🧬 What Is Retatrutide?

A Scientific Guide to Retatrutide, Triple-Receptor Agonism & Current Research

🏴 **Caledonia Peptides | Scotland, UK**
🔬 **Premium Research Compounds**
🧪 **Purity • Transparency • Safety**

Few investigational compounds have attracted as much scientific attention in recent years as **retatrutide**.

Also known during development as **LY3437943**, retatrutide is an investigational peptide-based molecule developed by Eli Lilly and designed to activate three different hormone receptors:

🧬 **GIP receptor**
🧬 **GLP-1 receptor**
🧬 **Glucagon receptor**

This triple-receptor mechanism makes retatrutide scientifically distinct from medicines and investigational compounds that target only one or two of these pathways.

But what exactly is retatrutide? How does triple-receptor agonism work? What has research discovered so far? And what is the compound's regulatory position in the UK?

Let's look at the science.

> 🔬 **Important Research Notice:** Retatrutide remains an investigational compound. It is not currently an approved medicine. This article is provided for scientific and educational purposes and does not provide medical advice or instructions for personal use.

🔬 What Exactly Is Retatrutide?

Retatrutide is a **single peptide-based triple-hormone-receptor agonist**.

In scientific literature it is described as an agonist of:

1️⃣ GIP

Glucose-dependent insulinotropic polypeptide

2️⃣ GLP-1

Glucagon-like peptide-1

3️⃣ Glucagon

GCG

An agonist is a molecule capable of binding to and activating a receptor.

A simplified representation is:

RETATRUTIDE

↙️ ↓ ↘️

🧬 **GIP** 🧬 **GLP-1** 🧬 **Glucagon**

↓

⚙️ **Multiple interconnected metabolic signalling pathways**

This three-target mechanism is the main reason retatrutide has generated so much research interest.

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🧠 **Is Retatrutide a "GLP-3"?**

You may have seen retatrutide described online as **"GLP-3."**

Scientifically, this is inaccurate.

There isn't a newly discovered hormone called GLP-3 involved here.

The nickname appears to have developed because retatrutide acts at **three receptors**.

The correct scientific description is:

🧬 **GIP / GLP-1 / glucagon receptor triple agonist**

Using accurate terminology matters, particularly when discussing an investigational compound.

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🧬 **Understanding the Three Receptors**

To understand why scientists are interested in retatrutide, it helps to examine each component separately.

1️⃣ **GLP-1 Receptor**

GLP-1 is an endogenous peptide hormone involved in metabolic signalling.

The GLP-1 receptor has consequently become an extremely important research and pharmaceutical target.

Activation of this pathway has been studied extensively in relation to:

🧠 appetite and satiety signalling
🩸 glucose-dependent insulin secretion
⚙️ metabolic regulation
🍽️ gastric emptying
🧬 energy homeostasis

GLP-1 receptor biology already forms the basis of several established pharmaceutical treatments.

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2️⃣ GIP Receptor

GIP is another naturally occurring incretin hormone.

Its receptor is involved in nutrient-responsive metabolic signalling and insulin secretion.

Scientists have become increasingly interested in what happens when **GIP and GLP-1 pathways are activated together**.

This concept is particularly important because another molecule, tirzepatide, targets both GIP and GLP-1 receptors.

Retatrutide goes one step further.

It adds a third target.

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3️⃣ Glucagon Receptor

Glucagon is traditionally associated with glucose regulation, particularly its role in maintaining blood glucose.

However, glucagon biology is considerably more complex.

Research has investigated glucagon-receptor signalling in relation to:

⚙️ energy metabolism
🔥 energy expenditure
🧬 substrate utilisation
🩸 glucose regulation
🔬 metabolic signalling

The scientific hypothesis behind triple agonism is therefore particularly interesting.

Instead of concentrating on a single pathway, researchers can investigate what happens when **three related metabolic pathways are influenced by one molecule.**

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⚙️ Single vs Dual vs Triple Agonism

This is one of the easiest ways to understand why retatrutide has attracted attention.

🔷 Single-receptor approach

GLP-1

⬇️

One principal receptor target.

🔷 **Dual-receptor approach**

GIP + GLP-1

⬇️

Two receptor targets.

🔷 **Triple-receptor approach**

GIP + GLP-1 + Glucagon

⬇️

Three receptor targets.

Retatrutide therefore provides researchers with an opportunity to investigate the effects of simultaneous activation across all three receptor systems.

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🧪 What Has Scientific Research Found?

Retatrutide has progressed through a substantial clinical-development programme.

An important Phase 2 randomised controlled trial was published in the **New England Journal of Medicine in 2023**.

Researchers studied adults with obesity or overweight with a weight-related condition.

At the highest studied dose, mean body-weight reduction reached approximately **24% after 48 weeks**.

Importantly, this was a controlled clinical trial — not anecdotal evidence or a social-media claim.

The results generated considerable scientific interest and helped lead to a much larger Phase 3 research programme.

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📊 What Happened in Phase 3?

By 2026, retatrutide research had advanced considerably.

The Phase 3 programme known as **TRIUMPH** has investigated the compound across different populations and conditions.

These include research involving:

🔬 obesity and overweight
🩸 type 2 diabetes
❤️ established cardiovascular disease

😴 obstructive sleep apnoea

🦵 obesity-associated knee osteoarthritis

Phase 3 studies involve substantially larger populations than early-stage experiments and are designed to provide more robust evidence about efficacy and safety.

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📈 TRIUMPH-1

In May 2026, Eli Lilly announced Phase 3 results from **TRIUMPH-1**.

The study investigated adults with obesity or overweight and at least one weight-related comorbidity who did not have diabetes.

The reported results attracted significant attention because substantial average reductions in body weight were observed across the investigated doses.

At 80 weeks, Lilly reported mean body-weight changes of approximately:

📊 **4 mg → –19.0%**

📊 **9 mg → –25.9%**

📊 **12 mg → –28.3%**

A predefined extension involving some participants with higher starting BMI continued to 104 weeks, where further reductions were reported.

These findings represent clinical-trial observations under controlled research conditions. They should not be interpreted as predictions about what would happen to any particular individual.

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🩸 TRIUMPH-2

Another Phase 3 trial, **TRIUMPH-2**, investigated adults with obesity or overweight alongside **type 2 diabetes**.

The trial enrolled more than 1,000 participants.

Lilly reported in July 2026 that at 80 weeks the highest investigated dose produced an average body-weight reduction of approximately **20.8%**, alongside changes in glycaemic measures.

This is scientifically important because metabolic responses can differ considerably between populations with and without type 2 diabetes.

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❤️ TRIUMPH-3

TRIUMPH-3 investigated retatrutide in adults with severe obesity and established cardiovascular disease, with or without type 2 diabetes.

The study enrolled approximately 1,946 participants.

Lilly reported an average body-weight reduction of approximately **22.6% at 80 weeks** at the highest studied dose.

Research in populations with established cardiovascular disease is particularly significant because scientists need to understand far more than changes in body weight alone.

Safety and broader cardiometabolic outcomes matter enormously.

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⚠️ What About Safety?

This is an essential part of the discussion.

Scientific research is not simply about asking:

“Does a compound produce an effect?”

Researchers must also ask:

“What are the risks, adverse effects and limitations?”

In the Phase 2 research, gastrointestinal adverse events were among those commonly reported, particularly during dose escalation.

Phase 3 investigations continue to provide much larger datasets for understanding the compound.

Long-term safety is one of the reasons large controlled clinical-development programmes are necessary before regulators decide whether a medicine should be approved.

Promising efficacy results do **not** remove the need for rigorous safety evaluation.

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🔬 Why Phase 3 Research Matters

Drug development progresses through several stages.

A simplified pathway looks like this:

🧪 Preclinical Research

⬇️

🔬 Phase 1 — Initial human safety/pharmacology

⬇️

📊 Phase 2 — Dose, efficacy and safety investigation

⬇️

🧬 **Phase 3 — Large confirmatory clinical trials**

⬇️

🏛️ **Regulatory Review**

⬇️

💊 **Possible Marketing Authorisation**

Retatrutide has reached the later stages of this pathway.

But reaching Phase 3 does **not** mean a medicine has automatically been approved.

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🇬🇧 **Is Retatrutide Approved in the UK?**

❌ **No.**

This distinction is extremely important.

As of September 2026, retatrutide remains an **investigational compound** and is not an approved medicine.

The UK's **Medicines and Healthcare products Regulatory Agency (MHRA)** has published information concerning a paediatric investigation plan associated with retatrutide and obesity research.

That demonstrates ongoing regulatory-development activity.

It does **not** constitute UK marketing authorisation.

Eli Lilly itself currently states that retatrutide has **not been approved by any regulatory agency**.

The company has indicated that regulatory submissions are planned following completion of its clinical-development package.

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🧬 **Why Is Retatrutide So Interesting Scientifically?**

Retatrutide represents something larger than one investigational compound.

It demonstrates an important direction in modern peptide and metabolic research:

Multi-receptor pharmacology.

Scientists are increasingly investigating whether carefully designed molecules can interact with several complementary biological pathways simultaneously.

This raises fascinating research questions.

🔬 Can multiple pathways produce complementary effects?

🧬 How does receptor balance influence biological activity?

⚙️ What role does glucagon-receptor activation contribute?

📊 How do responses vary between different populations?

🧠 How do these pathways interact with appetite and energy regulation?

❤️ What are the longer-term cardiometabolic effects?

🧪 How does molecular design influence receptor selectivity and potency?

These questions extend well beyond retatrutide itself.

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🧪 Research Quality Matters

The extraordinary public attention surrounding retatrutide also demonstrates why scientific evidence needs to be separated from internet hype.

There is an enormous difference between:

❌ social-media anecdotes

❌ unverified claims

❌ marketing language

and:

✅ randomised controlled trials

✅ peer-reviewed research

✅ defined experimental endpoints

✅ documented analytical methods

✅ large Phase 3 datasets

Scientific claims should be proportional to the quality of the evidence supporting them.

At Caledonia, we believe that principle should apply equally to **research compounds and the information surrounding them**.

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📄 COAs, HPLC & Research Material Verification

When compounds are supplied for legitimate laboratory research, documentation and traceability become important.

Researchers may encounter:

📄 **Certificates of Analysis (COAs)**

📈 **HPLC analysis**

⚛️ **Mass spectrometry**

🔢 **Batch identification**

🧪 **Purity information**

These different pieces of information answer different analytical questions.

For example, chromatographic purity does not automatically establish every aspect of molecular identity.

This is why Caledonia believes researchers should be able to look beyond a headline purity percentage and examine the documentation associated with a research material.

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🔢 **Traceability Matters**

A strong research-material chain should look something like:

🧬 **Compound**

⬇️

🔢 **Specific Batch**

⬇️

🧪 **Analytical Testing**

⬇️

📄 **Corresponding Documentation**

⬇️

🔍 **Researcher Verification**

The number printed on a vial should mean something.

That philosophy sits at the centre of our approach to **Purity · Transparency · Safety**.

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🏴 **Retatrutide Research & Scotland**

Caledonia Peptides is proudly based in Scotland.

As interest in **peptide research in the UK** continues to expand, we believe Scottish research suppliers have an opportunity — and a responsibility — to emphasise scientific accuracy rather than hype.

For Caledonia, Scottish identity means more than branding.

It means trying to reflect the country's long tradition of:

🔬 scientific enquiry
🧪 chemistry
🧬 biomedical research
🎓 academic excellence
📊 evidence-based investigation

Our aim is to contribute to that culture through responsible research information, analytical transparency and clear research-only positioning.

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🇬🇧 **Understanding "Retatrutide UK" Searches**

Online searches for terms such as:

🔎 **What is Retatrutide?**

🔎 **Retatrutide research UK**

🔎 **Retatrutide peptide research**

🔎 **Retatrutide UK research**

🔎 **research peptides UK**

🔎 **peptide research Scotland**

🔎 **research peptides Scotland**

have increased alongside scientific and public interest in the compound.

But search popularity should never be confused with regulatory status.

Retatrutide remains investigational.

Anyone researching the subject should distinguish carefully between:

🧪 laboratory research materials

🔬 controlled clinical trials

and

💊 approved medicines.

They are not interchangeable categories.

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🧠 **Five Things to Remember About Retatrutide**

1️⃣ **It is a triple-receptor agonist.**

Retatrutide targets **GIP, GLP-1 and glucagon receptors**.

2️⃣ **“GLP-3” isn’t the correct scientific name.**

The term is an informal internet/media nickname.

3️⃣ **It has reached Phase 3 clinical research.**

A substantial development programme has now produced results across several populations.

4️⃣ **The results are scientifically significant.**

Large reductions in mean body weight have been observed in controlled trials, alongside investigation of broader metabolic outcomes.

5️⃣ **It is still investigational.**

Retatrutide is not currently an approved medicine in the UK.

That final point is particularly important.

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🔬 **The Bigger Scientific Picture**

Retatrutide illustrates just how sophisticated modern peptide science has become.

The field has moved far beyond simply discovering naturally occurring signalling peptides.

Scientists can now investigate engineered molecules designed to interact with several biological targets simultaneously.

GIP

➕

GLP-1

➕

Glucagon

⬇️

🧬 Triple-Receptor Agonism

Understanding exactly how these signals interact — and determining their efficacy, safety and long-term implications — requires rigorous scientific investigation.

That is precisely what the continuing clinical-development programme is designed to establish.

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🏴 The Caledonia Standard

At **Caledonia Peptides**, our approach remains centred around three principles:

🧪 PURITY

Research materials supported by appropriate analytical information.

🔍 TRANSPARENCY

Clear documentation, batch information and honest scientific communication.

🛡️ SAFETY

Responsible research-only positioning and clear boundaries between laboratory materials and approved medicines.

Purity · Transparency · Safety

Because the product may be in the vial —

but the value is everything behind it.

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📚 Scientific Sources & Further Reading

🔬 **Jastreboff AM et al.** *Triple–Hormone-Receptor Agonist Retatrutide for Obesity — A Phase 2 Trial.* New England Journal of Medicine, 2023.

🧬 **Eli Lilly and Company** — Retatrutide clinical-development programme and 2026 TRIUMPH Phase 3 results.

📊 **TRIUMPH-2** — Phase 3 investigation in adults with obesity/overweight and type 2 diabetes.

❤️ **TRIUMPH-3** — Phase 3 investigation in adults with obesity and established cardiovascular disease.

🇬🇧 **Medicines and Healthcare products Regulatory Agency (MHRA)** — Retatrutide regulatory-development information.

Readers should always consult the original scientific publications and regulatory sources when evaluating emerging research.

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⚠️ Research Use Notice

Caledonia Peptides supplies research compounds **strictly for laboratory and in-vitro research purposes**.

Not for human or veterinary use.

Retatrutide is an investigational compound and is not currently an approved medicine.

Nothing in this article constitutes medical advice, treatment guidance or a recommendation for personal use.

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🧬 Continue the Caledonia Peptide Science Series

Next Article — Blog #5:

Retatrutide Peptides: What You Need to Know

We'll take the science further by looking at molecular characteristics, analytical verification, research terminology, COAs and how to distinguish genuine scientific evidence from the extraordinary amount of online hype surrounding retatrutide.

Caledonia Peptides

🏴 **Scottish Research. Scientific Standards.**

🔬 **Research Today. Together Tomorrow.**