



YEAR 13 TERM 2

‘An ambitious curriculum that meets the needs of all’

Medium Term Planning - Topic: Homeostasis and the Kidney

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| Curriculum Intent | <p>Developing knowledge from GCSE Biology or GCSE Combined Science, pupils will be taught, following National Curriculum guidelines, the following this topic:</p> <ul style="list-style-type: none"> • Homeostasis • Excretion • Structure of the kidney • Ultrafiltration • Selective reabsorption • Role of the loop of Henle in reabsorption of water • Osmoregulation by ADH • Kidney failure and its treatment • Adaptations to different environments <p>Specified practical work</p> <ul style="list-style-type: none"> • Dissection of kidney |
| Skills/National Curriculum Links | |
| Spiritual, moral, social, and cultural development | <p>SMSC: Dialysis – challenges presented</p> <p>PSHE/British Values: n/a</p> <p>Skills Builder: Practical work, independent investigation, data handling and analysis</p> |
| Numeracy | Interpretation of graphs |
| Literacy | <p>Vocabulary Tier 2: excretion, bladder, dialysis, transplant</p> <p>Vocabulary Tier 3: homeostasis, negative feedback, positive feedback, osmoregulation, urea, deaminated, proximal convoluted tubule, distal convoluted tubule, afferent arteriole, efferent arteriole, bowman’s capsule, glomerulus, vasa recta, loop of Henle, collecting duct, ultrafiltration, selective reabsorption, secondary active transport, antidiuretic hormone, aquaporins, pituitary gland, transamination,</p> <p>Reading: Students are given opportunity to develop their skills in specified tasks that develop disciplinary literacy. Throughout the A Level Biology course they develop their understanding of the requirements of exam questions and the key terminology in questions. In addition, they read practical methodology and translate this to actions in laboratory tasks.</p> <p>Writing: Students construct answers independently and through class teaching. Their answers range from single word answers to the planning and writing of 9-mark “extended writing” tasks that require linking of multiple concepts from a topic or across topics. These often develop students’ ability to construct written evaluations of contrasting situations, or data, where the use of comparative connectives are required.</p> <p>Oracy: Students are regularly given the opportunity to practice their scientific vocabulary in class discussion, through choral response, pair or group discussion and in giving instruction to others during practical activities.</p> |
| Becoming future ready | <p>Careers/Employability: A Level Biology students from Crompton House progress on to a wide range of undergraduate degrees, degree apprenticeships and into work. Opportunities to develop effective communication skills, concise written work, following written and verbal instructions as well as extending their problem solving skills are all key skills identified by business leaders for future success.</p> |
| Adaptation | Throughout this topic, quality first teaching will provide adaptive teaching accessible to all students: |
| QFT/SEND Provision | <p>By product: Assessments have opportunities for students to achieve all grades, with structured questions and opportunities for development of extended writing for all abilities.</p> <p>By Intervention: by providing different levels of supervision and support in theory and in practical lessons.</p> <p>By Progressive Questioning: exploring pupils’ understanding through interactive dialogue.</p> <p>By Grouping: according to prior attainment, gender, social preference.</p> <p>By Task: Pupils are involved in the identification of targets which are meaningful to them and in the selection of an appropriate task to develop specific skills further.</p> <p>By Offering Optional Activities: In class or as homework, to extend learning.</p> <p>This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p> |
| Implementation | <p>To be able to:</p> <ul style="list-style-type: none"> • Explain the principles of homeostasis in terms of the stages involved in a feedback loop |

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| Curriculum Delivery | <ul style="list-style-type: none"> • Describe the structure of the kidney • Describe and explain the production of urine with reference to the processes of ultrafiltration and selective reabsorption • Explain the role of the loop of Henle and the counter-current multiplier mechanism in the reabsorption of water • Explain the role of the hormone ADH in osmoregulation • Describe some causes of kidney failure and methods of treating it • Explain why fish, birds, insects and mammals produce different excretory products • Explain how desert-living mammals have adapted to conserve water |
| Learning Outcomes (Knowledge) | <p>Red denotes interleaving; aspects of knowledge covered previously.</p> |
| Current learning to be developed in the future within: | n/a – one of the final topics taught |
| Assessment | Refer to assessment maps for formative and summative assessment opportunities. |
| Impact | Attainment and Progress – Refer to assessment results / data review documentation. |

