



indicate how many peptides our body makes and list 10 peptides our body makes and their function

Scientists estimate that the human body contains on the order of several thousand distinct endogenous peptides at any given time, with one review putting the number around 7,000 identified or predicted peptides. These include hormones, neuropeptides, growth factors, and antimicrobial peptides, among others.^{[1] [2]}

Examples of 10 human peptides and their functions

1. Insulin

- Peptide hormone from the pancreas.
- Lowers blood glucose by promoting uptake of glucose into cells and stimulating glycogen, fat, and protein synthesis.^{[3] [4]}

2. Glucagon

- Peptide hormone from the pancreas.
- Raises blood glucose by stimulating glycogen breakdown and glucose production in the liver.^{[1] [3]}

3. Glucagon-like peptide-1 (GLP-1)

- Gut-derived peptide.
- Enhances insulin secretion in response to meals, slows gastric emptying, and reduces appetite, helping regulate blood sugar and body weight.^{[5] [3]}

4. Oxytocin

- Peptide made in the hypothalamus, released from posterior pituitary.
- Promotes uterine contractions during labor and milk ejection during breastfeeding, and is involved in social bonding.^{[6] [1]}

5. Vasopressin (antidiuretic hormone, ADH)

- Peptide from hypothalamus/posterior pituitary.
- Increases water reabsorption in the kidneys and helps maintain blood pressure.^[6]

6. Parathyroid hormone (PTH)

- Peptide from parathyroid glands.
- Regulates calcium and phosphate levels by acting on bone, kidneys, and indirectly on the intestine.^{[3] [1]}

7. Substance P

- Neuropeptide in central and peripheral nervous system.
- Transmits pain signals and contributes to neurogenic inflammation (vasodilation, plasma leakage, immune cell recruitment).^[7]

8. Enkephalins (Met- and Leu-enkephalin)

- Pentapeptide opioids in the nervous system.
- Act as neurotransmitters/neuromodulators that dampen pain perception and influence mood and stress responses.^[7]

9. Atrial natriuretic peptide (ANP)

- Cardiac peptide released from heart atria.
- Promotes salt and water excretion by the kidneys and dilates blood vessels, lowering blood pressure and blood volume.^{[8] [3]}

10. Ghrelin

- Peptide mainly from the stomach.
- Stimulates appetite and food intake and promotes growth hormone release.^{[3] [6]}



Can you list 10 more peptides the body produces with functions

Here are 10 more peptides your body produces, with brief functions:

1. Adrenocorticotrophic hormone (ACTH)

- Produced by the anterior pituitary.
- Stimulates the adrenal cortex to release cortisol, helping regulate stress responses, blood pressure, and metabolism.^{[16] [17]}

2. Thyroid-stimulating hormone (TSH)

- Produced by the anterior pituitary.
- Acts on the thyroid gland to promote secretion of thyroid hormones, which control metabolic rate and energy use.^{[17] [16]}

3. Luteinizing hormone (LH)

- Produced by the anterior pituitary.
- In females triggers ovulation and progesterone production; in males stimulates testosterone production by Leydig cells.^{[16] [17]}

4. Follicle-stimulating hormone (FSH)

- Produced by the anterior pituitary.
- In females promotes follicle growth and estrogen production; in males supports sperm production in the testes.^{[17] [16]}

5. Prolactin

- Produced by the anterior pituitary.
 - Promotes breast development and milk production after childbirth. [\[16\]](#) [\[17\]](#)
6. Corticotropin-releasing hormone (CRH)
- Produced by the hypothalamus.
 - Stimulates the pituitary to release ACTH, initiating the hormonal stress response. [\[18\]](#)
7. Gonadotropin-releasing hormone (GnRH)
- Produced by the hypothalamus.
 - Triggers the pituitary release of LH and FSH, thus controlling reproductive function and puberty. [\[18\]](#)
8. Cholecystokinin (CCK)
- Secreted by cells in the small intestine and also acts as a neuropeptide in the brain.
 - Stimulates gallbladder contraction and pancreatic enzyme secretion, and contributes to satiety after meals. [\[19\]](#) [\[16\]](#)
9. Gastrin
- Produced by G cells in the stomach.
 - Stimulates gastric acid secretion and growth of the stomach lining, aiding protein digestion. [\[16\]](#)
10. Neuropeptide Y (NPY)
- Widely produced in the brain and sympathetic nerves.
 - Increases food intake, influences energy balance and circadian rhythms, and modulates stress and anxiety responses. [\[20\]](#) [\[21\]](#)

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What are common disorders from peptide imbalances

Many common endocrine and metabolic diseases involve **peptide** imbalance (too much, too little, or loss of normal rhythm of peptide hormones or neuropeptides). Below are key examples: [\[32\]](#)

Metabolic and pancreatic peptide disorders

- Diabetes mellitus (type 1 and type 2)
 - Due to deficiency of insulin or resistance to its action, often with inappropriate glucagon excess.
 - Leads to chronic high blood glucose, ketoacidosis in severe cases, and, when treated with insulin, risk of severe hypoglycemia if glucagon responses are impaired. [\[33\]](#) [\[34\]](#) [\[35\]](#)
- Diabetic ketoacidosis and severe hypoglycemia

- Result from mismatch of insulin and glucagon: excess glucagon with little insulin promotes ketone overproduction; lack of glucagon response during insulin treatment predisposes to dangerous hypoglycemia. [\[34\]](#) [\[35\]](#) [\[33\]](#)

Parathyroid and calcium-related peptide disorders

- Hypoparathyroidism
 - Low parathyroid hormone (PTH) secretion.
 - Causes low blood calcium, muscle cramps or tetany, seizures, and long-term bone and dental problems. [\[36\]](#)
- Hyperparathyroidism
 - Excess PTH secretion.
 - Leads to high blood calcium, kidney stones, bone loss, and neurocognitive symptoms ("bones, stones, abdominal groans, psychic overtones"). [\[36\]](#)

Pituitary peptide hormone disorders

- Growth hormone excess (acromegaly, gigantism)
 - Excess GH (a peptide) and elevated IGF-1.
 - Causes enlargement of hands, feet, facial bones, organ enlargement, insulin resistance, and increased cardiovascular risk. [\[37\]](#)
- Growth hormone deficiency
 - In children causes short stature and delayed growth; in adults can reduce muscle mass, increase fat mass, and affect quality of life. [\[37\]](#)
- Hyperprolactinemia
 - Excess prolactin from the pituitary.
 - Leads to menstrual irregularities and infertility in women, low testosterone and infertility in men, and inappropriate milk production (galactorrhea). [\[38\]](#) [\[39\]](#)
- TSH imbalance (hypo- or hyperthyroidism)
 - Too little or too much TSH relative to thyroid hormones.
 - Produces hypothyroid symptoms (fatigue, weight gain, cold intolerance) or hyperthyroid symptoms (weight loss, rapid heart rate, heat intolerance). [\[39\]](#) [\[38\]](#)

Gut and appetite-related peptide disorders

- Obesity and metabolic syndrome linked to gut peptide dysregulation
 - Abnormal levels of GLP-1, ghrelin, leptin, and other appetite-regulating peptides contribute to overeating, impaired satiety, and insulin resistance. [\[40\]](#) [\[37\]](#)
- Functional gut disorders with CCK and other gut peptides
 - Imbalanced cholecystokinin and related peptides may alter gallbladder contraction, pancreatic secretion, and sensations of fullness, contributing to dyspepsia and biliary

pain syndromes. [\[40\]](#) [\[39\]](#)

Neuropeptide-related brain and mental health disorders

- Alzheimer's disease and other dementias
 - Dysregulation of neuropeptides (and tau peptides) in the brain is associated with synaptic loss and cognitive decline. [\[41\]](#) [\[42\]](#)
- Anxiety and depressive disorders
 - Altered levels of neuropeptide Y (NPY) and other neuropeptides are linked with heightened anxiety and major depression; lower NPY is associated with negative emotional processing. [\[43\]](#) [\[44\]](#)
- Neurodevelopmental disorders (ASD, ADHD)
 - Abnormal signaling of various peptide hormones and neuropeptides has been implicated as one factor among many in autism spectrum disorder and attention-deficit/hyperactivity disorder. [\[45\]](#) [\[43\]](#)

Vascular and inflammatory peptide disorders

- Vascular cognitive impairment and some forms of dementia
 - Vasoactive neuropeptide dysregulation (peptides controlling vessel tone) can drive microvascular constriction, chronic cerebral hypoperfusion, and progressive cognitive decline. [\[41\]](#)
- Inflammatory and autoimmune conditions
 - Many neuropeptides are immunomodulatory; their imbalance can shift the immune system toward excessive inflammation or immunosuppression, contributing to chronic inflammatory diseases. [\[46\]](#) [\[32\]](#)

If you'd like, I can map specific peptides you asked about earlier (insulin, GLP-1, NPY, etc.) to the main disorders they're involved in.



What current drugs are based on peptides

Many widely used drugs are themselves **peptides** or slightly modified peptide analogs. Here are some major current examples by category, with what they're used for:

Diabetes and weight-loss peptides

- Insulin (multiple analogs: lispro, aspart, glargine, degludec, etc.)
 - Modified forms of human insulin.
 - Treat type 1 and type 2 diabetes by replacing or supplementing endogenous insulin to control blood glucose. [\[49\]](#)
- GLP-1 receptor agonists: exenatide, liraglutide, semaglutide, dulaglutide, tirzepatide

- Peptide analogs of the incretin hormone GLP-1 (tirzepatide also targets GIP).
- Improve blood sugar in type 2 diabetes and are approved at higher doses for chronic weight management (for example, semaglutide, liraglutide, tirzepatide). [\[50\]](#) [\[51\]](#) [\[52\]](#) [\[53\]](#)
- Pramlintide
 - Synthetic analog of the pancreatic peptide amylin.
 - Used as an adjunct in type 1 and type 2 diabetes to lower post-meal glucose by slowing gastric emptying and suppressing glucagon. [\[54\]](#)

Endocrine peptide drugs (pituitary, bone, thyroid)

- Teriparatide
 - Recombinant fragment of parathyroid hormone (PTH 1-34).
 - An anabolic osteoporosis treatment that stimulates new bone formation and reduces fracture risk. [\[54\]](#)
- Somatostatin analogs: octreotide, lanreotide, pasireotide
 - Peptide analogs of somatostatin.
 - Treat acromegaly and hormone-secreting neuroendocrine tumors, and help control certain types of severe diarrhea and flushing. [\[54\]](#)
- GnRH agonists and antagonists: leuprolide, goserelin, triptorelin, degarelix, cetrorelix
 - Synthetic peptides targeting GnRH receptors.
 - Used for prostate cancer, endometriosis, uterine fibroids, and controlled ovarian stimulation in fertility treatment. [\[54\]](#)

Cardiovascular and clotting-related peptides

- Bivalirudin, eptifibatide
 - Short peptide anticoagulants.
 - Used during coronary interventions or in acute coronary syndromes to prevent clot formation. [\[54\]](#)
- Nesiritide, carperitide (natriuretic peptide analogs)
 - Recombinant forms of human or animal natriuretic peptides.
 - Used in some settings for acute heart failure to promote vasodilation and natriuresis. [\[54\]](#)

Pain, neurology, and immune peptides

- Ziconotide
 - Synthetic peptide derived from cone snail toxin.
 - Used as an intrathecal analgesic for severe chronic pain when other treatments fail. [\[54\]](#)
- Enfuvirtide
 - Peptide HIV fusion inhibitor.

- Blocks fusion of HIV with host cells in certain treatment-experienced patients. ^[54]
- Glatiramer acetate
 - Mixture of short synthetic peptides.
 - Used in multiple sclerosis to modulate immune responses and reduce relapses. ^[54]

Reproductive and obstetric peptides

- Oxytocin and analogs (carbetocin, atosiban)
 - Oxytocin is a natural nonapeptide; carbetocin is a longer-acting analog; atosiban is an antagonist.
 - Used to induce or augment labor, prevent postpartum hemorrhage, or as a tocolytic (inhibit preterm labor) depending on the agent. ^[54]

These are only a subset; hundreds of peptide and protein therapeutics are now approved worldwide, with more in late-stage trials, including oral peptide formulations that are beginning to appear. ^{[55] [56] [49]}



What are the safety differences between peptide drugs and small molecule drugs

Peptide drugs and traditional small-molecule drugs differ in safety mainly because of their size, how specifically they bind targets, how the body clears them, and their tendency to trigger immune reactions. ^{[64] [65] [66]}

Where peptide drugs are often safer

- Higher target specificity
 - Peptides usually bind very specifically to one receptor or protein surface, so they tend to have fewer off-target effects and “systemic” side effects than many small molecules. ^{[65] [66] [64]}
 - This is why they are often described as having good **tolerability** and low toxicity at therapeutic doses. ^{[64] [65]}
- Safer metabolites and low tissue accumulation
 - Peptides are broken down mainly by proteases into amino acids, which are normal body components; their metabolites rarely cause organ toxicity. ^{[66] [65]}
 - They usually do not accumulate in fatty tissues the way some lipophilic small molecules can, reducing long-term storage-related toxicity. ^{[65] [66]}
- Better for difficult targets
 - Because of their larger contact surface, peptides can block protein–protein interactions that small molecules cannot easily reach; this can allow lower doses and more focused action. ^{[67] [64]}

Where peptide drugs pose unique safety challenges

- Immunogenicity (anti-drug antibodies)
 - The main safety concern for peptide therapeutics is unwanted immune responses, where the body makes antibodies against the drug or related impurities. ^[68] ^[69] ^[70]
 - These antibodies can neutralize the drug, change its clearance, or rarely cross-react with the body's own proteins and cause autoimmune-type effects, though this is uncommon when the peptide closely matches a natural human sequence. ^[69] ^[71] ^[68]
- Short half-life and dosing burden
 - Many peptides are cleared quickly by proteases and the kidneys, which can require frequent injections or special formulations, increasing injection-site reactions and adherence issues rather than classic systemic toxicity. ^[66] ^[64]
- Route of administration
 - Most peptide drugs are not orally bioavailable and must be injected; this avoids some small-molecule gut and liver toxicities but introduces needle-related risks and, for long-acting depots, rare local reactions. ^[72] ^[66]

Where small molecules can be riskier (on average)

- Broader off-target activity
 - Small molecules often hit multiple receptors or enzymes, which can drive more diverse side-effect profiles (for example, liver, heart rhythm, or CNS effects). ^[67] ^[64]
 - Their metabolites can be chemically reactive, and some are directly linked to organ toxicity or genotoxicity, issues usually not seen with simple peptide breakdown products. ^[67] ^[65]
- Easier cell penetration, more systemic distribution
 - Small molecules cross membranes more easily and can reach intracellular and CNS targets, but this also means they can affect unintended tissues and pathways. ^[72] ^[67]

Safety summary in plain language

- Peptides: tend to be more **targeted**, have low intrinsic toxicity, and break down into harmless amino acids, but can trigger immune responses and usually need injections. ^[68] ^[64] ^[65] ^[66]
- Small molecules: are convenient (often oral) and can reach inside cells but are more prone to off-target effects, reactive metabolites, and classic organ toxicities. ^[64] ^[66] ^[67]

If you tell me which specific peptide drugs you're thinking about (for example, GLP-1 agonists vs a particular small-molecule diabetes drug), I can compare their safety profiles side-by-side.



1. <https://www.bachem.com/articles/peptides/what-are-peptides/>

2. <https://www.mcgill.ca/oss/article/medical-did-you-know/there-much-pep-peptide-research>

3. https://en.wikipedia.org/wiki/Peptide_hormone
4. https://en.wikipedia.org/wiki/List_of_human_hormones
5. <https://fitmdusa.com/what-the-peptide-breaking-down-the-world-of-peptides/>
6. <https://themedicalbiochemistrypage.org/peptide-hormones-and-their-receptors/>
7. <https://www.kenhub.com/en/library/physiology/neuropeptides>
8. <https://www.sigmaaldrich.com/US/en/technical-documents/technical-article/protein-biology/enzyme-activity-assays/neuropeptidases>
9. <https://goddesshealthcompany.com/blogs/news/10-peptides-and-what-they-do-a-guide-to-these-powerful-wellness-molecules>
10. <https://www.youtube.com/watch?v=kXIZccL9IJ4>
11. <https://www.nivea.ca/en-ca/advice/skin/what-are-peptides>
12. <https://en.wikipedia.org/wiki/Peptide>
13. <https://theordinary.com/en-us/blog/peptides-skincare-essential-guide.html>
14. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5837046/>
15. <https://www.webmd.com/a-to-z-guides/what-are-peptides>
16. <https://study.com/academy/lesson/peptide-hormones-definition-function-levels.html>
17. https://en.wikipedia.org/wiki/List_of_human_hormones
18. <https://themedicalbiochemistrypage.org/peptide-hormones-and-their-receptors/>
19. <https://www.ncbi.nlm.nih.gov/books/NBK28247/>
20. <https://www.kenhub.com/en/library/physiology/neuropeptides>
21. <https://en.wikipedia.org/wiki/Neuropeptide>
22. https://en.wikipedia.org/wiki/Category:Peptide_hormones
23. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5711782/>
24. <https://jamanetwork.com/journals/jamasurgery/fullarticle/211732>
25. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7168463/>
26. <https://themedicalbiochemistrypage.org/table-of-major-human-hormones/>
27. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4035769/>
28. [https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/General_Biology_\(Boundless\)/37:_The_Endocrine_System/37.02:_Types_of_Hormones-_Lipid-Derived_Amino_Acid-Derived_and_Peptide_Hormones](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/General_Biology_(Boundless)/37:_The_Endocrine_System/37.02:_Types_of_Hormones-_Lipid-Derived_Amino_Acid-Derived_and_Peptide_Hormones)
29. [what-are-the-synergies-between-zNUin5TIRjCz_0izjvNEng.md](#)
30. https://en.wikipedia.org/wiki/Peptide_hormone
31. <https://thegoodbug.com/blogs/news/peptide-hormones-overview-examples>
32. <https://www.sciencedirect.com/topics/neuroscience/peptide-hormone>
33. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6312800/>
34. <https://pubmed.ncbi.nlm.nih.gov/16530126/>
35. <https://pmc.ncbi.nlm.nih.gov/articles/PMC3281526/>
36. <https://globalgenes.org/podcast/treating-rare-endocrine-disorders-with-therapeutic-peptides/>
37. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8155905/>

38. https://en.wikipedia.org/wiki/List_of_human_hormones
39. <https://study.com/academy/lesson/peptide-hormones-definition-function-levels.html>
40. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12265896/>
41. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12635772/>
42. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9264367/>
43. <https://jebms.org/full-text-pdf/38>
44. <https://www.nature.com/articles/s41598-020-62699-0>
45. <https://jebms.org/full-text/38>
46. <https://pmc.ncbi.nlm.nih.gov/articles/PMC3417345/>
47. <https://themedicalbiochemistrypage.org/peptide-hormones-and-their-receptors/>
48. <https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/peptide-hormone>
49. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5536290/>
50. <https://www.goodrx.com/classes/glp-1-agonists/glp-1-drugs-comparison>
51. <https://my.clevelandclinic.org/health/treatments/13901-glp-1-agonists>
52. https://en.wikipedia.org/wiki/Glucagon-like_peptide-1
53. <https://empireondemand.com/blogs/posts/peptide-therapies-in-2025-whats-legal-whats-experimental-and-what-the-science-says>
54. <https://www.creative-peptides.com/blog/list-of-marketed-peptide-drugs/>
55. <https://globalrph.com/2025/12/emerging-and-approved-therapeutic-peptides-mechanisms-clinical-uses/>
56. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10893093/>
57. https://en.wikipedia.org/wiki/GLP-1_receptor_agonist
58. <https://pmc.ncbi.nlm.nih.gov/articles/PMC3712370/>
59. <https://bc9.co/fda-approved-peptides/>
60. <https://www.mayoclinic.org/diseases-conditions/type-2-diabetes/expert-answers/byetta/faq-20057955>
61. <https://www.drugtargetreview.com/article/179951/from-injections-to-pills-oral-peptides-set-to-transform-drug-development/>
62. <https://drjeneybyplasticsurgery.com/glp-1-agonist-list-of-drugs/>
63. <https://www.ncbi.nlm.nih.gov/books/NBK551568/>
64. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10609221/>
65. <https://www.biochempeg.com/article/286.html>
66. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5216031/>
67. <https://www.nature.com/articles/s41392-022-00904-4>
68. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12010466/>
69. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12722964/>
70. <https://www.sciencedirect.com/science/article/pii/S1359644623002301>
71. <https://www.drugtargetreview.com/article/191795/peptides-in-practice-what-it-takes-to-advance-these-therapies-to-clinic/>
72. <https://www.sciencedirect.com/science/article/pii/S0378517325003928>

73. <https://www.anapharmbioanalytics.com/blog-peptides-series-therapeutic-peptides-importance-challenges-bioanalysis-lcmsms/>
74. <https://drlans.org/peptide-therapies-unveiling-advantages-and-controversies/>
75. <https://pubmed.ncbi.nlm.nih.gov/39852830/>
76. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10740154/>
77. <https://www.webmd.com/a-to-z-guides/what-are-peptides>
78. <https://www.medicalnewstoday.com/articles/326701>