*This is the **Higher Separate** version — includes all Higher Tier content (marked ★) and all Separate Science content.*

The nervous system allows rapid responses to stimuli through electrical signals along neurones.

- Stimulus → receptor → sensory neurone → relay neurone (spinal cord) → motor neurone → effector → response
- Reflex actions bypass the brain — making them faster than voluntary actions
- Synapses: gap between neurones crossed by chemical neurotransmitters
- Three neurone types: sensory (receptor→CNS), relay (within CNS), motor (CNS→effector)
- Nervous vs endocrine: nervous = fast, specific; hormonal = slow, widespread

Key Terms

Reflex arc	Rapid automatic pathway — stimulus to response without conscious thought
Synapse	Gap between neurones — signal carried by neurotransmitters
Neurotransmitter	Chemical crossing synaptic cleft to trigger new impulse

■ **Exam Tip:** In a reflex arc: sensory → relay → motor. The relay neurone is in the SPINAL CORD (not the brain). This is why reflexes are fast — they bypass the brain.