



PEPTIDE GLOSSARY

Advanced Peptide Research Handbook



RESEARCH



PRECISION



PERFORMANCE

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INTRODUCTION TO PEPTIDE RESEARCH

Purpose

This glossary is designed as an educational research reference. It introduces peptide categories, mechanisms, potential research applications, and key considerations without serving as medical advice or a treatment guide.

What Are Peptides?

Peptides are short chains of amino acids, the same building blocks that form proteins. While proteins are typically larger and more complex, peptides are smaller molecular messengers that can interact with specific receptors and signaling pathways throughout the body. In biological systems, peptides help regulate communication between cells. They can influence repair, metabolism, immune response, inflammation, hormone signaling, neurological function, and cellular health. Some peptides occur naturally in the body, while others are synthetic versions designed to mimic, enhance, or study specific biological signals.

Why Peptides Are Studied

Because peptides can be highly targeted in how they interact with biological systems, they have become an important area of modern research. Researchers study these compounds to better understand how the body manages tissue repair, energy production, immune regulation, metabolic control, cognitive function, and age-related cellular changes. Peptides are used across many areas of research. In healing and repair studies, certain compounds are investigated for their potential roles in collagen signaling, angiogenesis, tissue recovery, and inflammation control. In cognitive and neurological research, peptides may be studied for their influence on neuroprotection, stress response, memory pathways, mood regulation, and nerve repair. In metabolic research, GLP-1 based compounds and related incretin peptides are examined for their effects on appetite signaling, glucose regulation, insulin response, and body composition. Other categories focus on growth hormone signaling, mitochondrial function, immune system modulation, antimicrobial defense, inflammation control, and longevity-related cellular health.

How to Use This Glossary

This glossary gives readers a clear, organized introduction to commonly discussed peptides and research compounds. Each entry includes a brief overview, a simplified mechanism of action, primary potential research benefits, and key considerations or risks. Peptide research is still developing, and the strength of evidence varies widely from one compound to another. Some peptides have established clinical applications, while others remain experimental, investigational, or primarily supported by preclinical and early-stage research. Product quality, purity, dosing accuracy, regulatory status, and long-term safety data can also vary significantly depending on the compound and source. RapidCore Bio created this handbook to make the language and science of peptide research easier to understand. It should not be interpreted as medical advice, a treatment guide, or a recommendation for human use. It is a structured research overview for readers who want to better understand peptide categories, mechanisms, and the potential direction of modern biological research.

Disclaimer: Most peptides are not approved by the FDA for the treatment of any medical condition, and many applications are considered "off-label" or experimental in many countries.

HEALING & REPAIR

BPC-157

Overview

BPC-157 (Body Protection Compound-157) is a synthetic peptide derived from a gastric protein, widely used in research for its potential to accelerate healing of tissues such as tendons, muscles, ligaments, and bones. It works by increasing vascular endothelial growth factor (VEGF) to improve blood flow, stimulating collagen synthesis, and reducing inflammation.

Mechanism of Action

It acts primarily by promoting angiogenesis (new blood vessel formation) through the VEGFR2-Akt-eNOS pathway, stimulating fibroblast activity, and stabilizing the nitric oxide system.



Primary Potential Benefits

- **Accelerated Tissue Repair:** Preclinical models suggest that it significantly speeds up the healing of Achilles tendons, muscles, ligaments, and bones, and can aid in repairing damaged intestinal linings.
- **Reduced Inflammation and Pain:** BPC-157 acts as an anti-inflammatory, offering potential relief for condition like arthritis, muscle strains, and inflammatory bowel disease.
- **Improved Gut Health:** Derived from gastric juice, it exhibits protective effects on the gastrointestinal tract, aiding in healing gastric ulcers and repairing damage, such as in cases of leaky gut syndrome.
- **Angiogenesis (Blood Vessel Formation):** It promotes the growth of new blood vessels, essential for delivering nutrients to damaged tissues to facilitate healing.
- **Joint and Bone Health:** Studies indicate it can help mend fractured bones and improve recovery in damaged joints and cartilage.

Key Considerations and Risks

- **Lack of Human Data:** The overwhelming majority of evidence comes from animal (rat) studies; there are very few rigorous human clinical trials.
- **FDA Status:** BPC-157 is not FDA-approved and is considered an unapproved drug.
- **Regulatory Status:** It is listed on the World Anti-Doping Agency (WADA) prohibited list.



Order BPC [HERE](#)

TB-500

Overview

TB-500 (Thymosin Beta-4) is a synthetic peptide primarily used for accelerating muscle, tendon, and ligament healing by promoting cell migration and angiogenesis (new blood growth). Key benefits include faster recovery from soft tissue injuries, reduced inflammation, and improved flexibility. Risks include unknown long-term effects, potential tumor growth stimulation, and unregulated product purity.

Mechanism of Action

Promotes rapid injury healing, tissue repair, and reduced inflammation by accelerating cell migration, angiogenesis (blood vessel growth), and collagen deposition.



Primary Potential Benefits

- **Rapid Injury Recovery:** Accelerates repair of muscles, tendons, ligaments, and skin, often used for sports injuries or post-surgical recovery.
- **Tissue Regeneration:** Promotes angiogenesis (new blood vessel formation) and cell migration, essential for healing damaged tissues.
- **Reduced Inflammation:** Helps manage swelling and pain, reducing the formation of adhesion and scar tissue.
- **Increased Flexibility & Strength:** Enhances collagen architecture, aiding in structural integrity and flexibility.
- **Organ Protection:** Potential protective effects on the heart and liver.

Key Considerations and Risks

- **Lack of FDA Approval:** TB-500 is not approved for human use and is often sold for "research purposes," making sourcing from reputable providers crucial.
- **Theoretical Cancer Risk:** Because Thymosin Beta-4 promotes cell proliferation, there is a theoretical risk it could accelerate the migration of existing cancer cells.
- **Side Effects:** Potential temporary side effects include fatigue, headaches, or injection site reactions.
- **Long-Term Safety Data:** Limited human clinical trials mean long-term effects remain largely unknown.



Order TB-500 [Here](#)

KPV

Overview

PV(Lysine-Proline-Valine) is a therapeutic tripeptide derived from alpha-melanocyte-stimulating hormone (α -MSH), a natural hormone responsible for anti-inflammatory, antimicrobial, and healing processes in the human body. It is highly regarded for its ability to target chronic inflammation, skin disorders, and gut health issues without the immunosuppressive side effects often associated with conventional anti-inflammatory drugs.

Mechanism of Action

Its primary mechanism of action involves inhibiting the nuclear factor kappa B (NF- κ B) pathway, reducing pro-inflammatory cytokines, and promoting mucosal healing via cellular uptake through the hPepT1 transporter.



Primary Potential Benefits

- **Accelerated Tissue Repair:** Preclinical models suggest that it significantly speeds up the healing of Achilles tendons, muscles, ligaments, and bones, and can aid in repairing damaged intestinal linings.
- **Reduced Inflammation and Pain:** BPC-157 acts as an anti-inflammatory, offering potential relief for condition like arthritis, muscle strains, and inflammatory bowel disease.
- **Improved Gut Health:** Derived from gastric juice, it exhibits protective effects on the gastrointestinal tract, aiding in healing gastric ulcers and repairing damage, such as in cases of leaky gut syndrome.
- **Angiogenesis (Blood Vessel Formation):** It promotes the growth of new blood vessels, essential for delivering nutrients to damaged tissues to facilitate healing.
- **Joint and Bone Health:** Studies indicate it can help mend fractured bones and improve recovery in damaged joints and cartilage.

Key Considerations and Risks

- **Unclear Safety Profile:** The FDA has noted a lack of human exposure data on KPV, meaning dedicated, large-scale safety studies are limited, with most research relying on animal models and cell cultures.
- **Contraindications:** As with many therapeutic peptides, KPV is generally contraindicated for pregnant or breastfeeding women and those with a history of cancer.
- **No Standardized Protocols:** Because it is not FDA-approved, there are no universally established dosing guidelines, making supervision by a qualified healthcare professional essential.



Order KPV [Here](#)

COGNITIVE & NEURO

Semax

Overview

Semax is a synthetic peptide known for its neuroprotective and cognitive-enhancing properties, acting as an analog of adrenocorticotrophic hormone (ACTH). Key benefits include improved focus, memory, accelerated recovery from ischemic stroke or traumatic brain injury (TBI), and increased motivation. It functions by boosting brain-derived neurotrophic factor (BDNF), modulating dopamine/serotonin, and reducing inflammation.

Mechanism of Action

Its primary mechanisms involve elevating Brain-Derived Neurotrophic Factor (BDNF) and Nerve Growth Factor (NGF), modulating dopaminergic and serotonergic systems, reducing neuroinflammation, and enhancing cerebrovascular health.



Primary Potential Benefits

- **Cognitive Enhancement:** Studies suggest improved attention, memory, and learning capacity, often resulting in increased mental stamina and focus.
- **Neuroprotection and Recovery:** Primarily used in Russia to treat ischemic strokes, it helps reduce neuronal damage, improve neuroplasticity, and aid in recovering from traumatic brain injury (TBI).
- **Mood Modulation and Stress Management:** Semax can boost mood and increase motivation, often providing a calming yet stimulating effect suitable for reducing anxiety.
- **Brain Health Support:** It increases BDNF levels in the hippocampus, which promotes neurogenesis (growth of new neurons).

Key Considerations and Risks

- **Limited High-Quality Evidence:** While promising, many studies on Semax are from Russia (often in Russian), and there is a lack of large-scale, randomized controlled trials in Western countries.
- **Administration Method:** Commonly administered via nasal spray, which allows it to cross the blood-brain barrier effectively, though dosage protocols vary and are not standardized globally.
- **Potential Side Effects:** While generally well tolerated with a good safety profile in clinical studies, potential side effects can include irritation of the nasal mucosa if using the spray.
- **Not a Cure-All:** It is best used as a tool to support cognitive function alongside healthy lifestyle habits, rather than a replacement for proper diet, sleep, and medical care.



Order Semax [Here](#)

Selank

Overview

Selank (also known as TP-7) is a synthetic neurocognitive peptide developed in Russia, functioning as a potent, non-sedating anxiolytic (anti-anxiety) and nootropic agent.

It is a synthetic analog of the natural human peptide tuftsin, designed to increase stability and efficacy in regulating stress, mood, and cognitive performance without the dependency issues common with traditional anti-anxiety medications like benzodiazepines.

Mechanism of Action

It acts as an anxiolytic and nootropic by modulating the GABAergic system, enhancing brain-derived neurotrophic factor (BDNF), and regulating monoamine neurotransmitters (serotonin/dopamine).



Primary Potential Benefits

- **Anxiety Reduction Without Sedation:** Selank modulates GABA-A receptors, increasing inhibitory action on neural excitability to create a state of calm. Unlike benzodiazepines, it is generally considered non-sedating and does not cause significant cognitive impairment, memory loss, or muscle relaxation.
- **Cognitive Enhancement (Nootropic):** Research indicates Selank enhances focus, mental clarity, attention, learning, and memory, particularly under stress. It may increase BDNF in the hippocampus, which promotes neuron growth and plasticity.
- **Mood Stabilization:** Selank influences serotonin and dopamine pathways, aiding in emotional resilience, improving motivation, and stabilizing mood swings.
- **Immune Modulation & Anti-Inflammatory:** Modeled after tuftsin, it supports healthy immune responses and has demonstrated the ability to reduce pro-inflammatory compounds in the brain (e.g., IL-6, TNF- α).

Key Considerations and Risks

- **Limited Human Clinical Trials:** The majority of scientific literature on Selank is in Russian, and while preclinical and some clinical studies show safety, robust large-scale human clinical trials in English-language literature are limited.
- **Regulatory Status:** Selank is not approved by the FDA for therapeutic use in the United States, meaning it is often sold through online vendors as a "research chemical," which carries risks of poor quality control, inconsistent dosing, or contamination.
- **Potential Side Effects:** While generally well-tolerated, reported side effects are rare but can include mild nasal or throat irritation (if using spray), headaches, dizziness, lightheadedness, or temporary fatigue.



Order Selank [Here](#)

Kisspeptin-10

Overview

Kisspeptin-10 is a short peptide fragment of the kisspeptin family that plays a major role in reproductive hormone signaling. It is best known for stimulating gonadotropin-releasing hormone, or GnRH, which then signals the pituitary to release luteinizing hormone, or LH, and follicle-stimulating hormone, or FSH. Research has focused on fertility signaling, puberty regulation, testosterone-related hormone pathways, and reproductive endocrine disorders. It is still investigational and is not FDA-approved for human therapeutic use.

Mechanism of Action

Kisspeptin-10 binds to the kisspeptin receptor, also known as KISS1R or GPR54. This activates GnRH neurons in the hypothalamus, increasing GnRH release. GnRH then stimulates the pituitary gland to release LH and FSH, which are key hormones involved in testosterone production, ovulation, fertility signaling, and reproductive function. Some research also suggests kisspeptin may have direct pituitary effects on LH release.



Primary Potential Benefits

- **Reproductive Hormone Signaling:** Studies show Kisspeptin-10 can stimulate LH release in men and women, especially through GnRH activation.
- **Testosterone Pathway Support:** In human research, Kisspeptin-10 boluses increased LH secretion in men, and continuous infusion increased testosterone, LH pulse frequency, and LH pulse size.
- **Fertility Research:** Kisspeptin signaling is being studied for its role in ovulation, ovarian stimulation, reproductive hormone restoration, and infertility-related pathways.
- **Hypogonadotropic Hypogonadism Research:** Kisspeptin has been studied as a way to test or stimulate the GnRH neuronal network in patients with idiopathic hypogonadotropic hypogonadism.
- **Puberty and Endocrine Regulation:** Kisspeptin signaling is considered a central regulator of puberty onset and reproductive hormone feedback loops.
- **Sexual Function Research:** Human clinical research has explored kisspeptin's effects on sexual brain processing and behavior in men with hypoactive sexual desire disorder, though this remains in investigation.

Key Considerations and Risks

- **Not FDA-Approved:** Kisspeptin-10 is not approved as a human therapeutic drug. FDA materials have also flagged compounded drugs containing Kisspeptin-10 as potentially presenting safety risks for certain routes of administration.
- **Research-Use Context:** Most available information comes from laboratory research, small human studies, and clinical research settings rather than approved medical use.



Order Kisspeptin-10 [Here](#)

METABOLISM & WEIGHT REGULATION

Semaglutide

Overview

Semaglutide (Ozempic, Wegovy) is a GLP-1 receptor agonist primarily used for substantial weight loss (often >10% body weight), type 2 diabetes management, and reducing major cardiovascular risks, including heart attack and stroke. Key risks include gastrointestinal issues (nausea, vomiting), potential pancreatitis, and gallbladder problems. It requires long-term management and is contraindicated for those with certain thyroid cancer histories.

Mechanism of Action

It treats type 2 diabetes and obesity by mimicking GLP-1 to enhance glucose-dependent insulin secretion, inhibits glucagon release, slow gastric emptying, and increase satiety while reducing hunger in the brain's hypothalamus.



Primary Potential Benefits

- **Significant Weight Loss:** Induces weight loss by mimicking the GLP-1 hormone to suppress appetite and reduce calorie intake.
- **Cardiovascular Protection:** Reduces the risk of cardiovascular mortality, heart attack, and stroke, particularly in adults with type 2 diabetes and heart disease.
- **Improved Glycemic Control:** Effectively lowers blood sugar levels (HbA1c) in patients with type 2 diabetes.
- **Kidney Protection:** Slows the progression of chronic kidney disease.

Key Considerations and Risks

- **Administration:** Semaglutide is typically administered as a once-weekly subcutaneous injection and is most effective when combined with lifestyle interventions like diet and exercise.
- **Gastrointestinal Side Effects:** The most common adverse effects are nausea, vomiting, diarrhea, constipation, and abdominal pain, which are typically transient.
- **Severe Adverse Risks:** Potential for pancreatitis, gallbladder disease, acute kidney injury, and diabetic retinopathy.



Order Semaglutide [Here](#)

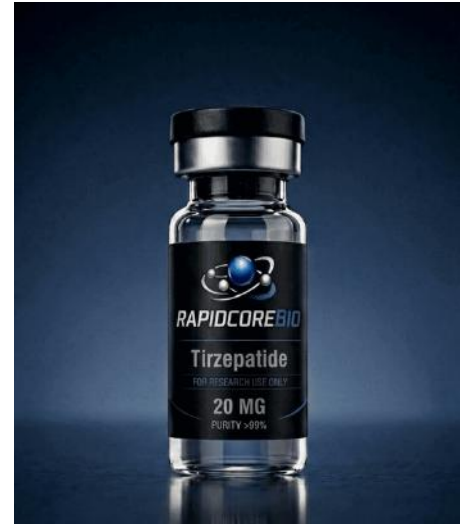
Tirzepatide

Overview

Tirzepatide is a dual agonist (GIP and GLP-1 receptors) that provides superior weight loss (up to 20%+), significant type 2 diabetes glycemic control (HbA1c reduction), and potential cardiovascular and metabolic improvements. Key risks include gastrointestinal issues (nausea, vomiting), potential pancreatitis, and a boxed warning for thyroid C-cell tumors. Tirzepatide is sold under the brand name Mounjaro for type 2 diabetes and Zepbound for weight loss.

Mechanism of Action

It mimics two incretin hormones, Glucose-dependent Insulinotropic Polypeptide (GIP) and Glucagon-like Peptide-1 (GLP-1), simultaneously activating their receptors to regulate blood sugar, suppress appetite, and promote fat loss. It works by slowing gastric emptying - making you feel fuller - and controlling blood sugar.



Primary Potential Benefits

- **Significant Weight Reduction:** Clinical trials show significant body weight reduction, often higher than GLP-1 medications like semaglutide, making it effective for chronic weight management in obesity.
- **Glycemic Control:** It significantly lowers glycosylated hemoglobin (HbA1c) and improves fasting/postprandial glucose levels in Type 2 Diabetes (T2DM) patients.
- **Cardiometabolic Improvements:** Benefits include improved blood pressure, lowered LDL cholesterol, reduced waist circumference, and potential benefits for NASH (liver health).
- **Cardiovascular and Other Benefits:** Studies suggest reduction in cardiovascular risk, improved heart failure (HFrEF) outcomes, and treatment for obstructive sleep apnea.
- **Improved Quality of Life:** Users often report increased energy and better mood.

Key Considerations and Risks

- **Administration:** It is a once-weekly subcutaneous injection.
- **Dosage Adjustment:** Treatment requires gradual dose escalation to minimize side effects.
- **Gastrointestinal Issues:** The most common side effects include nausea, vomiting, diarrhea, constipation, and abdominal pain.
- **Severe Side Effects:** Potential risks include pancreatitis, gallbladder-related issues, and kidney performance issues.



Order Tirzepatide [Here](#)

Retatrutide

Overview

Retatrutide is a "triple-agonist" (GLP-1, GIP, and Glucagon) peptide designed for significant weight loss and metabolic improvement. Early studies show up to 24% weight reduction, improved HbA1c, and favorable metabolic outcomes, potentially surpassing current GLP-1 treatments. Retatrutide shows promise as a potent triple-agonist that may support novel research into obesity and type 2 diabetes.

Mechanism of Action

A "triple-hormone" receptor agonist (often called a triple G) that works by activating three key receptors - GLP-1, GIP, and glucagon - to manage obesity and metabolic disorders. The glucagon receptor component promotes fat breakdown for energy



Primary Potential Benefits

- **Substantial Weight Loss:** Trials showed up to 24.2% weight reduction (15% in 12 weeks) in adults with obesity.
- **Improved Glycemic Control:** Significant reductions in HbA1c and fasting blood glucose, achieving normoglycemia in 72% of study participants with prediabetes.
- **Cardiometabolic Health:** Improved lipid profiles (cholesterol), reduced liver fat, and lowered blood pressure.
- **Quality of Life Improvement:** Improved emotional, social, and physical well-being.

Key Considerations and Risks

- **Administration:** It is a once-weekly subcutaneous injection.
- **Gastrointestinal Distress:** Most common side effects include nausea, diarrhea, vomiting, and constipation.
- **Cardiovascular Effects:** Crucially, it causes dose-dependent increases in heart rate and carries potential for mild-to-moderate cardiac arrhythmias.
- **Safety Profile:** Transient increases in liver enzymes (ALT) have been observed, although they did not result in permanent liver damage in trials.
- **Availability:** Retatrutide is currently in clinical trials and is not yet FDA-approved.



Order Retatrutide [Here](#)

MOTS-c

Overview

MOTS-c is a mitochondria-derived peptide that acts as an endocrine hormone to regulate metabolism, offering potential benefits such as improved insulin sensitivity, weight loss (fat burning), enhanced physical performance, reduced inflammation, and slowed aging-related decline. MOTS-c levels decrease with age and it is primarily activated by exercise and stress.

Mechanism of Action

MOTS-c mainly acts through the Folate-AICAR-AMPK pathway, thereby influencing energy metabolism, insulin resistance, inflammatory response, exercise, aging and aging-related pathologies.



Primary Potential Benefits

- **Metabolic Regulation:** Improves insulin sensitivity, enhances glucose utilization, and prevents obesity by regulating lipid metabolism in the liver and skeletal muscle.
- **Aging & Healthspan:** Promotes cellular homeostasis, reduces inflammation, and improves physical performance (grip strength, gait) in aging mice.
- **Weight Loss and Body Composition:** Promotes fat oxidation and inhibits obesity.
- **Cardiovascular and Bone Health:** Improves myocardial function, reduces oxidative stress in the heart, and promotes osteoblast proliferation, which helps increase bone density.
- **Energy Production:** Targets mitochondria to increase energy production (ATP).

Key Considerations and Risks

- **Evidence Limitation:** While promising, most research is currently based on animal studies (mice), and its full safety profile in humans has not been fully established.
- **Side Effects:** Potential temporary side effects include injection site reactions, mild fatigue, and occasional flushing.
- **Clinical Application:** While it mimics aerobic exercise in its effects, research is ongoing to establish optimized dosing and clinical application techniques.
- **Interaction:** Potential to interact with other drugs that target AMPK pathways.



Order Mots-c [Here](#)

GROWTH & HORMONE SIGNALING

HGH-191aa

Overview

HGH-191aa is a synthetic 16-amino acid peptide derived from the C-terminal end of the human growth hormone (HGH) molecule. It was specifically engineered to isolate and enhance the fat-burning (lipolytic) properties of HGH without triggering the undesirable side effects of full-length growth hormone, such as insulin resistance, blood sugar fluctuations, or uncontrolled tissue growth.

Mechanism of Action

HGH 191aa (Somatropin) is a 191-amino acid peptide hormone identical to natural human growth hormone. Its mechanism of action relies on binding to growth hormone receptors (GHR) on target cells, triggering the JAK2/STAT5 pathway. This cascade drives the liver to produce IGF-1, promoting protein synthesis, lipolysis, and cellular repair



Primary Potential Benefits

- **Accelerated Fat Burning (Lipolysis):** It stimulates the breakdown of fat cells (adipose tissue) and enhances the Research indicates that HGH Fragment 176-191 primarily acts on adipose tissue to promote weight loss through several mechanisms: use of stored fat for energy.
- **Inhibition of Fat Storage (Lipogenesis):** It helps prevent the body from storing new fat.
- **Targeted "Stubborn" Fat Loss:** Research suggests it is particularly effective at targeting visceral adipose tissue ("stubborn" belly fat).
- **Preservation of Lean Muscle Mass:** Unlike caloric restriction alone, this peptide is designed to target fat while sparing muscle tissue.
- **Increased Metabolic Rate:** It supports improved metabolic function, leading to higher basal energy expenditure.
- **No Negative Impact on Blood Sugar:** Unlike full HGH, this fragment does not appear to disrupt insulin sensitivity or glucose metabolism.

Key Considerations and Risks

- **Fluid Retention and Edema:** Excess HGH frequently causes the body to retain fluids, leading to noticeable swelling in the hands, feet, and face.
- **Carpal Tunnel Syndrome:** Fluid retention can compress nerves in the wrist, causing pain, numbness, and tingling in the hands.
- **Organ Enlargement (Acromegaly):** Long-term or unregulated use can cause abnormal bone growth (like coarsened facial features or enlarged hands/feet) and the dangerous enlargement of internal organs, including the heart (cardiomegaly).



Order HGH-191aa [Here](#)

IGF-1 LR3

Overview

IGF-1LR3 is a potent, long-acting synthetic analog of Insulin-like Growth Factor-1, primarily used to enhance muscle hypertrophy, accelerate recovery, and promote tissue repair. Its key benefits include increased muscle mass, satellite cell proliferation, and fat metabolism, while key risks involve potential cancer stimulation, blood sugar imbalances, and organ growth.

Mechanism of Action

It acts as a potent anabolic agent by binding to IGF-1 receptors in muscle tissue, driving enhanced protein synthesis, cell proliferation, and repair.



Primary Potential Benefits

- **Enhanced Muscle Growth (Hypertrophy):** By signaling satellite cells to proliferate and fuse into existing muscle fibers, IGF-1 LR3 boosts muscle density and size.
- **Accelerated Repair and Recovery:** It assists in repairing muscle damage and reducing inflammation after strenuous exercise or injury.
- **Fat Loss and Metabolism Improvement:** It encourages fat cells to release energy (lipolysis) rather than storing it, supporting a leaner body composition.
- **Increased Satellite Cell Activity:** It acts as a potent mitogen, forcing muscle satellite cells to divide and multiply for long-term strengthening.
- **Anti-Aging and Tissue Maintenance:** It has been researched for supporting tissue maintenance and countering age-related degeneration in muscle and neurological tissue.

Key Considerations and Risks

- **Cancer Risk:** IGF-1 is a growth promoter; elevated levels are associated with increased risks of developing or accelerating certain cancers, such as prostate, colorectal, and lung cancers.
- **Blood Sugar Management:** IGF-1 LR3 can affect blood sugar levels, potentially leading to hypoglycemia if not monitored.
- **Organ Growth:** Long-term or excessive use might cause abnormal growth of organs.
- **Off-Label/Unregulated Status:** IGF-1 LR3 is not FDA-approved for human bodybuilding or anti-aging, and safety studies are limited. It is highly recommended to use this peptide under professional guidance.
- **Side Effects:** Users may experience joint pain, water retention, and reactions at the injection site.



Order IGF-1LR3 [Here](#)

CJC-1295

Overview

CJC-1295 is a synthetic peptide acting as a Growth Hormone-Releasing Hormone (GHRH) analog, designed to stimulate the pituitary gland to produce more of the body's own human growth hormone (HGH). It is widely utilized for anti-aging, body composition improvements, and enhanced recovery, often paired with Ipamorelin to create a "spark and sustain" effect.

Mechanism of Action

By mimicking GHRH, it stimulates the pituitary gland to increase the production and pulsatile release of Growth Hormone (GH), which subsequently elevates Insulin-like Growth Factor 1 (IGF-1) levels, promoting muscle growth, fat loss, and tissue repair.



Primary Potential Benefits

- By stimulating the natural production of HGH rather than introducing synthetic HGH, CJC-1295 aims to mimic the body's natural pulsatile rhythm.
- Improved Body Composition: Enhances fat loss (lipolysis) while supporting lean muscle mass growth by increasing protein synthesis.
- Faster Recovery and Repair: Elevated HGH levels help accelerate repair of injuries, muscles, and tissues (cartilage and connective tissue).
- Better Sleep Quality: Users frequently report deeper, more restorative REM sleep, which further aids in recovery.
- Anti-Aging and Skin Health: Boosts collagen production, potentially enhancing skin elasticity and reducing wrinkles.
- Increased Energy and Cognitive Function: Many users experience higher energy levels and improved mental clarity.
- Bone Density: Supports better bone mineral density, advantageous for aging individuals.

Key Considerations and Risks

- Side Effects & Systemic Risks: While generally well-tolerated when compared to synthetic HGH, it carries risks and is not FDA-approved for general human use. Common side effects include water retention (bloating), temporary numbness/tingling, joint discomfort, injection site reactions, and headaches. The FDA has also identified risks including increased heart rate and vasodilatory reactions (flushing).
- Cancer Risk: Because CJC-1295 enhances cell replication, it is considered unsafe for individuals with active cancer or a history of cancer.
- Immunogenicity: There is a potential risk that the body may interpret the peptide as a threat, resulting in immune reactions, potentially severe ones like anaphylaxis.



Order CJC-1295 [Here](#)

Ipamorelin

Overview

Ipamorelin is a selective growth hormone secretagogue that stimulates natural pituitary growth hormone release, offering benefits like enhanced lean muscle growth, accelerated fat loss, improved sleep, and faster injury recovery. It is highly valued for its safety profile, which avoids significant cortisol or prolactin increases.

Mechanism of Action

It stimulates the pituitary gland to release growth hormone (GH) while suppressing somatostatin, promoting an anabolic effect without significantly increasing cortisol or appetite.



Primary Potential Benefits

- **Body Composition & Growth:** Increases lean muscle mass and assists with targeted fat loss, particularly in the midsection.
- **Recovery and Repair:** Enhances workout recovery and helps repair tissues, joints, and bones.
- **Sleep and Energy:** Promotes deeper REM sleep and boosts overall vitality and mental clarity.
- **Anti-Aging:** Improves skin elasticity, reduces wrinkles, and strengthens hair.
- **Minimal Side Effects:** Highly selective, causing few unwanted side effects compared to other peptides or synthetic growth hormone.

Key Considerations and Risks

- **Lack of FDA Approval:** It is currently categorized for research purposes and not officially approved for general medical use. Long-term studies are limited, necessitating supervision by a qualified professional.
- **Administration:** Typically requires regular (once or twice daily) subcutaneous injections.
- **Side Effects:** Potential for temporary side effects including headaches, flushing, joint aches, or fatigue, alongside injection site irritation.
- **Risks & Contraindications:** Not recommended for pregnant or breastfeeding individuals, and it is on the WADA prohibited list for athletes.



Order Ipamorelin [Here](#)

Tesamorelin

Overview

Tesamorelin is a synthetic growth hormone-releasing hormone (GHRH) analogue primarily used to reduce visceral adipose tissue (deep belly fat) and improve lipid profiles in HIV-positive adults with lipodystrophy. It increases natural growth hormone and IGF-1 production, resulting in reduced visceral fat and potential improvements in liver health, cardiovascular markers, and lean muscle mass maintenance.

Mechanism of Action

It acts as a GHRH receptor agonist in the anterior pituitary gland, stimulating the natural pulsatile production of growth hormone (GH).



Primary Potential Benefits

- **Visceral Fat Reduction:** Proven to significantly decrease deep abdominal fat (visceral adipose tissue - VAT). Visceral fat reduction is often associated with lowered cardiovascular risk.
- **Improved Metabolic Health:** Helps improve lipid profiles (triglycerides) and may reduce liver fat.
- **Body Composition:** Helps maintain or increase lean muscle mass.
- **Potential Cognitive/Repair Benefits:** Some research explores its potential benefits for cognitive function in older adults and nerve tissue repair.

Key Considerations and Risks

- **Administration:** Daily subcutaneous injection, usually into the abdominal area, requiring rotation of sites.
- **Metabolic Risks:** Can increase blood sugar levels, requiring caution in diabetics.
- **Side Effects & Fluid Retention:** Common side effects include injection site reactions (redness, itching), joint pain, muscle pain, nausea, and headaches. Possible swelling (edema) in limbs or joints can occur due to fluid retention.
- **Contraindications:** Not recommended for individuals with active malignancies, pituitary disorders, or hypersensitivity to the drug.
- **Long-Term Use:** Studies suggest improvements last only while on the medication, with fat typically returning after stopping.



Order Tesamorelin [Here](#)

Sermorelin

Overview

Sermorelin is a synthetic peptide that stimulates the pituitary gland to release growth hormone (GH), offering benefits such as increased lean muscle mass, reduced body fat, improved sleep quality, faster recovery times, and enhanced energy levels. It is considered a safer, more natural alternative to direct HGH injections because it utilizes the body's own feedback loop, preventing excessive hormone levels.

Mechanism of Action

It binds to GHRH receptors on the pituitary gland, stimulating somatotroph cells to produce and release endogenous human growth hormone (hGH) in a natural, pulsatile manner, which subsequently increases IGF-1 levels. Unlike direct synthetic HGH (GHRH) use which can suppress pituitary function, Sermorelin preserves it.



Primary Potential Benefits

- **Visceral Fat Reduction:** Proven to significantly decrease deep abdominal fat (visceral adipose tissue - VAT). Visceral fat reduction is often associated with lowered cardiovascular risk.
- **Improved Metabolic Health:** Helps improve lipid profiles (triglycerides) and may reduce liver fat.
- **Body Composition:** Helps maintain or increase lean muscle mass.
- **Potential Cognitive/Repair Benefits:** Some research explores its potential benefits for cognitive function in older adults and nerve tissue repair.

Key Considerations and Risks

- **Administration & Medical Oversight:** Sermorelin is typically administered via daily injections. It requires a prescription and should be supervised by a physician to manage dosage and monitor blood sugar/thyroid levels.
- **Side Effects:** Common side effects include injection site reactions (pain, redness, swelling), headaches, dizziness, and flushing.
- **Long-Term Data:** While generally well-tolerated, studies on long-term safety are more limited compared to other treatments.



Order Sermorelin [Here](#)

ANTI-AGING & CELLULAR HEALTH

GHK-Cu

Overview

GHK-Cu (glycyl-L-histidyl-L-lysine copper) is a naturally occurring human tripeptide recognized for potent regenerative, anti-inflammatory, and anti-aging properties. Primary benefits include accelerated wound healing, significantly increased collagen and elastin synthesis, improved skin firmness, reduced wrinkles, and stimulation of hair follicles.

Mechanism of Action

It works primarily by binding to copper ions, facilitating tissue repair, stimulating collagen and elastin synthesis, lowering inflammation, and modulating gene expression to return aging cells to a more youthful state.



Primary Potential Benefits

- **Skin Regeneration & Anti-Aging:** Enhances skin density, tightens loose skin, and reduces fine lines and wrinkles by promoting fibroblasts and collagen production (Types I, III, and IV).
- **Wound Healing & Tissue Repair:** Stimulates angiogenesis (new blood vessel formation) and accelerates wound closure in skin, lung, and stomach tissue.
- **Hair Growth:** Increases hair follicle size and stimulates hair growth (anagen phase), often utilized for treating androgenetic alopecia.
- **Anti-Inflammatory & Antioxidant:** Reduce pro-inflammatory cytokines (like TNF- α and IL-6) and upregulates antioxidant enzymes like superoxide dismutase (SOD).

Key Considerations and Risks

- **Administration:** Semaglutide is typically administered as a once-weekly subcutaneous injection and is most effective when combined with lifestyle interventions like diet and exercise.
- **Gastrointestinal Side Effects:** The most common adverse effects are nausea, vomiting, diarrhea, constipation, and abdominal pain, which are typically transient.
- **Severe Adverse Risks:** Potential for pancreatitis, gallbladder disease, acute kidney injury, and diabetic retinopathy.
- **Contraindications & Warnings:** Contraindicated in patients with a personal or family history of medullary thyroid carcinoma (MTC) or Multiple Endocrine Neoplasia syndrome type 2 (MEN 2).



Order GHK-cu [Here](#)

Epitalon

Overview

Epitalon (Ala-Glu-Asp-Gly) is a synthetic tetrapeptide designed to mimic the pineal gland compound epithalamin, primarily used in research for anti-aging, longevity, and telomere extension. Potential benefits include increased melatonin, enhanced telomere length, improved sleep, immune system modulation, and reduced risk of age-related diseases.

Mechanism of Action

It slows aging by activating the telomerase enzyme, which elongates shortened telomeres, allowing cells to divide beyond their normal limit.



Primary Potential Benefits

- **Telomere Lengthening:** Stimulates telomerase activity, potentially increasing the lifespan of mammalian cells.
- **Enhanced Sleep and Melatonin Production:** A 2021 human study showed that 0.5 mg/day increased melatonin synthesis by 160%.
- **Anti-Aging and Longevity:** Studies suggest it may slow cellular aging, boost immunity, and improve physical energy.
- **Antioxidant & Protective Effects:** Reduces oxidative stress, protects against DNA damage, and has shown tumor-prevention qualities in animal studies.
- **Accelerated Tissue Repair:** May improve wound healing.

Key Considerations and Risks

- **Limited Human Data:** Most promising findings stem from Russian clinical trials or animal studies (mice, fruit flies), lacking extensive, high-quality, independent Phase 1-3 studies. Long-term safety data in humans over many years is limited.
- **Regulatory Status:** It is primarily sold for "research purposes only" and is not approved by the FDA for human use. Consultation with a healthcare provider is essential due to its experimental nature.
- **Administration & Side Effects:** Typically administered via subcutaneous injection in 10-20 day cycles. Generally well-tolerated, but reported side effects include injection site reactions, headaches, or fatigue.



Order Epitalon [Here](#)

NAD+

Overview

NAD+ (nicotinamide adenine dinucleotide) is a vital coenzyme boosting cellular energy (ATP), DNA repair, and sirtuin activity, which helps counteract age-related decline. Primary benefits include enhanced cognitive function, improved metabolic health, reduced inflammation, and better cardiovascular, muscle, and sleep function.

Mechanism of Action

It accepts electrons and protons during metabolic processes like glycolysis and the tricarboxylic acid cycle, converting to NADH. NADH then travels to the electron transport chain in the mitochondria, where it donates these electrons to produce ATP.



Primary Potential Benefits

- **Anti-Aging and Cellular Health:** NAD+ levels naturally decline with age; replenishing them supports DNA repair and helps reverse cellular aging, maintaining healthier tissues.
- **Energy Metabolism:** It aids mitochondria in converting food into energy (ATP), boosting overall metabolic health and physical performance.
- **Cognitive Function:** NAD+ promotes brain cell protection, potentially enhancing memory, attention, and mental clarity.
- **Cardiovascular and Metabolic Health:** It may lower diabetes risk, assist with weight management, improve insulin sensitivity, and support heart function.
- **Sleep Regulation:** NAD+ helps regulate circadian rhythms, potentially improving sleep quality in older adults.
- **Hair Health:** Early research suggests it can promote hair follicle health and density.

Key Considerations and Risks

- **Cancer Risk:** Elevated NAD+ could potentially aid the growth of existing cancer cells, increasing their resistance to treatments like chemo- or radiotherapy.
- **Side Effects:** Supplements or IV therapies can cause mild side effects, including nausea, headaches, fatigue, diarrhea, and abdominal discomfort.
- **Medical Consultation Needed:** It is crucial to consult a doctor, particularly if you have cancer, advanced liver disease, are pregnant/breastfeeding, or are taking other medications. Many studies on NAD+ boosters (like NR or NMN) are in early stages.



Order NAD+ [Here](#)

IMMUNE & INFLAMMATION

Thymosin Alpha-1

Overview

Thymosin Alpha-1 (Tα1) is a synthetic peptide that enhances immune function by modulating T-cell activity, making it effective for chronic infections (Hepatitis B/C, HIV), cancer support, and sepsis. It reduces inflammation, acts as an antiviral/antibacterial agent, and improves vaccine response, generally with a favorable safety profile.

Mechanism of Action

Enhances T-cell maturation, strengthens immune response, and reduces inflammation by acting as a Toll-like receptor (TLR) agonist.



Primary Potential Benefits

- Immune System Modulation: Stimulates T-cell maturation, differentiation, and natural killer (NK) cell activity to fight infections and cancer.
- Chronic Infection Treatment: Widely used to treat Hepatitis B and C, HIV, and to manage severe infections like COVID-19 by reducing viral loads and mitigating sepsis-related mortality.
- Cancer Support: Enhances immune checkpoint inhibitor efficacy and reduces chemotherapy-induced side effects (e.g., lymphopenia).
- Anti-inflammatory and Antioxidant: Reduces chronic inflammation in conditions like rheumatoid arthritis and improves overall immune resilience.
- Enhanced Vaccine Efficacy: Used to boost immune responses in immunocompromised patients.

Key Considerations and Risks

- Administration: Typically administered via subcutaneous or intramuscular injection, often in 4-12 week cycles.
- Side Effects: Generally well-tolerated, but can cause mild issues such as injection site pain/redness, fatigue, fever, chills, muscle aches, and rare gastrointestinal distress. A transient increase in ALT (liver enzyme) can occur during therapy.



Order Thymosin Alpha-1 [Here](#)

LL-37

Overview

LL-37 is a human host defense peptide that offers broad-spectrum antimicrobial, antiviral, and antibiofilm activities, alongside immunomodulatory effects that enhance pathogen clearance. Its potential benefits include treating antibiotic-resistant infections, boosting immunity against viruses like SARS-CoV-2, and promoting wound healing. Key risks involve high manufacturing costs, potential cytotoxicity to human cells, and the potential to exacerbate autoimmune diseases.

Mechanism of Action

Its main mechanism is binding to negatively charged microbial membranes, creating transmembrane pores that cause lysis.



Primary Potential Benefits

- **Broad-Spectrum Antimicrobial and Antibiofilm Action:**
- LL-37 kills Gram-positive and Gram-negative bacteria, fungi, and viruses, often bypassing traditional antibiotic resistance mechanisms.
- **Immunomodulation:** It modulates immune responses by recruiting neutrophils, differentiating monocytes, and inducing dendritic cell maturation, which aids in clearing infections.
- **Wound Healing and Regeneration:** It plays a role in angiogenesis (new blood vessel formation) and cell migration, supporting tissue regeneration and healing.
- **Neutralization of Toxins:** LL-37 binds to and neutralizes bacterial endotoxins (such as LPS and LTA), reducing severe inflammatory responses in conditions like sepsis.
- **Antiviral Properties:** LL-37 disrupts viral entry and replication for various viruses, including RSV, influenza, and has potential protective roles against COVID-19.

Key Considerations and Risks

- **Potential for Autoimmunity:** As a pro-inflammatory agent in certain contexts, it can bind to self-DNA and trigger autoimmune reactions (e.g., in psoriasis).
- **Cytotoxicity & Stability:** High concentrations of LL-37 can be toxic to human cells. The peptide has low stability and is susceptible to proteolytic degradation in the body, limiting its efficacy.
- **Complex Role in Cancer:** While it can kill cancer cells in some contexts, it also has the potential to promote tumor growth in others.
- **High Cost and Delivery Hurdles:** High production costs and the need for specialized delivery systems (like liposomes) make it challenging to transition to clinical use.



Order LL-37 [Here](#)

SPECIALIZED & NICHE

ARA-290

Overview

ARA-290 (also known as Cibinetide) is an investigational 11-amino acid peptide derived from erythropoietin (EPO), engineered to activate the innate repair receptor (IRR). It is specifically designed to promote tissue protection, repair, and reduce inflammation, while separating these benefits from the red-blood-cell-stimulating (hematopoietic) effects of EPO. Clinical trials have shown particular promise in treating painful neuropathies.

Mechanism of Action

Its primary mechanism of action is the selective binding and activation of the Innate Repair Receptor (IRR). By bypassing the classical EPO receptors, it promotes tissue repair and reduces inflammation without increasing red blood cell production.



Primary Potential Benefits

- **Neuropathic Pain Relief:** ARA-290 significantly reduces chronic neuropathic pain (e.g., burning, allodynia, thermal pain) in patients with small fiber neuropathy (SFN) associated with sarcoidosis or type 2 diabetes.
- **Small Fiber Regeneration:** Unlike traditional pain management that only masks symptoms, ARA-290 has been shown to encourage the regrowth of damaged nerve fibers, particularly in the cornea.
- **Anti-Inflammatory Action:** It targets the innate repair receptor, reducing pro-inflammatory cytokines (such as TNF- α , IL-1 β , IL-6) and calming microglia activation without systemic immunosuppression.
- **Improved Microcirculation:** It supports endothelial function and microvascular repair, enhancing nutrient and oxygen delivery to compromised tissues, which may help with wound healing.
- **No Erythropoietic Effects:** Because it is designed to lack the hematologic effects of EPO, it carries a lower risk of increasing hematocrit (blood thickness) or causing vascular thrombosis.

Key Considerations and Risks

- **Investigational Status:** ARA-290 is currently not FDA-approved for general medical use and is considered an investigational agent. Larger Phase III trials are necessary to fully confirm long-term safety and efficacy.
- **Short Half-life:** The peptide has a very short half-life, which necessitates daily, long-term subcutaneous administration (often 4-8 weeks) to see sustained results.
- **Limited Data on Long-Term Use:** The majority of human clinical trials have focused on short-term treatments (28 days), and the long-term impacts of continuous or intermittent use are not fully established.



Order ARA-290 [Here](#)

SS-31

Overview

SS-31 (also known as elamipretide, Bendavia, or MTP-131) is a mitochondria-targeting peptide that binds to cardiolipin in the inner mitochondrial membrane, stabilizing it and restoring its ability to produce energy (ATP) while reducing the production of damaging reactive oxygen species (ROS). It has shown significant potential in treating diseases linked to mitochondrial dysfunction and aging-related cellular decline.

Mechanism of Action

Its primary mechanism of action is selectively binding to cardiolipin, a key phospholipid in the inner mitochondrial membrane, to restore mitochondrial cristae structure, optimize the electron transport chain, boost ATP production, and limit harmful oxidative stress.



Primary Potential Benefits

- **Enhanced Energy Production (ATP):** By stabilizing cardiolipin and improving the electron transport chain, SS-31 increases ATP production, particularly in tissues under metabolic stress or in aging, leading to improved physical and mental energy.
- **Improved Exercise Tolerance and Muscle Function:** Studies in aged mice have shown that 8 weeks of SS-31 treatment reverses age-related declines in mitochondria, restoring redox homeostasis and significantly increasing exercise tolerance and endurance.
- **Renal Protection and Repair:** SS-31 has demonstrated significant potential in mitigating chronic kidney disease (CKD), acute kidney injury (AKI), and diabetic nephropathy by preventing cardiolipin peroxidation, reducing renal inflammation, and inhibiting fibrosis.
- **Neuroprotection and Cognitive Health:** In animal models, SS-31 has "rescued" cognitive deficits following anesthesia, reduced Alzheimer's-like amyloid beta levels, and improved outcomes in stroke and traumatic brain injury models.

Key Considerations and Risks

- **FDA Status:** Elamipretide is FDA-approved in the U.S. as FORZINITY for Barth syndrome in patients weighing at least 30 kg under accelerated approval; other research uses remain investigational.
- **Injection Site Reactions:** The most common side effects reported in clinical trials are mild to moderate injection site reactions, including pain, pruritus (itching), erythema (redness), and irritation.
- **Limited Long-Term Human Data:** While short-term safety is well-documented, studies regarding long-term daily use (e.g., beyond 4-24 weeks) in humans are still accumulating.
- **Contraindications & Quality Source:** It is generally contraindicated for use in women who are pregnant or breastfeeding,



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