B13.2.1: What is a Hormone?

A **hormone** is a chemical messenger produced by a gland and released into the bloodstream. It travels through the bloodstream to specific target organs, where it binds to receptors and triggers a response.

B13.2.2: Major Endocrine Glands and Their Hormones

Let's look at some key endocrine glands and the hormones they produce:

- **Adrenal Glands:** These glands produce **adrenaline**, a hormone that prepares the body for a "fight or flight" response.
- **Pancreas:** The pancreas produces two important hormones: **insulin** and **glucagon**. Insulin helps regulate blood sugar levels by promoting glucose uptake into cells.
- **Testes:** The testes produce **testosterone**, a hormone responsible for male sexual development and characteristics.
- **Ovaries:** The ovaries produce **estrogen**, a hormone involved in female sexual development and the menstrual cycle.

B13.2.3: Adrenaline: The Fight-or-Flight Hormone

When we encounter a stressful situation, the adrenal glands release adrenaline. This hormone triggers a series of physiological changes, preparing the body for action:

- **Increased breathing rate:** This provides more oxygen to the muscles.
- **Increased heart rate:** This increases blood flow to the muscles.
- **Increased pupil diameter:** This allows more light to enter the eyes, improving vision.

B13.2.4: Glucagon: The Counter-Hormone

Glucagon is a hormone produced by the pancreas. It works opposite to insulin, raising blood sugar levels by stimulating the liver to release stored glucose.