lys)$_6$-Amide; H-His-Gly-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Leu-Ser-Lys-Gln-Met-Glu-Glu-Glu-Ala-Val-Arg-Leu-Phe-Ile-Glu-Trp-Leu-Lys-Asn-Gly-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Ser-Lys-Lys-Lys-Lys-Lys-Lys-NH$_2$; ZP-10; Lyxumia (M.W. 4858.60) $C_{215}H_{347}N_{61}O_{65}S$ [320367-13-3] *Potent and Highly Selective Once-Daily GLP-1 Peptide Agonist* This peptide is a GLP-1 receptor agonist. Originally discovered by Zealand Pharma, it was licensed and developed by Sanofi for its use in the treatment of Type 2 diabetes. GLP-1 is a natually occuring peptide, released shortly after a meal has been consumed. ***Please note:*** *This product is offered and sold solely for uses reasonably related to the development and submission of information under a Federal law which regulates the manufacture, use or sale of drugs (the "Bolar Exemption"). Peptides International cannot be made liable for any infringement of intellectual property rights. It is the sole and only responsibility of the purchaser or user of this product to comply with the relevant national rules and regulations.*	1 mg 5 mg	$493 $1,980
PRO-334	**Thioredoxin (*E. coli* Recombinant)** Troponin I Fast Skeletal Muscle; Troponin I Fast-Twitch Isoform; TNNI2; DA2B; FSSV; fsTnI; AMCD2B; Thioredoxin-1; Trx-1; trxA; fipA; tsnC; b3781; JW5856 HMSDKIIHL TDDSFDTDVLKADGAIL VDFW AEWCGPCKMIAPILDEI GKLTVAKLNIDQNPGTAPKYGIRGIPTLLLFKNGEVAATKVGAL DANLA	20 µg 100 µg 1000 µg	$50 $130 $900
PRO-333	**Thioredoxin (Yeast Recombinant)** Thioredoxin-1; Thioredoxin I; TR-I; Thioredoxin-2; TRX1; TRX2; YLR043C	5 µg 20 µg 1000 µg	$50 $130 $2,400
ShK (STICHODACTYLA TOXIN)			
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)* O. Castañeda, *et al.*, *Toxicon*, **33**, 603 (1995). *(Pharmacol.)* J. Pohl, *et al.*, *Lett. Pept. Sci.*, **1**, 291 (1994). *(S-S Bond)*	0.1 mg vial	$295
SHK-3770-PI	**Stichodactyla Toxin (ShK) (Amide)** **(Sea Anemone, *Stichodactyla helianthus*)** H-Arg-Ser-Cys-Ile-Asp-Thr-Ile-Pro-Lys-Ser-Arg-Cys-Thr-Ala-Phe-Gln- Cys-Lys-His-Ser-Met-Lys-Tyr-Arg-Leu-Ser-Phe-Cys-Arg-Lys-Thr-Cys- Gly-Thr-Cys-NH$_2$ (M.W. 4053.86) $C_{169}H_{275}N_{55}O_{47}S_7$	1 mg 5 mg	$1,070 $4,280
SHK-3746-PI	**5-Fam-ShK** **(Sea Anemone, *Stichodactyla helianthus*)** (Trifluoroacetate Form) Fluorescein-5-carbonyl-AEEAc-Arg-Ser-Cys-Ile-Asp-Thr-Ile-Pro-Lys-Ser-Arg-Cys-Thr-Ala-Phe-Gln-Cys-Lys-His-Ser-Met-Lys-Tyr-Arg-Leu-Ser-Phe-Cys-Arg-Lys-Thr-Cys-Gly-Thr-Cys-NH$_2$ (Disulfide bonds between Cys^3-Cys^{35}, Cys^{12}-Cys^{28}, and Cys^{17}-Cys^{32}) (M.W. 4557.33) $C_{196}H_{296}N_{56}O_{56}S_7$ C. Beeton, *et al.*, *J. Biol. Chem.*, **278**, 9928 (2003) R.S. Norton, *et al.*, *Curr. Med. Chem.*, **11**, 3141 (2004)	1 mg	$1,500

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