*This is the **Higher Combined** version — includes Higher Tier content. Some Separate-only details are omitted.*

The endocrine system uses chemical messengers called hormones, carried in the blood to target organs. It works more slowly than the nervous system but produces longer-lasting effects.

- Hormones are secreted by endocrine glands directly into the blood.
- They travel in plasma to target organs — cells with specific receptors for that hormone.
- Key glands: pituitary (master gland), thyroid, adrenal glands, pancreas, ovaries, testes.
- Pituitary: produces FSH, LH, ADH, growth hormone — controls other endocrine glands.
- Thyroid: produces thyroxine — controls metabolic rate.
- Adrenal glands: produce adrenaline — fight or flight response (increases heart rate, dilates pupils, redirects blood to muscles).
- Nervous system vs endocrine: nerves = fast, short-lived, specific target. Hormones = slower, longer-lasting, widespread effect.
- ★ **HT** Negative feedback: the response to a hormone reduces further hormone release — maintains homeostasis.

Key Terms

Hormone	A chemical messenger secreted by an endocrine gland into the blood — affects target organs
Endocrine gland	A gland that secretes hormones directly into the bloodstream (ductless)
Target organ	An organ with specific receptors for a particular hormone
Adrenaline	Hormone from adrenal glands — prepares body for fight or flight
Negative feedback	A control mechanism where the response reduces further secretion of the hormone

■ **Exam Tip:** Nervous system vs endocrine: FAST, SPECIFIC, SHORT = nervous. SLOW, WIDESPREAD, LONG-LASTING = endocrine. This comparison comes up often in 4-mark questions.