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GMP 棟 と 正面玄関

## **Biologically Active Peptides**

## Amyloid $\beta$ -Proteins

Code	Compound	Price:Yen
4481-v	<b>Amyloid <math>\beta</math>-Protein (Human, 1-28)</b>	Vial 0.5 mg 15,000
<b>(New)</b>	<b>SP-28 (Human)</b>	
<b>-20°C</b>	(Trifluoroacetate Form) Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Glu-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys (M.W. 3262.5) C <sub>145</sub> H <sub>209</sub> N <sub>41</sub> O <sub>46</sub> [109770-29-8] Purity ≥99.0% (HPLC)	
	<i>Amyloidogenic Segment of Amyloid <math>\beta</math>-Protein</i>	

**Amyloid β-protein (Human, 1-28)** is a peptide that was synthesized chemically during the early stages of amyloid β-proteins research<sup>1)</sup>. Over the years, many research publications using **amyloid β-protein (Human, 1-28)** have been reported, frequently including: **i)** formation of amyloid fibrils<sup>1-5)</sup> and **ii)** expression of neurotrophic or neurotoxic activity<sup>5-7)</sup>, some of which are specific to this particular peptide. **Amyloid β-protein (Human, 1-28)** possesses only one of the fibril forming domains (central domain) and lacks the corresponding C-terminal one<sup>5)</sup>, so that this peptide reinforces a structural as well as functional interest in the research of Alzheimer's disease.

- 1) D.A. Kirschner, H. Inouye, L.K. Duffy, A. Sinclair, M. Lind, and D.J. Selkoe, *Proc. Natl. Acad. Sci. U.S.A.*, **84**, 6953 (1987). (*Original; Amyloid-Like Fibril Formation*)
  - 2) B. Klajnert, M. Cortijo-Arellano, J. Cladera, and M. Bryszewska, *Biochem. Biophys. Res. Commun.*, **345**, 21 (2006). (*Amyloid Fibril Formation*)
  - 3) A. Perálvarez-Marin, A. Barth, and A. Gräslund, *J. Mol. Biol.*, **379**, 589 (2008). (*Amyloid Fibril Formation*)
  - 4) N.G.N. Milton and J.R. Harris, *Micron*, **40**, 800 (2009). (*Amyloid Fibril Formation*)
  - 5) T. Wasiak, M. Ionov, K. Nieznanski, H. Nieznanska, O. Clementieva, M. Granell, J. Cladera, J.-P. Majoral, A.M. Caminade, and B. Klajnert, *Mol. Pharm.*, **9**, 458 (2012). (*Amyloid Fibril Formation & Neurotoxicity*)
  - 6) J.S. Whitson, D.J. Selkoe, and C.W. Cotman, *Science*, **243**, 1488 (1989). (*Pharmacol.*)
  - 7) B.A. Yankner, L.K. Duffy, and D.A. Kirschner, *Science*, **250**, 279 (1990). (*Pharmacol.*)

4484-v <b>New</b> -20°C	<b>Amyloid <math>\beta</math>-Protein (Human, 1-38)</b> (Trifluoroacetate Form)  Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Glu-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe- Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys-Gly-Ala-Ile-Ile-Gly-Leu-Met-Val-Gly-Gly (M.W. 4131.5) C <sub>184</sub> H <sub>277</sub> N <sub>51</sub> O <sub>56</sub> S [131438-74-9] Purity ≥95.0% (HPLC)	Vial	0.5 mg	17,000
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*Endogenous Form of Amyloid  $\beta$ -Protein in Cerebrospinal Fluid*

Human amyloid  $\beta$ -proteins are produced by enzymatic cleavages of amyloid precursor protein (APP); enzymes involved are  $\beta$ - and  $\gamma$ -secretases. Successive scissions of APP by these enzymes yield primarily the longer forms of amyloid  $\beta$ -protein, such as amyloid  $\beta$ -protein (1-49). Recently, it has been clarified that these longer forms are not the final products, but the substrates of  $\gamma$ -secretase, providing **amyloid  $\beta$ -protein (Human, 1-38)** through numerous intermediates such as amyloid  $\beta$ -protein (Human, 1-42) (Code 4349-v), and amyloid  $\beta$ -protein (Human, 1-43) (Code 4370-v)<sup>1,2</sup>

**Amyloid  $\beta$ -protein (Human, 1-38)** has been discovered to exist in human plasma and cerebrospinal fluid<sup>3,4)</sup>, among other locations. Functionally, **amyloid  $\beta$ -protein (Human, 1-38)** is reported to enhance glutamate neurotoxicity in cortical cultures at doses between 20 and 80  $\mu$ M<sup>5)</sup>. **Amyloid  $\beta$ -protein (Human, 1-38)** is now available from Peptide Institute, Inc.

- M. Okochi, S. Tagami, K. Yanagida, M. Takami, T.S. Kodama, K. Mori, T. Nakayama, Y. Ihara, and M. Takeda, *Cell Rep.*, **3**, 42 (2013). ( $\gamma$ -Secretase-Mediated Generation)
  - N. Matsumura, M. Takami, M. Okochi, S. Wada-Kakuda, H. Fujiwara, S. Tagami, S. Funamoto, Y. Ihara, and M. Morishima-Kawashima, *J. Biol. Chem.*, **289**, 5109 (2014). ( $\gamma$ -Secretase-Mediated Generation)
  - J.M. Maler, H.-W. Klafki, S. Paul, P. Spitzer, T.W. Groemer, A.W. Henkel, H. Esselmann, P. Lewczuk, J. Kornhuber, and J. Wilfang, *Proteomics*, **7**, 3815 (2007). (Quantitation in Human Plasma)
  - M.E. Lame, E.E. Chambers, and M. Blatnik, *Anal. Biochem.*, **419**, 133 (2011). (Quantitation in Human Cerebrospinal Fluid)
  - M.P. Mattson, B. Cheng, D. Davis, K. Bryant, I. Lieberburg, and R.E. Rydel, *J. Neurosci.*, **12**, 376 (1992). (Pharmacol : Enhancement of Glutamate Neurotoxicity)

## Orexins

Code	Compound		Price:Yen	
4482-s <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">New</span>	<b>Orexin-A (Human, 17-33)</b> <b>OXA (17-33)</b> Tyr-Glu-Leu-Leu-His-Gly-Ala-Gly-Asn-His-Ala-Ala-Gly-Ile-Leu-Thr-Leu-NH <sub>2</sub> (M.W.1749.0) C <sub>79</sub> H <sub>125</sub> N <sub>23</sub> O <sub>22</sub> [343268-91-7] Purity ≥99.0% (HPLC)	Vial	0.1 mg	8,000
	<i>Orexin-1 Receptor Selective Agonist</i>			
4483-s <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">New</span> -20°C	<b>[Ala<sup>11</sup>, D-Leu<sup>15</sup>]-Orexin B (Human)</b> Arg-Ser-Gly-Pro-Pro-Gly-Leu-Gln-Gly-Arg-Ala-Gln-Arg-Leu-D-Leu-Gln-Ala-Ser-Gly-Asn-His-Ala-Ala-Gly-Ile-Leu-Thr-Met-NH <sub>2</sub> (M.W. 2857.3) C <sub>120</sub> H <sub>206</sub> N <sub>44</sub> O <sub>35</sub> S [532932-99-3]	Vial	0.1 mg	10,000
	<i>Orexin-2 Receptor Selective Agonist</i>			

Orexin A (Code 4346-s) and orexin B (Code 4348-s: Human, Code 4347-s: Rat & Mouse) elicit numerous biological functions including feeding regulation and wake/sleep regulation. These peptides bind to two G protein-coupled receptors, orexin 1 receptor (OX<sub>1</sub>) and orexin 2 receptor (OX<sub>2</sub>) to express their biological activities; orexin A interacts with both OX<sub>1</sub> and OX<sub>2</sub> non-selectively, whereas orexin B shows preferential OX<sub>2</sub> binding ability. To learn the contributions of these peptides to exerting an individual function of orexins, a selective ligand to each receptor subtype is required.

After an extensive structure-activity relationship study of orexin A, **orexin A (Human, 17-33)** was discovered to be 23-fold more selective to OX<sub>1</sub> than OX<sub>2</sub><sup>1)</sup>. In the case of OX<sub>2</sub>, **[Ala<sup>11</sup>, D-Leu<sup>15</sup>]-orexin B (Human)** is reported to show a 400-fold selectivity over OX<sub>1</sub><sup>2)</sup>, although one report described that such potency in receptor selectivity could not be reproduced<sup>3)</sup>. These two orexin analogs may be useful tools for orexin A and orexin B distinguishing research.

- 1) N.A. German, A.M. Decker, B.P. Gilmour, B.F. Thomas, and Y. Zhang, *ACS Med. Chem. Lett.*, **4**, 1224 (2013). (*Original; Structure-Activity Relationship & Pharmacol.*)
- 2) S. Asahi, S.-I. Egashira, M. Matsuda, H. Iwasa, A. Kanatani, M. Ohkubo, M. Ihara, and H. Morishima, *Bioorg. Med. Chem. Lett.*, **13**, 111 (2003). (*Original; Structure-Activity Relationship & Pharmacol.*)
- 3) J. Putura, P.M. Turunen, M.H. Jäntti, M.E. Ekholm, and J.P. Kukkonen, *Neurosci. Lett.*, **494**, 57 (2011). (*Pharmacol.*)

## CEP1

Code	Compound	Price:Yen
4487-s <b>New</b> -20°C	<b>CEP1</b> <b>C-Terminally Encoded Peptide 1</b> <b>(Plant, <i>Arabidopsis</i>)</b> Asp-Phe-Arg-Hyp-Thr-Asn-Pro-Gly-Asn-Ser- Hyp-Gly-Val-Gly-His (M.W. 1583.6) C <sub>66</sub> H <sub>98</sub> N <sub>22</sub> O <sub>24</sub>	Vial 0.1 mg 7,000

### *Mediator of Systemic N-Demand Signaling in Plant*

In plants the peptide ligand-receptor systems are involved in developmental processes with some diversities<sup>1)</sup>. Peptide ligands in these systems are categorized into groups; the major constituents are the secreted small peptides with posttranslational modification(s) which function extracellularly<sup>2)</sup>. This particular group of peptides is encoded by paralogous genes, in which the mature peptides are located at the C-terminal conserved domains. One such peptide is phytosulfokine (Code 4477-s), which contains two sulfated-Tyr residues.

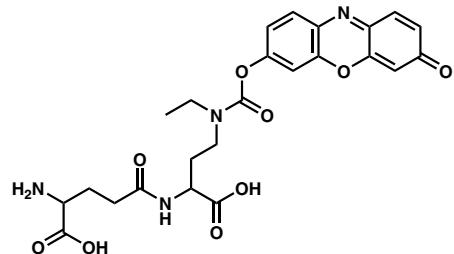
Another member of this family is **CEP1 (C-terminally encoded peptide 1)**, isolated from *Arabidopsis* by *in silico* gene screening<sup>3)</sup>. Very recently, a signaling systems triggered by **CEP1** has been clarified<sup>4)</sup>: **1)** secretion of **CEP1** from root upon starvation of N-neutritent, **2)** translocation of **CEP1** to shoot and perception by Leu-rich repeat receptor kinases (LRR-RKs) which are receptors of **CEP1**, and **3)** stimulation of nitrate uptake in roots in N-rich region. This "root-to-shoot-back-to-root" signaling is considered to be effective in escaping from the retardation of root growth under the nutrient-depleted conditions. **CEP1** may help in understanding the adaptation mechanism of plants in environmentally disadvantageous situations.

- 1) S. Endo, S. Betsuyaku, and H. Fukuda, *Curr. Opin. Plant Biol.*, **21**, 140 (2014). (Review)
- 2) Y. Matsubayashi, *Annu. Rev. Plant Biol.*, **65**, 385 (2014). (Review)
- 3) K. Ohyama, M. Ogawa, and Y. Matsubayashi, *Plant J.*, **55**, 152 (2008). (Original)
- 4) R. Tabata, K. Sumida, T. Yoshii, K. Ohyama, H. Shinohara, and Y. Matsubayashi, *Science*, **346**, 343 (2014). (Pharmacol.)

# Enzyme Substrates

Code	Compound			Price:Yen
3234-s <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">New</span> -20°C	<b>LISA-101</b> (Trifluoroacetate Form) γ-L-Glutamyl-(2S)-N <sup>ε</sup> -ethyl-N <sup>ε</sup> -[(3-oxo-3H-phenoxazin-7-yl)oxy]carbonyl-2,4-diaminobutyric acid (M.W. 514.48) C <sub>24</sub> H <sub>26</sub> N <sub>4</sub> O <sub>9</sub> [1638785-74-6] Purity ≥98.0% (HPLC)	Vial	0.1 mg	10,000

*Fluorogenic Substrate for γ-Glutamyl Cyclotransferase (GGCT)*



γ-Glutamyl cyclotransferase<sup>1)</sup> (GGCT, γ-GCT, C7orf24, EC 2.3.2.4) attracts interest as a member of glutathione cycle-related enzymes. GGCT has been found to be over-expressed in a range of cancers<sup>2)</sup>. In particular, presence of GGCT is thought to be relevant to the malignancy of the cancer cells<sup>3)</sup>. Additionally, it is interesting that systemic administration of siRNA of GGCT could retard the tumor growth and induce necrosis of tumor tissue while showing no obvious toxicity to normal tissues<sup>4)</sup>. Specifically, GGCT converts γ-glutamyl amino acids (γ-Glu-Xaa, Xaa: any amino acid) into 5-oxoproline (pyroglutamate) and the corresponding amino acids (Xaa). This singular substrate preference hampered its chemical probe development for some time.

Against this background, a novel fluorogenic GGCT probe "**LISA\*-101**" was successfully developed at Peptide Institute, Inc. in collaboration with Professor Yoshiki of Kyoto Pharmaceutical University and Shiga University of Medical Science<sup>5)</sup>. GGCT treatment liberates an intact fluorophore "resorufin" from **LISA-101** which is not a fluorescence compound. This makes it possible to quantify GGCT activity with the guidance of fluorescence (e.g. Ex 571 nm/ Em 585 nm). This probe, **LISA-101**, can expand the repertoire of strategies used in cancer studies related to GGCT.

\***LISA**: Ligand Inspired by Substrate Acidity

- 1) a) M. Orlowsli, P.G. Richman, and A. Meister, *Biochemistry*, **8**, 1048 (1969); b) A.J. Oakley, T. Yamada, D. Liu, M. Coggan, A.G. Clark, and P.G. Board, *J. Biol. Chem.*, **283**, 22031 (2008). (*Isolation and Identification of GGCT*)
  - 2) P. Gromov, I. Gromova, E. Friis, V. Timmermans-Wielenga, F. Rank, R. Simon, G. Sauter, and J.M.A. Moreira, *J. Proteome Res.*, **9**, 3941 (2010). (*Proteomic Profiling of Mammary Carcinomas*)
  - 3) K. Takemura, H. Kawachi, Y. Eishi, K. Kitagaki, M. Negi, M. Kobayashi, K. Uchida, J. Inoue, J. Inazawa, T. Kawano, and P.G. Board, *Human Pathol.*, **45**, 331 (2014). (*GGCT as a Diagnostic Marker in Esophageal Tumors*)
  - 4) R. Ran, Y. Liu, H. Gao, Q. Kuang, Q. Zhang, J. Tang, H. Fu, Z. Zhang, and Q. He, *J. Pharm. Sci.*, **104**, 476 (2015). (*siRNA for Treatment of Drug-Resistant Breast Cancer*)
  - 5) a) H. Ii, Y. Nishiuchi, T. Yoshiaki, Japan Patent JP 2014-21849 A  
b) T.Yoshiya, H. Ii, S.Tsuda, S.Kageyama, T.Yoshiaki and Y.Nishiuchi, *Org. Biomol. Chem.*, **13**, 3182 (2015). (*Development of LISA-101*)
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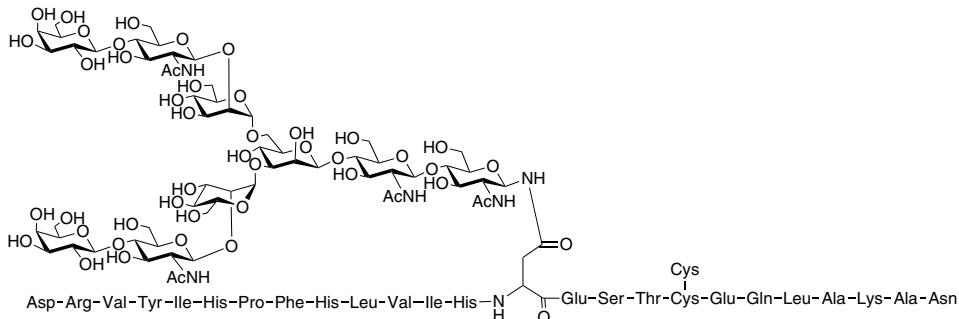
Code	Compound		Price:Yen	
3235-v	<b>Leu-Asp-MCA</b>  <b>(New)</b> L-Leucyl-L-aspartic acid $\alpha$ -(4-methylcoumaryl-7-amide) (M.W. 403.43) C <sub>20</sub> H <sub>25</sub> N <sub>3</sub> O <sub>6</sub> [929621-97-6] Purity $\geq 99.0\%$ (HPLC), AMC $\leq 0.1\%$ , TLC single spot	Vial	5 mg	5,000
-20°C				
	<i>Substrate for Porphyromonas Gingivalis Dipeptidyl-Peptidase 11</i>			
	1) Y. Ohara-Nemoto, Y. Shimoyama, S. Kimura, A. Kon, H. Haraga, T. Ono, and T.K. Nemoto, <i>J. Biol. Chem.</i> , <b>286</b> , 38115 (2011). 2) S.M. Rouf, Y. Ohara-Nemoto, T. Hoshino, T. Fujiwara, T. Ono, and T.K. Nemoto, <i>Biochimie</i> , <b>95</b> , 824 (2013). 3) S.M. Rouf, Y. Ohara-Nemoto, T. Ono, Y. Shimoyama, S. Kimura, and T.K. Nemoto, <i>FEBS Open Bio</i> , <b>3</b> , 177 (2013).			
3236-v	<b>Met-Leu-MCA</b>  <b>(New)</b> (Trifluoroacetate Form) L-Methionyl-L-Leucine 4-methylcoumaryl-7-amide (M.W. 419.54) C <sub>21</sub> H <sub>29</sub> N <sub>3</sub> O <sub>4</sub> S [1009549-31-8] Purity $\geq 99.0\%$ (HPLC), AMC $\leq 0.1\%$ , TLC single spot	Vial	5 mg	5,000
-20°C				
	<i>Substrate for Porphyromonas Gingivalis Dipeptidyl-Peptidase 7</i>			
	1) A. Banbula, J. Yen, A. Oleksy, P. Mak, M. Bugno, J. Travis, and J. Potempa, <i>J. Biol. Chem.</i> , <b>276</b> , 6299 (2001). 2) S.M. Rouf, Y. Ohara-Nemoto, T. Hoshino, T. Fujiwara, T. Ono, and T.K. Nemoto, <i>Biochimie</i> , <b>95</b> , 824 (2013). 3) S.M. Rouf, Y. Ohara-Nemoto, T. Ono, Y. Shimoyama, S. Kimura, and T.K. Nemoto, <i>FEBS Open Bio</i> , <b>3</b> , 177 (2013).			

# Glycopeptides

## Big Angiotensin-25

Code	Compound	Price:Yen
24009-s <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">New</span> -20°C	<b>Big Angiotensin-25 (Human)</b> <b>Bang-25</b> (Trifluoroacetate Form)  Asp-Arg-Val-Tyr-Ile-His-Pro-Phe-His-Leu-Val-Ile-His-[O-β-D-Galactopyranosyl-(1→4)-O-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→2)-O-α-D-mannopyranosyl-(1→3)-[O-β-D-galactopyranosyl-(1→4)-O-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→2)-O-α-D-mannopyranosyl-(1→6)]-O-β-D-mannopyranosyl-(1→4)-O-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→4)-N-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→4)]-Asn-Glu-Ser-Thr-Cys(Cys)-Glu-Gln-Leu-Ala-Lys-Ala-Asn (M.W. 4677.9) C <sub>195</sub> H <sub>307</sub> N <sub>43</sub> O <sub>85</sub> S <sub>2</sub> Synthetic Product	Vial 0.1 mg 20,000

### Glycosylated Novel Endogenous Angiotensin Family Peptide



Since the discovery of the longer form of angiotensin I (Human) (Code 4007) in rat, named proangiotensin-12 (Rat) (Code 4439-v), Professor Kitamura of University of Miyazaki has endeavored to find the longer form of angiotensin family peptide(s) in humans. As a result, he clarified that such peptides in humans are not a 12 amino acid residue peptide corresponding to proangiotensin-12 (Rat), but rather a 25 amino acid residue peptide called **big angiotensin-25 (Human)**<sup>1)</sup>.

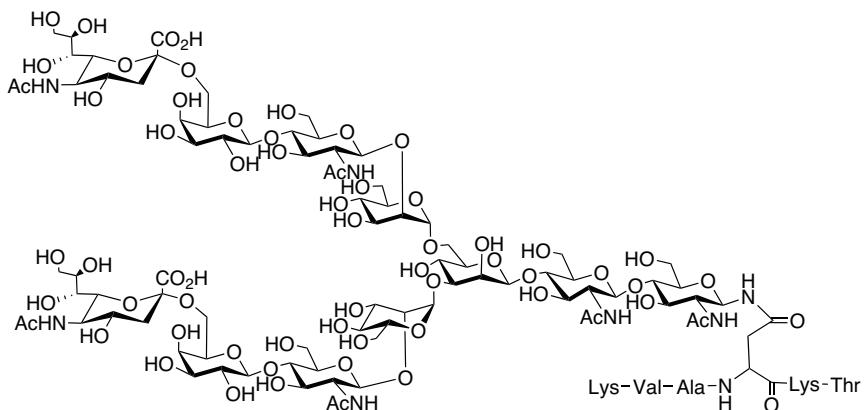
**Big angiotensin-25 (Human)** was isolated from urine as a major peptide when surveyed using an antibody raised against the N-terminal portion of angiotensin II. Structure analysis revealed that the primary structure of **big angiotensin-25 (Human)** is comprised of the first 25 amino acid residues of angiotensinogen and there exists two modifications in the sequence: **i**) N-glycosylation by 9-mer sugar at Asn<sup>14</sup> in the typical N-glycosylation motif, Asn-Glu-Ser and **ii**) attachment of Cys on Cys<sup>18</sup> through disulfide linkage. In collaboration with Professor Kitamura, we have succeeded in synthesizing **big angiotensin-25 (Human)** and confirmed that the native and synthetic **big angiotensin-25 (Human)** elute at the identical retention time on reversed phase-HPLC<sup>1,2)</sup>.

Interestingly, **big angiotensin-25 (Human)** is cleaved rapidly by chymase, directly providing angiotensin II, whereas it is slowly cleaved by renin (an enzyme generating angiotensin I). Other experimental results show that **big angiotensin-25 (Human)** immunoreactivity is located in various tissues in humans such as kidney and heart, among others. **Big angiotensin-25 (Human)** is suggested to be a precursor of tissue angiotensin II.

Chemically synthesized **big angiotensin-25 (Human)**, available now, will help to unravel the *in vivo* functional roles of this particular form of the angiotensin family peptide.

- 1) S. Nagata, K. Hatakeyama, M. Asami, M. Tokashiki, H. Hibino, Y. Nishiuchi, K. Kuwasako, J. Kato, Y. Asada, and K. Kitamura, *Biochem. Biophys. Res. Commun.*, **441**, 757 (2013). (*Original; Structure & Enzymatic Generation of Angiotensin II*).
- 2) H. Hibino, S. Nagata, K. Hatakeyama, M. Asami, M. Tokashiki, K. Kuwasako, J. Kato, Y. Asada, K. Kitamura, and Y. Nishiuchi, *Peptide Science 2013*, **50**, 151 (2014). (*Chem. Synthesis*)

Code	Compound			Price:Yen
24010 <b>(New)</b> -20°C	<b>Sialylglycopeptide</b> <b>SGP (<math>\alpha</math>2,6)</b> Lys-Val-Ala-[O-(5-Acetamido-3,5-dideoxy-D-glycero- $\alpha$ -D-galacto-2-nonulopyranosylonic acid)-(2 $\rightarrow$ 6)-O- $\beta$ -D-galactopyranosyl-(1 $\rightarrow$ 4)-O-2-acetamido-2-deoxy- $\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 2)-O- $\alpha$ -D-mannopyranosyl-(1 $\rightarrow$ 3)-[O-(5-acetamido-3,5-dideoxy-D-glycero- $\alpha$ -D-galacto-2-nonulopyranosylonic acid)-(2 $\rightarrow$ 6)-O- $\beta$ -D-galactopyranosyl-(1 $\rightarrow$ 4)-O-2-acetamido-2-deoxy- $\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 2)-O- $\alpha$ -D-mannopyranosyl-(1 $\rightarrow$ 6)]-O- $\beta$ -D-mannopyranosyl-(1 $\rightarrow$ 4)-O-2-acetamido-2-deoxy- $\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 4)-N-2-acetamido-2-deoxy- $\beta$ -D-glucopyranosyl]-1 $\rightarrow$ 4)-Asn-Lys-Thr (M.W. 2865.8) C <sub>112</sub> H <sub>189</sub> N <sub>15</sub> O <sub>70</sub> [189035-43-6] Purity $\geq$ 95.0% (HPLC) Natural product isolated from egg yolk	Bulk	5 mg	30,000



1) A. Seko, M. Koketsu, M. Nishizono, Y. Enoki, H.R. Ibrahim, L.R. Juneja, M. Kim, and T. Yamamoto, *Biochim. Biophys. Acta*, **1335**, 23 (1997).

Fmoc-Asn with 11 or 9 saccharide derivatives will be also available by custom service.



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2-200 残基(200 残基を越える場合も可能です。ご相談下さい)
- 2 各種酵素基質(MCA, AFC, pNA, その他の蛍光, 発色基質など)
- 3 消光性蛍光基質(Nma-Dnp, MOCAc-Dnp, Dabcyl-EDANS の組合せなど)
- 4 酵素阻害剤(アルデヒド, フルオロメチルケトン, クロロメチルケトン, ボロン酸誘導体など)
- 5 ジスルフィド結合含有ペプチド(1 組, 2 組, 3 組以上, 分子内, 分子間)
- 6 環状ペプチドおよび枝分かれペプチド
- 7 鎖状および環状デプシペプチド
- 8 糖ペプチド [Asn(GlcNAc), Ser/Thr(GalNAc), Ser/Thr(GlcNAc), Ser/Thr(Gal-GalNAc), Ser/Thr(Neu-Gal-GalNAc), 1-Deoxyfructosyl 含有ペプチドなど]
- 9 リン酸化ペプチド [Ser(PO<sub>3</sub>H<sub>2</sub>), Thr(PO<sub>3</sub>H<sub>2</sub>), Tyr(PO<sub>3</sub>H<sub>2</sub>)誘導体]
- 10 フォスファターゼ抵抗性リン酸化ペプチドミニック (Ser, Thr, Tyr, His, Asp 対応)
- 11 硫酸化ペプチド [Tyr(SO<sub>3</sub>H)]
- 12 蛍光標識ペプチド(FITC, Rhodamine, BODIPY, DY- シリーズなど 380 nm-730 nm に対応)
- 13 安定同位体ラベルアミノ酸含有ペプチド(<sup>13</sup>C, <sup>15</sup>N, <sup>2</sup>H など)
- 14 PEG 化(分子量 150 ~ 4 万まで, N 末端, C 末端, 側鎖)
- 15 フォトアフィニティ用ラベル化(N<sub>3</sub>, Benzophenone, Diazirine など)
- 16 細胞膜透過性修飾 (Tat, オリゴアルギニン, Penetratin など)
- 17 非天然アミノ酸含有ペプチド(ハイブシン, システインスルフィン酸など他多数)
- 18 アミノ基修飾(Biotinyl 化, Myristoyl 化, Palmitoyl 化, Methyl 化, Malonyl 化など種々の修飾)
- 19 チオール基修飾(Farnesyl 化, Geranyl 化, Palmitoyl 化など)
- 20 水酸基修飾(Octanoyl 化, Palmitoyl 化, Palmitoleoyl 化など)
- 21 ペプチド結合の修飾(還元型, スタチン型など)
- 22 ペプチドアルコール
- 23 アミノ酸誘導体, 保護ペプチド
- 24 その他

**受託合成量**：標準 10mg-25mg から g, kg オーダーまで承ります。(お見積り依頼の際に、ご相談下さい)

**納期**：配列、修飾、難度、合成量により異なります（最短 1 週間～）

個別お見積りいたしますのでご用命下さい。

**保証純度**：通常、トリフルオロ酢酸塩でご提供いたします。

- 規格 (1) HPLC で検定: 90% 以上 (精製品)
- (2) HPLC で検定: 95% 以上 (精製品)
- (3) HPLC で検定: 99% 以上 (精製品) など

通常、HPLC チャート、アミノ酸分析結果、質量分析結果を添付いたします。

その他の分析項目につきましてはご相談させていただきます。

**価格**：個別にお見積りいたしますので、E-mail、あるいは FAX にてご用命下さい。

## ペプチド医薬品合成 (GMP)

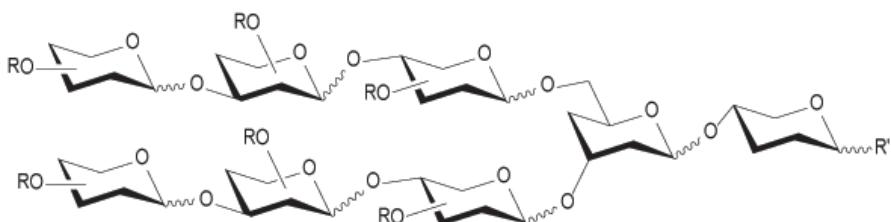
弊社は、医薬品製造業許可を取得しており、医薬品原薬および原薬中間体の製造が可能です。GMP 対応、治験薬 GMP 対応など個別にご相談させていただきます。

現在、ペプチド医薬品の基礎研究から上市後の受託製造まで、トータルなサービスのご提供に取り組んでいます。高品質なペプチド原薬をあらゆる場面でご提供できますので、お気軽にお問い合わせ下さい。



## 糖鎖関連合成

糖を母体とした有機化合物から九糖まで実績多数



单糖・オリゴ糖

修飾糖

蛍光標識糖

安定同位体ラベル糖

糖ヌクレオチド

糖脂質

グリコサミノグリカンフラグメント

各種糖アナログ

脂質

糖化最終産物

## 抗体（ポリクローナル）作製

エピトープ選択

抗原ペプチドの合成

コンジュゲート作製

抗体作製

抗体の精製

抗体の修飾

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