

Year 10	Homeostasis	Inheritance, Variation and Evolution
<p>Content- WHAT will be learned? What previous learning can be linked? Why this order/sequence?</p>	<p>Builds on Cell Biology and Organisation from Y9. And Bioenergetics in Y10. Links to Y8 Sound and Light and KS4 Physics on refraction.</p> <p>The bodies internal conditions must be regulated via our nervous system and a system of glands known as our endocrine system. Our nervous system produces electrical impulses carried through pathways to bring about quick changes which can protect us from harm.</p> <p>Knowledge of the human reproductive system and the associated hormones can be used to increase or decrease fertility.</p>	<p>Builds on Cell Biology Y9 and Ecology Y10. This unit has been brought later as there are some trickier concepts which are more suited to year 11 where ample reinforcement of Cell structure and biodiversity has already been covered. In this unit we cover different approaches to reproduction; sexual and asexual. We look at how changes in DNA can be inherited and the likelihood of inheritance can be predicted. Differences in DNA also leads to genetic disorders or in some rare cases, beneficial characteristics, which leads to natural selection and eventually evolution. Scientists can mimic this through selective breeding to make desirable characteristics more common. Controversially, scientists can also clone individuals or take genes from one organism and put them into another in genetic engineering.</p>
<p>Skills- What will be developed?</p>	<p>Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment.</p> <p>Evaluate methods and suggest possible improvements and further investigations.</p> <p>Numeracy skills below</p> <p>All 'working scientifically' skills also addressed by exam skills lessons.</p>	<p>Numeracy skills below</p> <p>Outline a simple ethical argument about the rights and wrongs of a new technology.</p> <p>Describe and explain specified examples of the technological applications of science.</p> <p>Give examples to show how scientific methods and theories have changed over time. Explain, with an example, why new data from experiments or observations led to changes in models or theories.</p> <p>All 'working scientifically' skills also addressed by exam skills lessons.</p>
<p>Key 'How'/'Why' Questions- What powerful knowledge will be gained? What areas/themes/concepts will be explored?</p>	<p>Key Concepts:</p> <p>Conditions inside the body have physical and chemical limits that need constant regulation via internal control systems. The body must monitor and constantly adjust these systems.</p> <p>How does the structure of the nervous system help it function and achieve quick responses.</p>	<p>Key Concepts:</p> <p>The characteristics of a living organism are influenced by its genome and its interaction with the environment</p> <p>Evolution occurs by a process of natural selection and accounts both for biodiversity and how organisms are all related to varying degrees.</p>

	<p>How do we investigate factors influencing human reaction time in an accurate and valid manner?</p> <p>How does the endocrine system and related hormones work to regulate other control systems, in particular our reproductive systems?</p> <p>How can we use our knowledge of hormones to manipulate human fertility and growth in plants?</p>	<p>New technologies may help to solve some of humanities challenges, as well as presenting new ones.</p> <p>How do characteristics get passed on from parents to offspring?</p> <p>How likely is a child to inherit a genetic disorder given information about the genetics of two parent?</p> <p>How can humans change the characteristics of organisms?</p>
<p>SEND- how will support be seen? Seating plans? Simplified questions?</p>	<p>Keyword box for each lesson, knowledge organisers for the unit. Scaffolded tasks and sentence starters in appropriate units. Off colour backgrounds and dyslexia friendly fonts to avoid visual overload. Glossary for overlearning key vocabulary. Checking in with students regularly in lesson.</p>	<p>Keyword box for each lesson, knowledge organisers for the unit. Scaffolded tasks and sentence starters in appropriate units. Off colour backgrounds and dyslexia friendly fonts to avoid visual overload. Glossary for overlearning key vocabulary. Checking in with students regularly in lesson.</p>
<p>Assessment- What? Why?</p>	<p>Summative: 2 x 12 mark assessment during the unit 1 x 25 mark assessment at the end of the unit Formative: regular plenary quizzes and starter retrieval practice to check understanding. Tiered assessment including triple tier as more extra triple content in year 11.</p>	<p>Summative: 1 x 12 mark assessment during the unit for combined, 2 x 12 markers for triple students. 1 x 25 mark assessment at the end of the unit Formative: regular plenary quizzes and starter retrieval practice to check understanding. Tiered assessment including triple tier as more extra triple content in year 11.</p>
<p>What memory for learning skills will be required- modelling? Concrete answers? Retrieval?</p>	<p>Modelling answers Concrete examples Interleaving activities Retrieval practice quizzes throughout Students creating their own revision quiz questions for peers</p>	<p>Modelling answers Concrete examples Interleaving activities Retrieval practice quizzes throughout Students creating their own revision quiz questions for peers</p>
<p>Literacy- reading, extended accurate writing and oracy opportunities</p>	<p>Spelling of scientific key vocabulary Reading challenging article on Phineas Gage for Triple</p>	<p>Spelling of scientific key vocabulary</p>
<p>Numeracy/computing skills</p>	<p>Calculation of rates by dividing by time. Choice of appropriate units for time and conversion of units. E.g. milliseconds to seconds</p>	<p>Fractions, percentage and probability from punnet squares. Translate data between graphical and numeric form. Direct proportion and simple ratios.</p>

	<p>Translate information between graphical and numerical forms; and extract and interpret information from charts, graphs and tables.</p> <p>Use a scatter diagram to identify a correlation between two variables.</p> <p>Interpreting observations and other data (presented in verbal, diagrammatic, graphical, symbolic or numerical form), including identifying patterns and trends, making inferences and drawing conclusions.</p>	<p>Translate information between graphical and numerical forms; and extract and interpret information from charts, graphs and tables.</p> <p>Interpreting observations and other data (presented in verbal, diagrammatic, graphical, symbolic or numerical form), including identifying patterns and trends, making inferences and drawing conclusions.</p>
Character development	<p>Students show kindness, acceptance and embrace a variety of family dynamics.</p> <p>Students can make healthy and well-informed decisions regarding their sexual health and fertility now and in the future.</p>	<p>Students show understanding, tolerance and mutual respect for individuals with different viewpoints and beliefs with regard to new technologies. Students can learn resilience and reassurance from the fact that even the most famous of scientists theories have been improved over time, much like their own learning.</p>
Equality/Diversity opportunities	<p>Use of IVF for different types of family units as a way of having children.</p> <p>Use of genetic screening to identify serious genetic disorders or disabilities in potential embryos for couple undergoing IVF.</p> <p>Arguments for and against this.</p>	<p>Discussion of prefixes homo and hetero (relevant to genetic key terms) and where students may have heard these before e.g. homosexual or heterosexual.</p> <p>Sex vs Gender when discussing XY or XX sex chromosomes.</p> <p>Debate on whether genetic engineering should be used to correct genetic diseases; does this make us as a society less tolerant of disability?</p>
Homework/Independent learning	<p>Quizzes and retrieval practice (see schedule). Links to myGCSEscience.com and use of knowledge organisers.</p>	<p>Quizzes and retrieval practice (see schedule). Links to myGCSEscience.com and use of knowledge organisers.</p>
CIAG coverage/links	<p>Geneticist</p> <p>Contraceptive nursing</p> <p>Counselling (students have to debate which families should receive IVF)</p>	<p>Geneticist</p> <p>Palaeontology</p> <p>Breeding technician (relates to selective breeding lesson)</p>