



How do we use Knowledge Organisers in Biology

How can you use knowledge organisers at home to help us?

- **Retrieval Practice:** Read over a section of the knowledge organiser, cover it up and then write down everything you can remember. Repeat until you remember everything.
- **Flash Cards:** Using the Knowledge Organisers to help on one side of a piece of paper write a question, on the other side write an answer. Ask someone to test you by asking a question and seeing if you know the answer.
- **Mind Maps:** Turn the information from the knowledge organiser into a mind map. Then reread the mind map and on a piece of paper half the size try and recreate the key phrases of the mind map from memory.
- **Sketch it:** Draw an image to represent each fact; this can be done in isolation or as part of the mind map/flash card.
- **Teach it:** Teach someone the information on your knowledge organiser, let them ask you questions and see if you know the answers.

How will we use knowledge organisers in Biology?

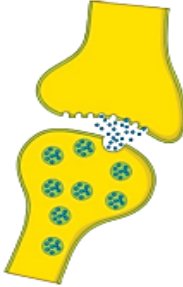
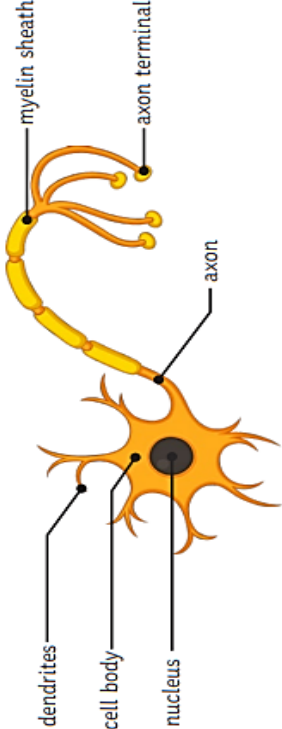
- **Test:** We will do regular low stakes tests to check your ability to retrieve information from memory.
- **Mark our answers:** Once you have done a low stake test you can mark your work using the knowledge organiser.
- **Improve our work:** Once you have finished a piece of work you may be asked to check your knowledge organiser to see if there is any information on it that you could add into an answer.

Term	Topic/s	Year group
1	Topic 9 Nervous System	11

Tier 2 ‘unlocking’ language	Tier 3 subject relevant language
Signal	Synapse
Message	Impulse
React	Sensory
Spine	Motor
Stimulate	Effector
Nerve	Relay
Brain	Receptor
Control	Neurone



Knowledge Organiser: Topic 9 Nervous system

Homeostasis	Synapses	The Human Nervous System						
Homeostasis is the regulation of a constant internal environment. The conditions are maintained to ensure optimum conditions for metabolism and changes in response to both internal and external fluctuations. In humans, homeostasis regulates the blood glucose (sugar) levels, the body temperature, CO₂ levels and water levels. The levels are monitored and regulated by automatic control systems which can be either nervous responses (coordinated by the nervous system) or chemical responses (coordinated by the endocrine system). Information about the environment is called a stimulus and is detected by a receptor. The information is processed by a central coordination system and a response is initiated by an effector.	 A synapse is the gap where the ends of two neurons meet. The information needs to be passed from one neuron to the next, but cannot be passed as an electrical impulse over the synapse (gap). Instead, the message is transmitted by chemical neurotransmitters. When the electrical impulse arrives at the terminal of the first neuron, it causes a release of neurotransmitter chemicals into the synapse. They travel across the gap and bind to receptor sites on the terminal of the next neuron. The receptor sites are specific for each type of neurotransmitter. A nerve impulse will only be created in the second neuron when a complementary chemical binds.	The nervous system allows a fast, short-lived response to a stimulus in the surroundings. The information is received by a receptor, passed along the neurons (nerve cells) as an electrical impulse and results in a response. You might have to label the parts of a typical neuron:  • The axon is the main part of the nerve cell. It is a long, stretched-out fibre of cytoplasm which the electrical impulse will travel along. • Some axons are surrounded in a layer of fatty cells called the myelin sheath and it helps to insulate the electrical impulse. • The branched endings, dendrites, connect the neurons together to create a network.						
The Nervous Pathway								
A stimulus is a change in the environment (internally or externally). In a typical response to stimuli, this information is received by the receptor and sent as an electrical impulse along a sensory neuron towards the central nervous system (CNS). The CNS is comprised of the brain and spinal cord. Here, the impulse is passed through relay neurons and a response to the stimulus is coordinated. This could be consciously or subconsciously. The CNS sends information about the response along a motor neuron as an electrical impulse. The effector receives the impulse and carries out the response. [stimulus] → receptor → sensory neuron → CNS → motor neuron → effector → [response] Examples of receptors include rod and cone cells within the eye which respond to light and allow us to see. Or it could be the cells in the skin which respond to pressure or temperature changes allowing us to feel. An effector could be a muscle or a gland. In response, a muscle might contract to make a movement or a gland releases a chemical into the body.								
<table><thead><tr><th>sensory neuron</th><th>relay neuron</th><th>motor neuron</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table>			sensory neuron	relay neuron	motor neuron			
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