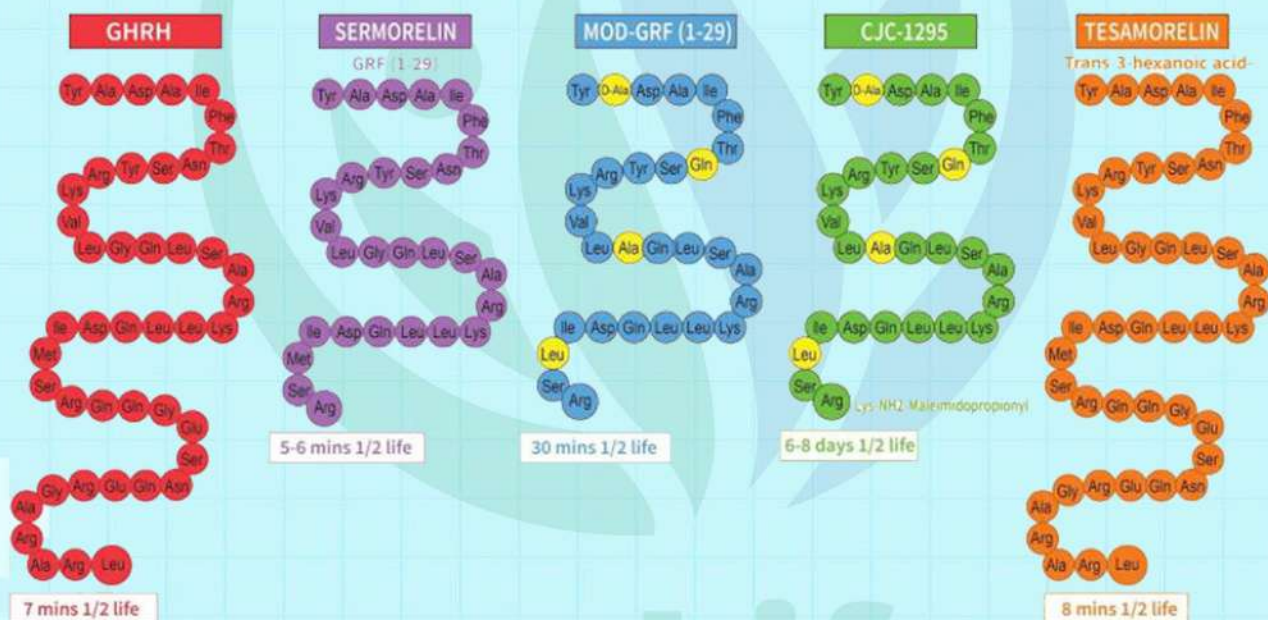


# Demystifying Growth Hormone-Releasing Peptides!



ReNEWLifeRX

\*\*\*The author is not a doctor and anything you read in this article is not to be taken, interpreted, or construed as medical advice.



# Growth Hormone-Releasing Peptides & Growth Hormone-Releasing Hormones

It's a well-known fact that a wide variety of our biological processes decline as we age. We can easily become insulin resistant, our testosterone levels begin to decline, and we gain unwanted weight easier.

***If you are like me, then you want to learn to live optimally, and this information explains how this applies to maintaining healthy growth hormone (GH) levels through the use of peptides.***

Growth hormone, as a medication, has been associated with Hollywood stars and the wealthy elite for decades. The FDA does not allow its use for anti-aging purposes, and even if you can find a doctor that will prescribe it, it's often far too expensive.

I want to shed some light on the often complex explanations of growth hormone-releasing hormone and peptides.

Let's take a deeper more advanced dive into growth hormone-releasing peptides (GHRP) and growth hormone-releasing hormones (GHRH).

These products are all prescription drugs that are taken via subcutaneous injection with an insulin syringe to the abdomen.

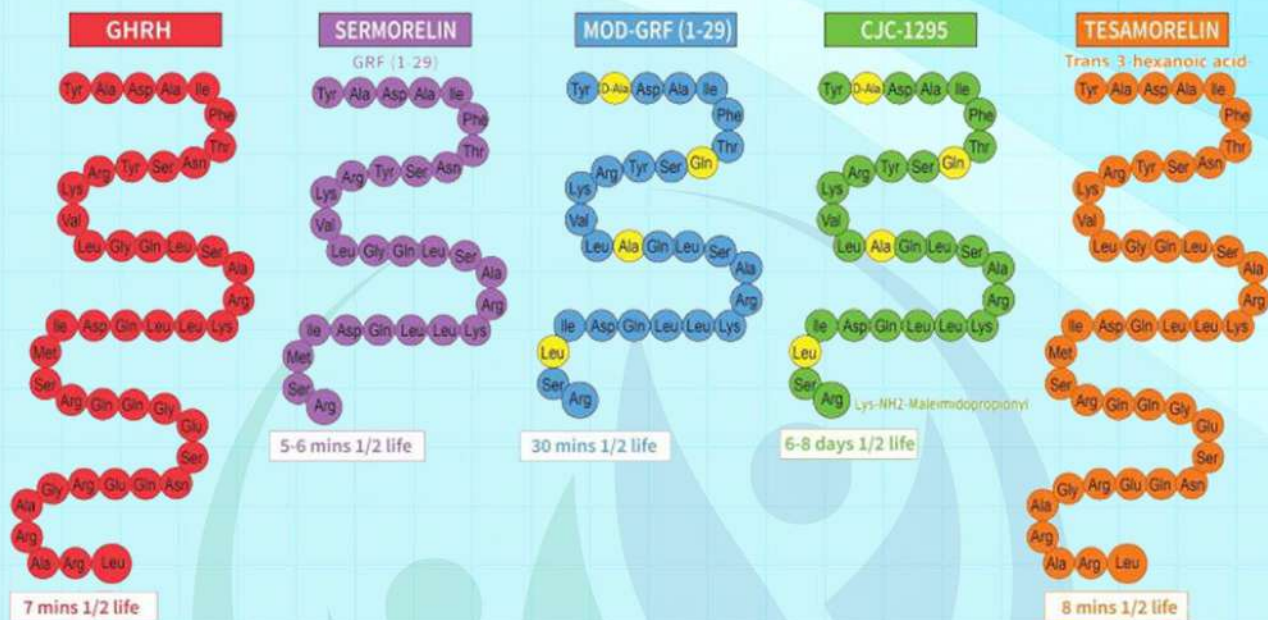
Why subcutaneous you ask? Peptidase enzymes will break down these peptides if taken orally resulting in limited to no peptide reaching the bloodstream.

These enzymes are found throughout the gastrointestinal tract starting with saliva in the mouth.

First, let's take a look at these peptides you've been hearing so much about and see what makes them different from each other.

On the next page is a diagram that shows some of the unique, but similar, differences in growth hormone-releasing peptides and growth hormone-releasing hormones.





The image above shows strings of beads, each bead being the individual amino acid that makes up the peptide.

I chose to use the 3 letter code to label each amino acid in the peptide sequence. Therapeutically, these peptides are available as the acetate salts and typically synthetically manufactured in a laboratory using solid-phase synthesis.

When the peptide is finished being produced, it is often cleaved off of the solid resin as the trifluoroacetate salt (TFA).

A salt exchange from the TFA salt to the Acetate salt needs to occur before the drug is acceptable for human use.



## Growth Hormone-Releasing Hormone

All of the above peptides are based on this naturally occurring peptide which can be found in your brain.

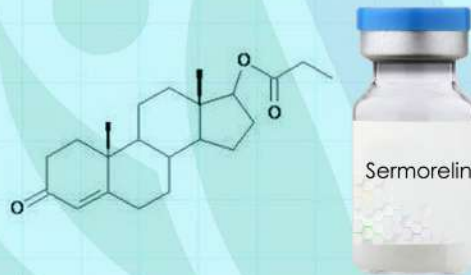
The first peptide on the left, shown in red in the above image is the endogenous (self-made) peptide, GHRH that is released in your brain, specifically from the hypothalamus.

It signals the pituitary gland to release growth hormone (GH), also known as somatotropin, in a pulsatile fashion. It is a 44 amino acid peptide (more on that later).

The pituitary maintains its ability to produce growth hormone as we age, it is simply inhibited by another peptide called somatostatin, also known as growth hormone inhibiting hormone (GHIH).

It turns out we keep producing growth hormone as we get older, it's this inhibition by somatostatin that brings on the overall decline, by not allowing it to be released.

GHRH is available as a drug under the name somatorelin. It is used as a diagnostic agent to test for pituitary gland functionality and I have never seen it prescribed.



## Sermorelin

The second peptide, shown in purple, is sermorelin, also known as growth releasing factor (1-29). It is a growth hormone secretagogue.

Sermorelin was approved by the Food and Drug Administration (FDA) in 1991. It turns out that scientists were able to determine that it's possible to stimulate the pituitary to release GH by using only the first 29 amino acids of GHRH, hence the (1-29) designation in its name.

It is believed that these first 29 amino acids are the fragment of GHRH that actively signals the pituitary to catalyze the release of growth hormone.

One downside of this peptide is that it has a short half-life, meaning that it doesn't hang around for long in your bloodstream.



## CJC-1295

The green peptide was invented by a pharmaceutical company called ConjuChem Biotechnologies, hence the CJC code number.

It is actually the now modified sermorelin aka, Mod-GRF (1-29 with an attached "tail" coined Drug Affinity Complex (DAC).) DAC is written in the above diagram as maleimidopropionic acid with a lysine linker at the bottom end of the peptide. ConjuChem has even added DAC to Insulin.

It turns out that this modification increases the duration of the drug to about a week! It showed a clinically significant increase in IGF-1 and GH, but clinical studies were halted for other reasons.

It has been suggested that this extended half-life may not provide the optimal pulses of GH by the pituitary that we see as pulsatile when naturally occurring.

## Tesamorelin

Tesamorelin, all the way to the right, in orange, is an FDA-approved drug under the trade name Egriftra and was developed by a Canadian pharmaceutical company named Theratechnologies.

It is a direct derivative of GHRH. This peptide is approved for HIV patients that use a cocktail of antiretroviral drugs that often includes the side effect of "lipodystrophy," which in this case is the accumulation of fat around the abdomen.

As you can see, it's the same sequence as our own GHRH (in red all the way to the left), but with a leading tail having an attached trans-3-hexanoic acid.

In other words, tesamorelin is the 44 amino acid peptide GHRH, but with a slight chemical modification added to the start of the peptide. Much like Mod-GRF (1-29), this modification was made to reduce the natural and rapid degradation of the peptides by enzymes in our bodies. It turns out that tesamorelin, while increasing GH, also selectively reduces visceral adipose tissue (VAT); aka the beer belly.

Tesamorelin- cont.

This peptide is the premium therapeutic choice on this list. Clinical studies on Tesamorelin have shown blood tests resulting in IGF-1 raised by 200 ug/L.



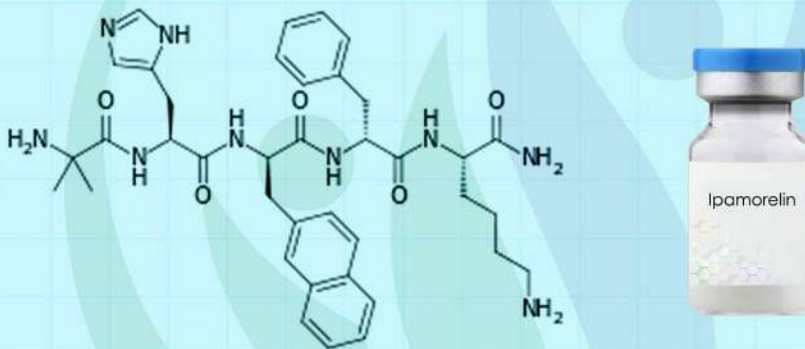


## Ipamorelin

In practice, we find that sermorelin, Mod-GRF (1-29), and tesamorelin all perform better with the addition of ipamorelin. Ipamorelin is a shorter peptide and not shown in the above image.

While the hypothalamus is releasing GHRH, it is also releasing somatostatin, which I mentioned earlier. Ipamorelin inhibits the process allowing the above peptides to get their GH releasing activity optimally performed.

For our patients, we find that the tesamorelin/ipamorelin combo is the fastest acting and they see the quickest obvious results. It is a little expensive, but does the job of Human Growth Hormone for 1/3 of the price.



## Patient Feedback

*We have seen the greatest patient satisfaction with Tesamorelin. Many patients reporting feeling great and strong, along with noticeable fat loss.*

*Follow up labs show increased and healthier IGF-1 levels, drops in some lipid scores, and no negative lab levels reported.*

The second favorite is the CJC-1295 and ipamorelin combination. Patients reported better sleep and overall recovery. Some patients reported fat loss

as well. Follow up labs show increased and healthier IGF-1 levels. No negative lab levels reported.

Most patients find improved sleep using the above peptides and for the uncommon group that experiences insomnia, we simply suggest to them that they change to AM injections as opposed to 30 minutes before bedtime.



## Where To Find Growth Hormone-Releasing Peptides

We always recommend patients get their peptide therapeutics through a legitimate health care provider, such as Renew Life RX's physicians,

These steps allow you to have the security of knowing your medication is coming from a high-quality FDA-approved compounding pharmacy here in the US.

If you are ordering drugs off of the internet, you are working outside of DSCA (FDA's Drug Supply Chain Act) and creating a buyer beware situation. Below you'll see some published studies that show the consumer is not always getting what they pay for when they purchase pharmaceuticals online.

In 2018, this NY Times article "At the Heart of a Vast Doping Network, an Alias," by Michael Powell found terrible peptide analytical results. To quote the article, "The head of Switzerland's anti-doping organization said that his agency's tests have shown that 80 percent of the peptides advertised on the web are adulterated or outright fakes." Powell's content is focused on the performance-enhancing use of these types of peptides.

Furthermore, there are professionals that test internet purchased peptides and publish their results. The paper "Characterization of Performance-Enhancing Peptides via Inlet Ionization on DART-TOF/MS" purchased peptides from various websites and states: "Analysis of 13 of these samples produced results that were consistent with the advertised product; in other words, the products appeared to be authentic. The remaining three peptides did not produce the expected result. One likely possibility for the discrepancies is that the vials did not contain the compound that was listed on the labeling. The mass obtained for CJC-1295 DAC was indicative of CJC-1295 without DAC, also known as Mod GRF (1-29). It is possible that the DAC group (Drug Affinity Complex) was cleaved from the main peptide structure during analysis; however, due to the soft ionization nature of this method, this is unlikely."

One of our biggest concerns is that during the peptide manufacturing process trifluoroacetic acid (TFA) is used to cleave the peptide from the resin.

Another step is then performed to convert it to the acetate salt. I have heard of an otherwise healthy friend show highly elevated liver values on his blood work and the only recent change was his use of a new peptide.

They submitted a sample that he had purchased over the internet to an analytical lab and sent it in for fluorine NMR and it lit up positive.

In other words, the HPLC showed a perfectly and accurately pure peptide but did not show the toxic TFA salt.

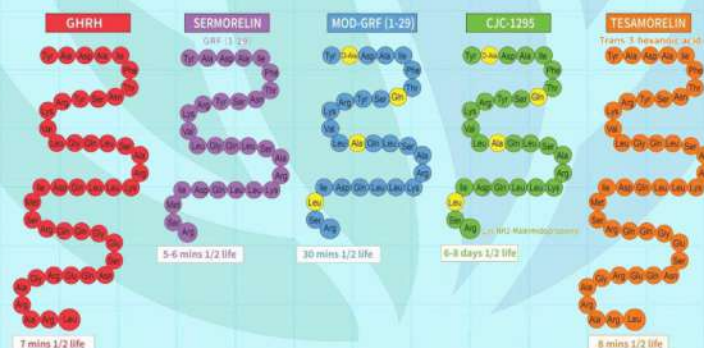


## Summary

Growth hormone-releasing peptides are a great and affordable option to help with overall hormone optimization.

It is important to get IGF-1 levels tested via blood work, prior to beginning and throughout the therapy process. It is also important to find an informed healthcare provider to monitor your therapy to get the best results and be safe.

As I mentioned earlier, a legitimate health care provider, such as Renew Life RX's physicians, is your best bet for ensuring your medication is coming from a high-quality FDA-approved compounding pharmacy here in the US.



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