

# Endocrine System

## What is the Endocrine System?

The endocrine system releases **chemical messengers** called **hormones** into the blood to act on distant target cells

- Hormones only act on the cells with a **specific receptor**

The endocrine system works at the same time with the nervous system to maintain balance

- Hormones initiate **slower responses** (longer durations)

## 2 Pituitary Gland

↗ Excitatory  
↘ Inhibitory

Composed of **2 lobes** the anterior which secretes hormones involved in the body's **growth & development**, and the posterior, which secretes hormones that increase the reabsorption of water in the **Kidneys**. It makes hormones that control other glands.

## 3 Pineal Gland

It releases a hormone called **melatonin** that causes you to feel sleepy

## 4 Thyroid

Produces hormones that regulate the body's **metabolism** (how the body uses energy)

**4 Parathyroid glands** Regulate the absorption of **calcium**

## 5 Thymus

Controls the production of **white blood cells** & plays a role in the body's ability to **fight diseases**

## 6 Adrenal Gland

Control **metabolism**, **blood pressure**, **sexual development** and response to stress

## 7 Pancreas

It makes a hormone called **insulin** that controls the **level of sugar in the blood**

## Nervous System vs Endocrine System

| Comparison                       | Nervous system                                                 | Endocrine system                                        |
|----------------------------------|----------------------------------------------------------------|---------------------------------------------------------|
| Speed of the action              | Very rapid                                                     | Can be slow                                             |
| Nature of the message            | Electrical impulses, travelling along nerves                   | Chemical messages, travelling in the bloodstream        |
| Duration of the response         | Usually completed within seconds                               | May take years before completed                         |
| Area of response                 | Often confined to one area of the body - response is localised | Usually noticed in many organs - response is widespread |
| Examples of processes controlled | Reflexes such as blinking; movement of the limbs               | Growth; development of reproductive system              |

The endocrine system contains **9 major glands** & organs that produce, store & secrete hormones

## 1 Hypothalamus

Maintains the body's **balance** & **regulates** **body temperature**, **heart rate** and **blood pressure**

