

Endocrine System II

Hormones are chemical messengers that allow the endocrine system to communicate with cells and organs and maintain homeostasis. Hormones are released into the circulatory system and affect target cells containing specific receptors that can bind to the hormone. Once the hormone binds to the receptor, changes occur within the cell: different proteins and enzymes can be synthesized, the rate of synthesis of existing proteins/enzymes can increase or decrease, and the shapes of existing proteins/enzymes can be altered. Compared to the nervous system, the endocrine system can act on a greater number of cells and their effects can be longer lasting.

The hormones of the endocrine system can be broken down into 3 classes based on their chemical structure:

1. **Amino acid derivatives** - made from the amino acids tyrosine or tryptophan
 - These include thyroid hormones (e.g. calcitonin, thyroxine, triiodothyronine), catecholamines (e.g. epinephrine, norepinephrine, and dopamine), and melatonin.
2. **Peptide hormones** - made from chains of amino acids joined together
 - These include thyroid-stimulating hormone, luteinizing hormone, follicle-stimulating hormone, antidiuretic hormone, oxytocin, growth hormone, insulin, and glucagon
3. **Lipid derivatives** - made from fatty acid chains or cholesterol
 - These include leukotrienes, prostaglandins, estrogen, progestins, androgens, and calcitrol

Note: The above is not a complete list of hormones found in the body

Complete the following chart:



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Hormone	Source	Conditions that cause hormone release	Target Organ/Cells	Result
Oxytocin				
Thyrotropin-releasing hormone (TRH)				
Gonadotropin-releasing hormone (GnRH)				
Corticotropin-releasing hormone (CRH)				
Growth hormone-releasing hormone (GHRH)				
Prolactin-inhibiting hormone (PIH)				



Somatostatin				
Antidiuretic hormone (ADH)				
Follicle-stimulating hormone (FSH)				
Luteinizing hormone (LH)				
Thyroid-stimulating hormone (TSH)				
Adrenocorticotrophic hormone (ACTH)				
Prolactin (PRL)				
Growth hormone				
Estrogen				



Progesterone				
Testosterone				
Thyroxine (T_4) and triiodothyronine (T_3)				
Cortisol				
Calcitonin				
Parathyroid hormone (PTH)				
Calcitrol				
Epinephrine and Norepinephrine				
Insulin				



Glucagon				
Erythropoietin (EPO)				
Aldosterone				
Natriuretic peptides				



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