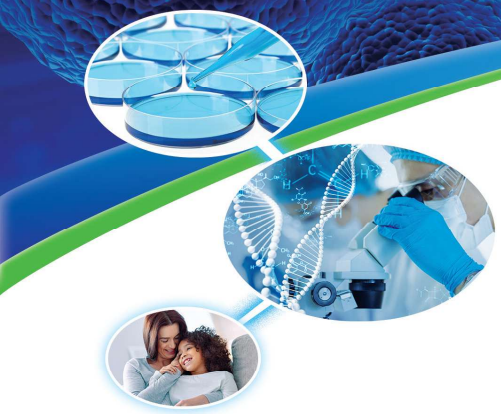
Synthetic Peptide Growth Factors

PeptiGrowth



PeptiGrowth Synthetic Peptide Growth Factors—
Forging the Path Forward for Cell Therapy and Regenerative Medicine

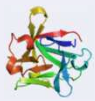
Growth factors derived from conventional sources – fetal bovine serum (FBS) and recombinant proteins – have accompanied regenerative medicine to the threshold of a new era, but in key areas they fall short of the technologies they support.

The challenge now is for accelerated research at greater cost-efficiency, and to move ahead with confidence that biological impurities, batch-to-batch variations in quality, and product instability won't imperil the accuracy of our results.

Introducing Chemically Synthesized Peptide Alternatives to Growth Factors

PeptiGrowth peptides possess similar capability for receptor activation, cell proliferation, and differentiation as conventional growth factors. Along with greater ease of use, longer shelf life, and no contamination by animal-derived components, these peptides provide uniformity in quality that can improve efficiency and data reproducibility and thus, reduce the cost of R&D, manufacturing, and quality control.

Comparison to conventional growth factors



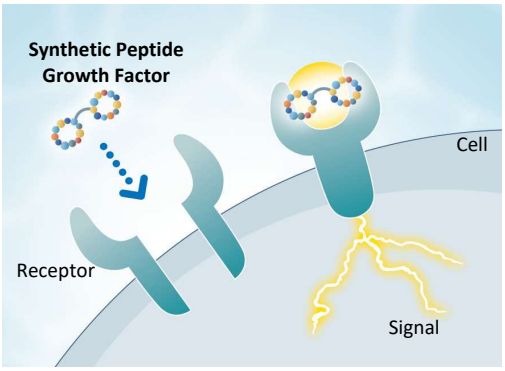
Conventional growth factors

- Unstable
- Lot-to-lot variation
- Not animal-free
- Low scalability

Synthetic peptide growth factors

- Stable
- Consistent in quality and activity
- Animal-component free
- High scalability

Receptor Diagram



Product Lineup Numerous products are being developed at the same time with the following products in the pipeline

Product Lineup

Product Code	Factor Name
PG-001	HGF alternative peptide
PG-002	TGFβ-1 inhibitor
PG-003	BDNF alternative peptide
PG-004	Noggin-like peptide
PG-005	BMP7 selective inhibitor
PG-006	BMP4 selective inhibitor
PG-007	VEGF alternative peptide
PG-008	Wnt3a alternative peptide
PG-009	Synthetic EGF
PG-010	TPO alternative peptide

Upcoming Growth Factors

Factor Name	Launch Date
FGF2 (bFGF)	Summer, 2024
PDGF-AA	Summer, 2024
FGF7 (KGF)	2nd half 2024
IL-15	1st half 2025

✓ All products are for research use only and are not intended for administration to humans or for diagnostic purposes.

✓ All products can be supplied as **GMP grade** upon request. Please inquire with us.

Other Development Targets

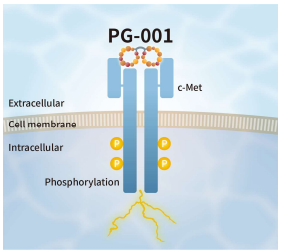
Factor Name				
Activin A	FLt3 Ligand	IGF-1	IL-21	R-spondin
BMP4	GDNF	IL-2	M-CSF	SCF
DLL 1/4	GM-CSF	IL-7	PDGF-BB	TGFβ-1

Product Information

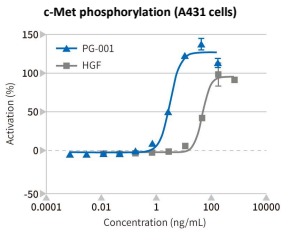
PG-001 : HGF alternative peptide (c-Met agonist)

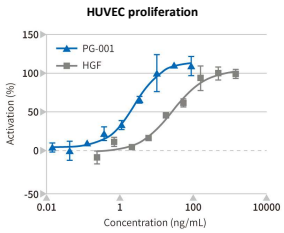
Hepatocyte growth factor (HGF) can be used for inducing hepatocyte differentiation from stem cells and proliferation of hepatocyte and myosatellite cells. PG-001 replicates the mechanism of action of HGF, inducing dimerization and signaling processes of human c-Met upon binding.

Mode of action



Activity evaluation data





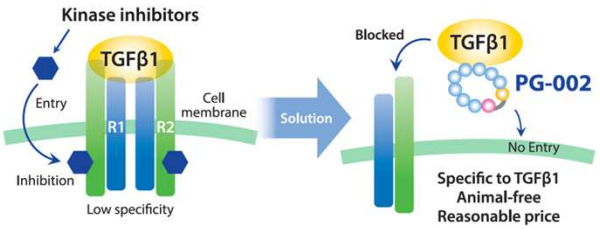
Properties

Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 4825.39 (acetate)
Product size :
- 2 μg (eq. 32 μg of rHGF)
- 5 μg (eq. 80 μg of rHGF)
- 15 μg (eq. 240 μg of rHGF)

PG-002 : TGFβ-1 inhibitor

Small kinase inhibitors are commonly used to inhibit the signaling of TGFβ-1, aiming to achieve cell differentiation. However, due to their lack of specificity, they can perturb other signaling pathways, leading to cytotoxicity. PG-002 specifically inhibits TGFβ-1 signaling under extracellular conditions, making it a suitable alternative to small kinase inhibitors.

Mode of action



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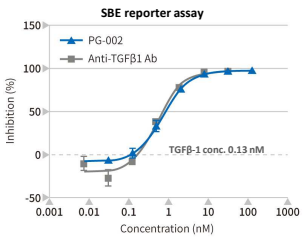


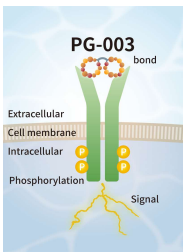
Properties

Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 2587.90 (acetate)
Product size :
- 10 μg
- 100 μg

PG-003 : BDNF alternative peptide (TrkB agonist)

Brain-derived neurotrophic factor (BDNF) binds to the TrkB receptor, regulating neuronal growth, survival, and synaptic function. PG-003 exhibits agonistic activity against the TrkB receptor by specifically binding to and inducing its dimerization and promoting cell signaling pathways.

Mode of action



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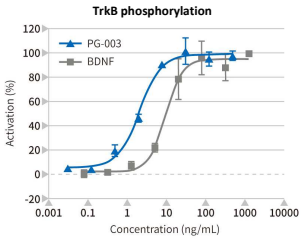
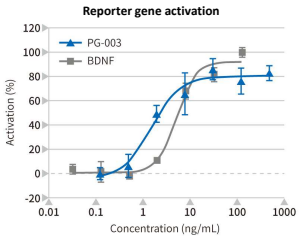




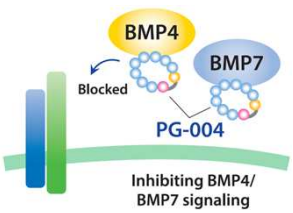
Properties

Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 5151.66 (acetate)
Product size :
- 10 μg (eq. 25 μg of rBDNF)

PG-004 : Noggin-like peptide (BMP4,7 inhibitor)

Noggin is commonly used in the culture of organoids derived from intestinal, pancreatic, lung, and tumor tissues, as well as for the neural and endoderm differentiation of stem cells. PG-004 inhibits the BMP4 and BMP7 families in the same manner as Noggin, exhibiting antagonist activity against them.

Mode of action



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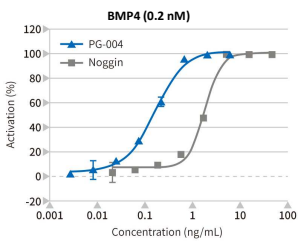
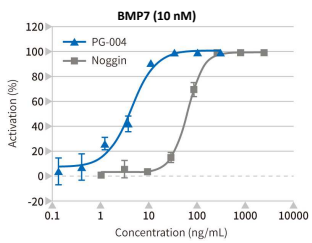




Properties

Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 2920.15 (acetate)
Product size :
- 5 μg (eq. 40 μg of rNoggin)

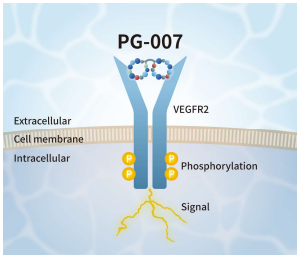
Related products

PG-005: BMP7 selective inhibitor
PG-006: BMP4 selective inhibitor

PG-007 : VEGF alternative peptide (VEGFR2 agonist)

Vascular endothelial growth factor (VEGF) has the ability to promote the proliferation of endothelial cells, and it is also a key differentiation factor for endothelial cells as well as hematopoietic stem cells. PG-007 has been confirmed to possess phosphorylation capability on VEGFR2, similar to VEGF, as well as the ability to promote the proliferation of iPSC-derived endothelial cells and the differentiation of iPSCs into endothelial cells.

Mode of action



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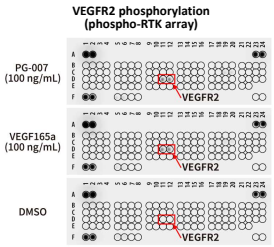
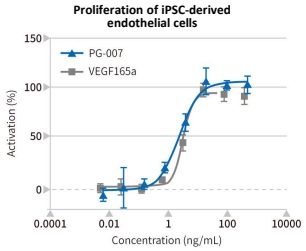




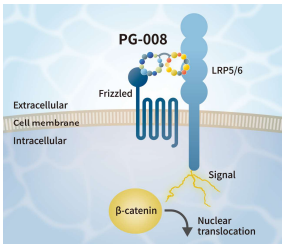
Properties

Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 4785.32
Product size :
- 5 μg (eq. 40 μg of rVEGF)
- 20 μg (eq. 160 μg of rVEGF)

PG-008 : Wnt3a alternative peptide (β-catenin pathway agonist)

Wnt3a binds to Frizzled and LRP5/6 receptors to induce the β-catenin pathway of Wnt signaling. It is used in the differentiation of stem cells as well as the maintenance of organoids. PG-008 exhibits agonistic activity in the β-catenin pathway of Wnt signaling in the same manner as Wnt3a, exhibiting even superior activity compared to recombinant Wnt3a.

Mode of action



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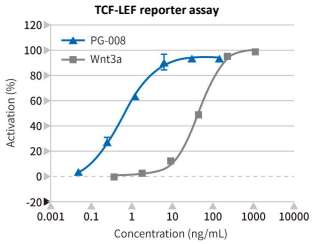
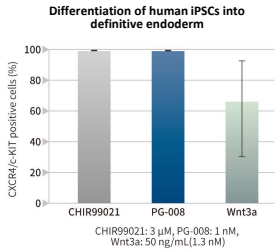




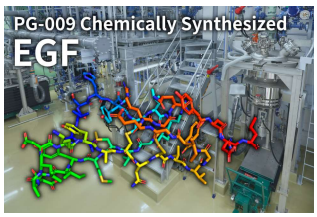
Properties

Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 5099.63(acetate)
Product size :
- 10 μg (eq. 700 μg of rWnt3a)
- 100 μg (eq. 7000 μg of rWnt3a)

PG-009 : Synthetic EGF

PG-009 is full-length Epidermal Growth Factor (EGF) (human) synthesized through complete chemical synthesis. In comparison to recombinant EGF produced using microorganisms or cells, it shows no quality variations between batches, is devoid of animal-derived raw materials, and is compatible with GMP production.

Product concept



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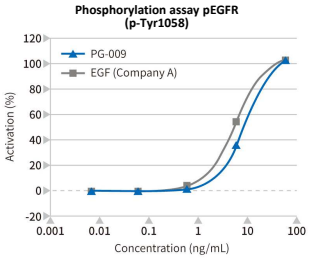
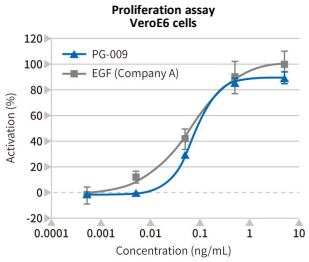




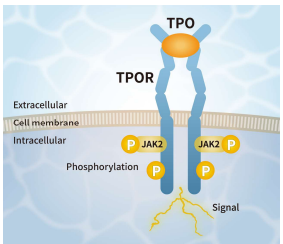
Properties

Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 6215.9
Product size :
- 100 μg

PG-010 : TPO alternative peptide (TPOR agonist)

Thrombopoietin (TPO) stimulates the proliferation and maturation of megakaryocytes and is commonly used for the differentiation of iPSCs into hematopoietic stem cells. PG-010 binds to TPOR and exhibits agonistic activity equivalent to recombinant TPO.

Mode of action



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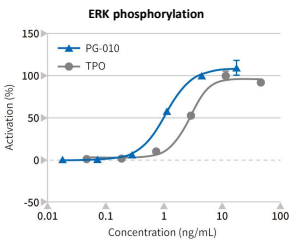
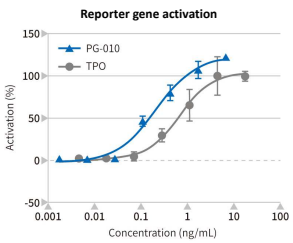




Properties

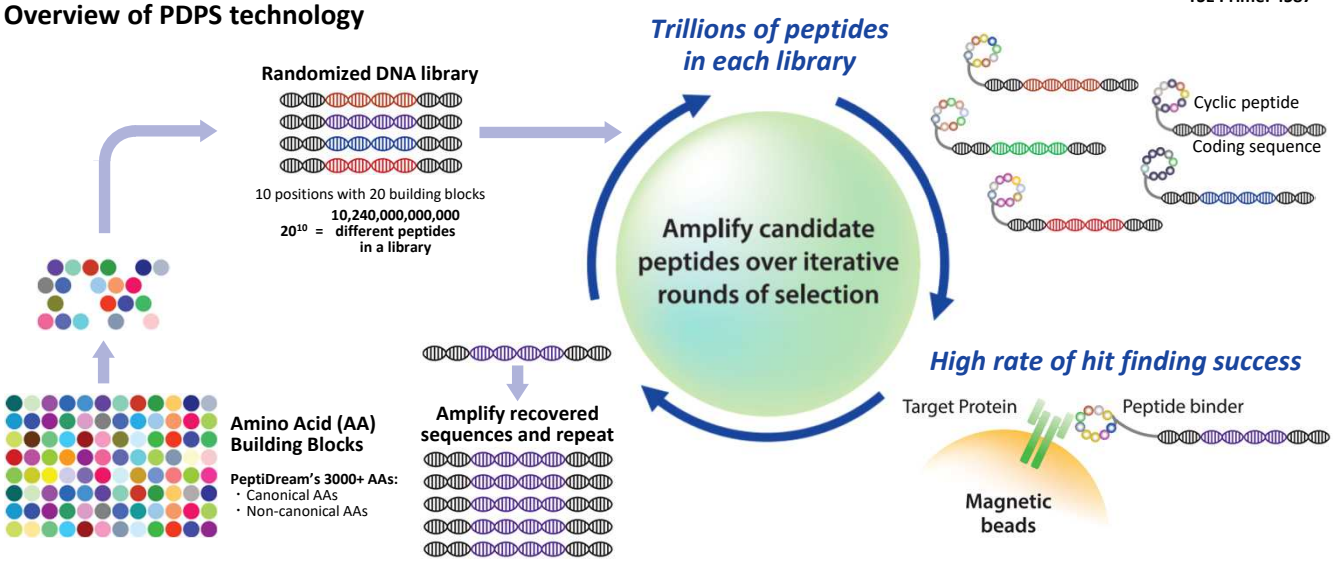
Formulation : Lyophilized
Storage condition : ≦-20℃
Purity : ≧95%
MW : 7148.02 (acetate)
Product size :
- 10 μg (eq. 26 μg of rTPO)
- 25 μg (eq. 65 μg of rTPO)

Peptide Discovery Platform System (PDPS)

PeptiDream employs its proprietary PDPS technology, enabling the production of highly diverse non-standard libraries containing trillions of peptides, and efficiently identifying highly potent and selective macrocyclic peptide candidates. PeptiGrowth is leveraging this PDPS to obtain peptides that can specifically bind to target molecules, typically receptors or growth factors, and use them as synthetic peptide growth factors.

PeptiDream
TSE Prime: 4587

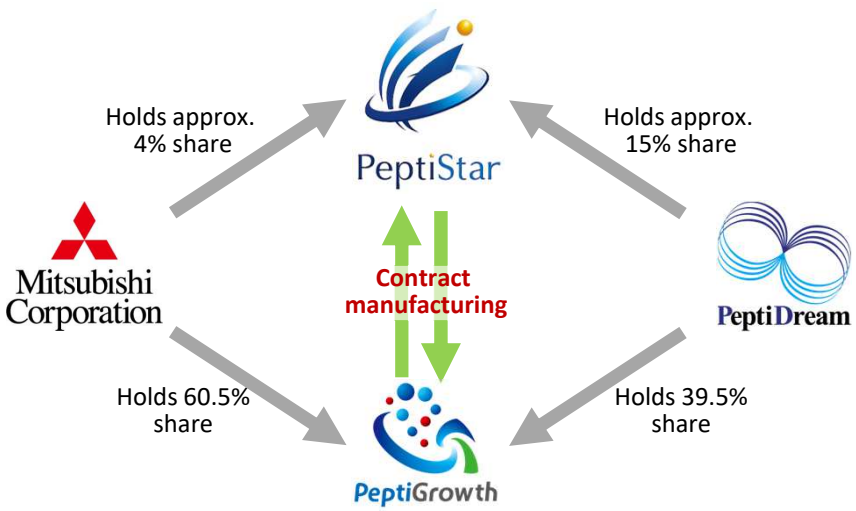
Overview of PDPS technology



✓ **We offer co-development of synthetic peptide growth factors to any growth factors and cytokines not on the development list.**

Stable Supply System of Synthetic Peptide Growth Factors

PeptiStar Inc., based in Settsu City, Osaka, Japan, is a sister company of PeptiGrowth and is one of the world's largest CDMO companies for peptides and oligonucleotides. It possesses innovative technologies in peptide manufacturing and operates a GMP-compliant facility for the production of peptides with a large manufacturing capacity. By leveraging PeptiStar's facility, PeptiGrowth can stably supply GMP grade synthetic peptide growth factors in large quantities.



✓ **Timely delivery through the manufacturing system of PeptiStar and offers GMP grade products upon request**

✓ **Capable of supplying synthetic peptide growth factors in even kilogram scale**

PeptiGrowth
PeptiGrowth.com/en

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