

BEGINNER'S RESOURCE

Peptides 101

A plain-language introduction to what peptides are, how they work, and what you need to know before diving deeper.

5 min

READ TIME

Research

USE ONLY

No Hype

JUST THE BASICS

Important: Read This First

This guide is intended solely for educational and research purposes. Nothing on this page constitutes medical advice, diagnosis, or a treatment recommendation. The information provided here reflects publicly available research literature only.

Peptides are research chemicals sold strictly for **laboratory and in-vitro research use**. They are **not for human consumption**. Many are not approved by the FDA for human use, and their long-term safety and efficacy have not been established through broad clinical trials.

This content exists to help people understand what peptides *are* from a scientific standpoint. **You are responsible for understanding the laws and regulations in your jurisdiction.**

Affiliate Disclosure: Some links on this page are affiliate links — meaning I may earn a small commission if you make a purchase through them, at no extra cost to you. I only recommend vendors and products I have personally vetted and used in my own research. My recommendations are my honest opinion, full stop.

THE BASICS

So... What Actually Is a Peptide?

If you've been seeing peptides everywhere lately — in wellness spaces, bodybuilding communities, anti-aging content — and you have no idea what they actually are, you're in the right place. Let's start from scratch.

A peptide is a short chain of amino acids — the same building blocks that make up proteins. Think of amino acids like individual LEGO bricks. A peptide is a small, specific arrangement of those bricks. A full protein is a much larger, more complex structure made from many more.

Your body naturally produces hundreds of peptides. Hormones like insulin are peptides. Neurotransmitter-adjacent molecules are peptides. Many of your body's own signaling systems run on peptide chemistry.

In the research world, synthetic peptides are designed to mimic, amplify, or modulate these natural signals — targeting everything from growth hormone release, to tissue repair, to cognitive function, to skin collagen, to metabolic signaling.

THE SCIENCE (SIMPLY PUT)

How Do Peptides Work?

Most peptides work by binding to specific receptors on cells — like a key fitting into a lock. When they bind, they trigger a cellular response. That response depends entirely on what receptor is involved and where in the body those receptors are located.

Receptor Binding

Peptides bind to specific receptors on cell surfaces, triggering targeted downstream effects based on that receptor's function.

Signaling

Many peptides act as signaling molecules — telling the body to do something: release a hormone, repair tissue, reduce inflammation.

Short Half-Life

Most peptides break down relatively quickly in the body, which is part of why delivery method and timing matter in research contexts.

Specificity

Unlike broad pharmaceuticals, many peptides are designed with high specificity — targeting particular pathways with less systemic impact.

CATEGORIES

Common Research Categories

Peptides studied in research contexts tend to cluster around a few broad categories. This is a simplified overview — each compound has its own unique mechanism and research profile.

GROWTH / RECOVERY

Growth Hormone Secretagogues (GHS)

Compounds researched for their ability to stimulate or amplify the body's natural growth hormone release. Examples include CJC-1295, Ipamorelin, GHRP-2, and Sermorelin. Often explored in the context of muscle, recovery, and metabolic signaling.

REPAIR / HEALING

Body Protective Compounds

BPC-157 is among the most widely discussed peptides in this category. Research has explored its role in tissue repair, gut lining support, tendon healing, and inflammatory modulation. Derived from a protein found in gastric juice.

COGNITIVE / NEURO

Nootropic & Anxiolytic Peptides

Selank and Semax are two Russian-developed peptides with a history of research around anxiety, mood, focus, and neuroprotection. They act on neurotransmitter systems and have a different profile from traditional pharmaceuticals.

METABOLIC

GLP-1 & Metabolic Peptides

GLP-1 receptor agonists like semaglutide and tirzepatide — and research analogs like retatrutide — have become some of the most widely discussed peptides for metabolic health, appetite regulation, and body composition research.

SKIN / COLLAGEN

Cosmetic & Regenerative

Copper peptides (GHK-Cu), Snap-8, and Matrixyl are studied in skin research contexts for collagen stimulation, wound healing, and anti-aging applications. Found both in topical cosmetics and research-grade injectables.

RESEARCH CONTEXT REMINDER

The categories above reflect areas of **ongoing scientific research** — not proven, approved treatments. Many compounds listed have not completed human clinical trials. "Studied for" does not mean "proven to" or "approved for." **These are research chemicals. Not for human consumption.**

QUICK REFERENCE

Glossary of Beginner Terms

You'll run into a lot of terminology in peptide research communities. Here's a plain-language breakdown of the most common terms.

Kit In group buy context, a "kit" = 10 vials of the same peptide ordered together. The standard unit for group buy pricing and testing thresholds.	Reconstitution The process of mixing lyophilized (freeze-dried) peptide powder with bacteriostatic water to create a solution.
Lyophilized Freeze-dried. Most research peptides are shipped in this form for stability and shelf life.	Bacteriostatic Water (BW) Sterile water with 0.9% benzyl alcohol — the standard diluent for reconstituting peptide vials. Inhibits bacterial growth.
Subcutaneous (SubQ) An injection method into the fatty tissue just beneath the skin. Common delivery method in research contexts.	Intramuscular (IM) Injection directly into muscle tissue. Less common for peptides but used for some compounds.
Half-Life The time it takes for a compound's concentration to reduce by half. Influences how often a compound needs to be administered.	Peptide Stack Using two or more peptides together because their mechanisms complement each other (e.g., a GHRH + GHRP combo for GH release).
Saturation Dose The concept that receptors can become temporarily saturated — more compound doesn't always equal more effect.	Research Chemical A compound sold legally for laboratory research purposes, not for human consumption. Most peptides sold gray-market exist in this category.
CoA (Certificate of Analysis) Documentation from a third-party lab verifying the purity and composition of a peptide vial. A key quality indicator.	Bioavailability The proportion of a compound that reaches systemic circulation and has an active effect. Varies significantly by delivery method.
Peptide Bond The chemical bond linking amino acids together in a chain. What makes a peptide a peptide.	Protocol Your full research plan — which compounds, what doses, what timing, what cycle length.

BEFORE YOU GO FURTHER

What Responsible Research Looks Like

GOOD PRACTICES ✓ Read primary research when possible, not just community summaries ✓ Verify any vendor with independent CoA testing and community reputation ✓ Start conservatively and track observations carefully in research logs ✓ Understand that anecdote ≠ evidence ✓ Know that "natural" doesn't mean safe	COMMON MISTAKES ✗ Trusting vendor claims without third-party verification ✗ Stacking multiple new compounds at once ✗ Ignoring potential contraindications with medications ✗ Treating forum posts as clinical evidence ✗ Assuming what works for one person will work for you
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How to Reconstitute a Peptide Vial

Most research peptides arrive as a white lyophilized (freeze-dried) powder in a sealed vial. Before use in a research context, the powder needs to be mixed with bacteriostatic water (BW) to create a liquid solution — this is called **reconstitution**.

The math is simple once you understand it: you're figuring out how much liquid to add so that a given volume of solution contains a known amount of peptide.

The Core Formula

How many mcg are in each unit (tick) on your insulin syringe?

$$\begin{array}{|c|} \hline \text{VIAL SIZE} \\ \hline \text{e.g. 5mg} \\ \hline \end{array} \div \begin{array}{|c|} \hline \text{BW ADDED} \\ \hline \text{e.g. 2mL} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{CONCENTRATION} \\ \hline \text{2500 mcg/mL} \\ \hline \end{array}$$

WORKED EXAMPLE — 5MG VIAL, 2ML BW, 250MCG DOSE

Step 1: Convert vial size → 5mg = 5,000 mcg

Step 2: Concentration = 5,000 mcg ÷ 2mL = 2,500 mcg per mL

Step 3: A standard U-100 insulin syringe has 100 units per mL → each unit = 25 mcg

Step 4: For a 250 mcg dose → 250 ÷ 25 = **10 units on your syringe**

Inject bacteriostatic water slowly down the side of the vial — never directly onto the powder. Swirl gently, don't shake. Store reconstituted vials refrigerated and away from light. Most are stable for 4–6 weeks refrigerated.

[Use the Peptide Reconstitution Calculator ↗](#)

SOURCING GUIDE

Understanding Vendor Types

Not all peptide vendors are the same — and understanding the landscape before you source anything is one of the most important things a new researcher can do. There are four main categories, each with real tradeoffs on price, quality, testing, and risk.

US-BASED

US "Manufactured" Vendors

These vendors market themselves as US-manufactured, but in most cases they are purchasing raw peptide powder from China, reconstituting it into vials on US soil, and labeling it as domestic. The large markup you'll pay should come with something in return: **recent, independent, third-party testing**. Look for 7-panel testing from a recognized lab (Vanguard Scientific is the gold standard). Without that, the premium is hard to justify.

US WAREHOUSE

US Warehouse Vendors

These vendors purchase pre-filled vials from Chinese manufacturers and store them in a US warehouse for domestic distribution. Fast shipping and no customs exposure — but large markups still apply. Most accept credit cards. If you're paying US warehouse prices, **recent third-party testing should be non-negotiable**. One key thing to watch: you often don't know how frequently they test versus how often they're bringing in new product — ask before you buy.

PROS

- ✓ Fast domestic shipping
- ✓ No customs risk
- ✓ Most accept credit cards

CONS

- ✗ Significant markup over direct sourcing
- ✗ No way to know how often they test vs. how often they restock
- ✗ Product still originates from China

DARK GREY

Direct China / "Dark Grey" Contacts

Dark grey sourcing means reaching out to a contact in China via WhatsApp or Telegram, receiving a price list through private messages, and sending crypto with no formal invoice. You may receive manufacturer CoAs for purity, but there's no independent verification. If your shipment is seized at customs, your options for recourse are extremely limited. Not recommended for new researchers.

POTENTIAL UPSIDE

- ✓ Lowest possible pricing
- ✓ Access to compounds not carried by US vendors

REAL RISKS

- ✗ Crypto-only, no buyer protection
- ✗ Customs seizure with no recourse
- ✗ Manufacturer CoAs only — no independent testing
- ✗ Not recommended for beginners

GROUP BUY

Informal Group Buys (Discord / Telegram)

Informal group buys happen in private Discord servers, Telegram groups, or WhatsApp chats. One person coordinates everyone's orders, receives the shipment, and redistributes. You have no direct relationship with the source, testing is rare, payment options are limited and may not include card or Afterpay, and you have no guarantee of receiving your product if something goes wrong. Not recommended — especially for beginners.

POTENTIAL UPSIDE

- ✓ Reduced shipping costs
- ✓ Access to bulk pricing

REAL RISKS

- ✗ No direct relationship with the source
- ✗ Testing rarely done
- ✗ Limited payment options — often no card or Afterpay
- ✗ No guarantee of receiving your product
- ✗ Not recommended

GROUPBUYKITS

RECOMMENDED

GroupBuyKits — Legitimate Group Buy Platform

GroupBuyKits is in a category of its own. A real website with nearly **16,000 members**, coordinating with three vetted vendors. You never deal with customs or international shipping headaches — and they **guarantee you receive your product or you get a credit**. There are three ways to order:

Group Buy (Kits): A "kit" is 10 vials of the same peptide. Shipping is \$25 for 10 kits, plus \$5 for each additional 5 kits. Standard group buys ship in 4–6 weeks — the best per-unit pricing available anywhere.

US Group Buy: A newer option that gets you kits within approximately 2 weeks at a slight price increase over standard group buy pricing.

Shop Orders (Individual Vials): Individual vials available in US stock — ship same day, arrive in 2–3 days at a slight markup over kit pricing.

The standout feature: **9-panel testing through Vanguard Scientific on 7 vials out of every 100 kits ordered** — the most thorough testing in the space. Card, Afterpay, Klarna, and more accepted. Free for 14 days with the link below.

WHY IT WORKS

- ✓ Nearly 16,000 member community
- ✓ 9-panel Vanguard testing (7 vials per 100 kits)
- ✓ Product guarantee — receive it or get a credit
- ✓ No customs hassle — handled for you
- ✓ 3 ordering options for every timeline
- ✓ Card, Afterpay, Klarna accepted
- ✓ Free 14-day trial with referral link

TRADE-OFFS

- ✗ Standard kits take 4–6 weeks (worth it for the price)
- ✗ US group buy and shop vials carry a slight markup over standard kit pricing

Join GroupBuyKits — Free for 14 Days ↗

Bottom line on testing: *Whatever vendor you use, always ask for the CoA. Anything over 6 months old should raise questions. A 9-panel test from Vanguard Scientific is the benchmark to look for.*

RESEARCH TOOLS

Using AI to Accelerate Your Research

AI tools like ChatGPT and Claude have become genuinely useful for peptide research — not as a replacement for primary literature, but as a way to synthesize it, ask questions in plain language, and understand complex mechanisms without a biochemistry degree. The trick is knowing how to prompt well. Here are some you can use directly:

MECHANISM OF ACTION

"Explain the mechanism of action of BPC-157 in plain language. How does it promote tissue repair at a cellular level? What receptors or pathways are involved? Summarize what the current research says and note where evidence is limited."

STACKING / SYNERGY

"I'm researching CJC-1295 and Ipamorelin as a stack. Explain how these two peptides work together, why they're commonly combined, and what the current research says about their combined effect on growth hormone release. What does the saturation dose concept mean in this context?"

LITERATURE SUMMARY

"Summarize the current state of published research on Selank. What has been studied, what were the findings, what are the limitations of the existing literature, and what remains unknown? Cite specific studies if possible."

RECONSTITUTION MATH

"Help me with reconstitution math. I have a 5mg vial of [peptide name]. I want to add 2mL of bacteriostatic water. Walk me through the concentration calculation and tell me how many units on a U-100 insulin syringe I'd draw for a [X] mcg dose."

HALF-LIFE & TIMING

"What is the half-life of [peptide name] and how does that affect research administration timing? Is there a meaningful difference between morning and evening administration? What does the literature say about frequency?"

COA INTERPRETATION

"I have a Certificate of Analysis for a peptide vial. Help me understand what each section means. What should I look for to assess quality? What are red flags? What's the difference between a manufacturer CoA and an independent third-party CoA?"

Pro tip: AI works best when you push back. If an answer feels surface-level, follow up with "go deeper on the mechanism" or "what does the research actually say vs. what's anecdotal?" Treat it like a research assistant, not a search engine.

GO DEEPER

Trusted Research Resources

These are the go-to references for digging deeper into peptide research — where serious beginners should spend their time.

COMMUNITY WIKI



WikiPep

A comprehensive community-maintained wiki covering peptide profiles, mechanisms, research literature, protocols, and vendor information.

COMPOUND REFERENCE



Pepdex — VialDex

A searchable index of peptide vials and compounds with structured data on what's been researched, sourced, and documented by the community.

PRIMARY LITERATURE



PubMed

The gold standard for peer-reviewed biomedical research. Search any peptide name to find actual studies, trials, and review papers.

RECOMMENDED



GroupBuyKits

The most trusted group buy platform in the space — 16,000 members, 9-panel testing, product guarantee, and free for 14 days.

EXTERNAL LINKS DISCLAIMER

Links to external resources are provided for informational purposes only. External sites have their own terms of use and disclaimers — read them.

For Research Purposes Only. Not for Human Consumption. Nothing on this page constitutes medical advice, diagnosis, or treatment. This content is for educational and informational use only.

All peptides referenced are sold strictly for laboratory and in-vitro research use. Understanding the regulatory and legal landscape in your jurisdiction is your responsibility.

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