Learning Tracker: Topic 8 – Grey Matter

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| **SPECIFICATION POINTS** | **R** | **Y** | **G** |
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| 8.1 Know the structure and function of sensory, relay and motor neurones including the role of Schwann cells and myelination. |  |  |  |
| 8.2 i) Understand how the nervous systems of organisms can cause effectors to respond to a stimulus.  ii) Understand how the pupil dilates and contracts. |  |  |  |
| 8.3 Understand how a nerve impulse (action potential) is conducted along an axon including changes in membrane permeability to sodium and potassium ions and the role of the myelination in saltatory conduction. |  |  |  |
| 8.4 Know the structure and function of synapses in nerve impulse transmission, including the role of neurotransmitters, including acetylcholine. |  |  |  |
| 8.5 Understand how the nervous systems of organisms can detect stimuli with reference to rods in the retina of mammals, the roles of rhodopsin, opsin, retinal, sodium ions, cation channels and hyperpolarisation of rod cells in forming action potentials in the optic neurones. |  |  |  |
| 8.6 Understand how phytochrome and IAA bring about responses in plants to environmental cues, including their effects on transcription. |  |  |  |
| 8.7 Understand how co-ordination is brought about through nervous and hormonal control in animals. |  |  |  |
| 8.8 Know the location and functions of the cerebral hemispheres, hypothalamus, cerebellum and medulla oblongata in the human brain. |  |  |  |
| 8.9 Understand how magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI), positron emission tomography (PET) and computed tomography (CT) scans are used in medical diagnosis and the investigation of brain structure and function. |  |  |  |
| 8.10 Understand what happens during the critical period so that mammals can develop their visual capacities to the full. |  |  |  |
| 8.11 Understand the role animal models have played in the research into human brain development and function, including Hubel and Wiesel’s experiments with monkeys and kittens. |  |  |  |
| 8.12 Be able to discuss moral and ethical issues relating to the use of animals in medical research from two ethical standpoints |  |  |  |
| 8.13 Understand how animals, including humans, can learn by habituation. |  |  |  |
| CORE PRACTICAL 18: Investigate habituation to a stimulus. |  |  |  |
| 8.14 Understand how imbalances in certain, naturally occurring brain chemicals can contribute to ill health, including dopamine in Parkinson’s disease and serotonin in depression, and to the development of new drugs |  |  |  |
| 8.15 Understand the effects of drugs on synaptic transmissions, including the use of L-Dopa in the treatment of Parkinson’s disease and the action of MDMA in Ecstasy. |  |  |  |
| 8.16 Understand how the outcomes of genome sequencing projects are being used in the development of personalised medicine and the social, moral and ethical issues this raises. |  |  |  |
| 8.17 Know how drugs can be produced using genetically modified organisms (plants, animals and microorganisms). |  |  |  |
| 8.18 Understand the risks and benefits associated with the use of genetically modified organisms. |  |  |  |
| 8.19 Understand the methods used to investigate the contributions of nature and nurture to brain development, including evidence from the abilities of new-born babies, animal experiments, studies of individuals with damaged brain areas, twin studies and cross-cultural studies. |  |  |  |

**How can I improve?**

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**Revision Actions taken**

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