

## Peptide Hormones

Peptide hormones are proteins involved in endocrine system signaling. Peptide hormones are derived from multiple amino acids, and cannot travel through the cell membrane because they tend to be large and charged. They bind to cell membrane receptors, which stimulate secondary messengers, like cAMP, to induce enzymatic changes in the cell. The effects are short-lived because the secondary messenger systems are short-lived and responsive, but are also fast-acting, because the effects do not rely on DNA transcription to occur. Examples of peptide hormones include insulin, parathyroid hormone, vasopressin and oxytocin.



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### Characteristics

#### Fast-Acting and Short-Lived

##### [Quick and Young Rabbit](#)

Because they bind only to the cell surface and affect change through secondary messengers, peptide hormones can cause the intended change in physiology relatively rapidly. The effects of peptide hormones are short-lived because they only temporarily induce secondary messengers, but do not affect long-term processes like translation or transcription.

#### Bind To Cell Membrane Receptors

##### [Receptor on the Membrane](#)

Peptide hormones bind to receptors on the surface of cells rather than on intracellular receptors.

#### Stimulate Secondary Messengers

##### [Messenger-pigeon in a \(2\) Tutu](#)

Peptide hormones interact with receptors to stimulate secondary messengers within the cell, such as cAMP.

#### Amino Acid-Derived

##### [Amigo-lemon Driver](#)

Peptide hormones are derived from many amino acids and are processed in the endoplasmic reticulum.

### Examples

#### Insulin

##### [Insect-syringe](#)

Insulin is a peptide hormone produced by the beta cells of the pancreas. It functions to deliver glucose from the bloodstream into muscle, fat, liver, and most other cells, allowing the body to use it for fuel.

#### Parathyroid Hormone (PTH)

##### [Parachuting-thigh-droid with Harmonica](#)

Parathyroid hormone, PTH, is a peptide hormone used in bone remodeling. It enhances the release of calcium from the bones when calcium levels in the blood are too low. Additionally, it works to reduce the reabsorption of phosphate, reducing its levels in the blood, and also helps to activate vitamin D.

#### Vasopressin

##### [Vase-present](#)

Vasopressin, also called antidiuretic hormone, is a peptide hormone which acts on the kidneys and blood vessels. This hormone helps prevent loss of water from the body by reducing urine output and helping the kidneys reabsorb water into the body.

## **Oxytocin**

Octopus-toe

Oxytocin is a peptide hormone and a neuropeptide. It functions to allow the milk-letdown reflex and stimulates breastfeeding. Additionally, it increases uterine contraction. It also has functions in selective social bonding and sexual pleasure.