What will you be learning in Year 12 Science?

The topics you will study in Year 12 build on your knowledge and understanding of the GCSE content to provide the foundations and principles for further study

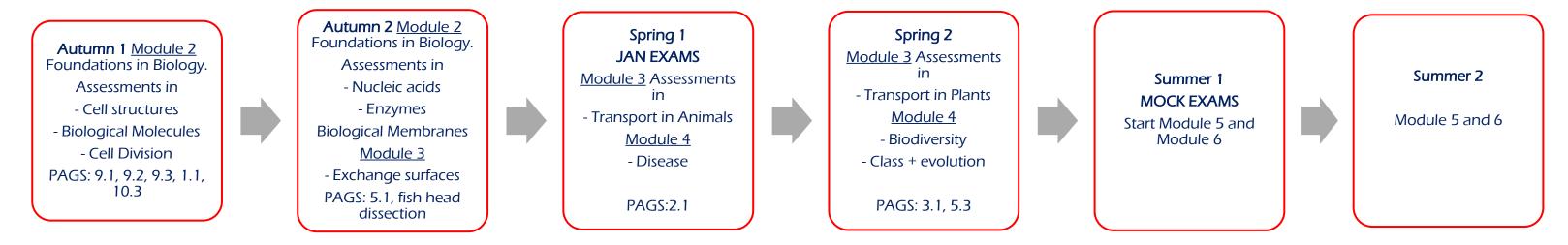
This foundation of knowledge, as well as the **practical skills learnt**, will equip you well. The skills you learn in each topic will prepare you for future career as well as to be curious, innovative, and independent scientists! Meiosis **Binary fission Adaptations** Exam: what progress have I \$ made so far this year? Variation and natural selection **Binominal** systems Classification Simpsons Index and evolution Proteins and Semi-Nucleuotide PAG 3.1 species Cell division, mitosis peptide bonds structure conservative PAG 5.1 Temp + <u>diversity</u> and meiosis DNA PAG 2.1 Heart mechanisms Sampling replication Xylem/phloem **Dissection** Exchange surface of enzymes Fluid mosaic methods^{*} distribution adaptations model PAG 10.3 Ras Lock & key / Blood and blood Properties of Movement of Xerophytes/ induced fit structures/tissues <u>mol</u> water molecules Hydrophytes Genetic Lipids and ester **Biodiversity** bonds 2.1.4. Enzymes 2.1.5 Biological 2.1.6. Cell 3.1.1 Exchange 3.1.2 Transport 3.1.3 Transport **Nucleotides** and Biological membranes surfaces in Animals . Glucose and glyco_sidic bonds Division in Plants Vaccines, **Nucleic Acid** medicine and antibiotics Pathogens Factors affecting Structure of Transcription & Coenzymes, Tissue fluid / PAG 1.1 Allium Non specific + permeability Fish head Heart structures, cofactors, translation lymph DNA, RNA, ATP Mitosis specific defense **PAG 5.3** dissection cardiac cycle Memory T/B Effects of prosthetic (phagocytes, **Potometer** temp, pH groups, cells, PAGS 9.1, 9.2, lymphocytes) Stem cells Immunity, inhibitors 9.3 Food tests Fish and insect autoimmune Plant defense disease Cells structures: prokaryotes, mechanisms Transpiration eukaryotes and translocation Oxygen and structures

Keeping a track of your progress: Your teacher will be assessing your progress informally every lesson. Your folder should be brought to every lesson, and this will be checked every half term for evidence of work and consolidation. You will have home-works on mathematical skills, projects and will be expected to consolidate every lesson. Record of assessments:

Prokaryotes **VS** Eukaryotes

Microscopes

carbon dioxide transport



The Big Picture—Intent: The first year of A level study provides students with a broad and balanced overview of the fundamental ideas and concepts in Biology. The course aims to develop a love of learning by discussing the detailed explanations of how biological organisms function. Deep dives into specific concepts are covered throughout the course.

Year 12

Biology

Content / Units	Skills	Knowledge	Prior—KS4	Next—Year 13
OCR A Biology H020 Development of practical skills Foundations in biology Exchange and transport Biodiversity, evolution and disease	AO1: develop knowledge and understanding of practical skills, cellular components, biological molecules, exchange surfaces and transport in plants and animals. Communicable diseases, biodiversity and evolution. Maths skills including statistical tests. A02: Application of knowledge and understanding A03: evaluation of data, practical methods, conclusions, graphical data	Develop knowledge and understanding of: Practical skills (planning, implementing, analysis and evaluation), Foundations of biology, which includes: cell structure, biological molecules, nucleotides and nucleic acids, enzymes, biological membranes, cell division, cellular diversity and cellular organisation. Exchange and transport, which includes: exchange surfaces, transport in animals and transport in plants. Biodiversity, evolution and disease, which includes: communicable diseases, biodiversity, classification and evolution.	Students have studied: Cells biology Organisation Infection and response Bioenergetics Homeostasis and response Inheritance, variation and evolution Ecology	Topics coming up: Communication and homeostasis, excretion, neuronal communication, hormonal communication, plant and animal responses photosynthesis, respiration, cellular control, patterns of inheritance, manipulating genomes, cloning and biotechnology, ecosystems, populations and sustainability.

Implementation	Marches Futures Links	Summative Assessment
Five 55 minute lessons per week, split between two teaching staff – one three times, the other, twice. Most tasks are completed independently, but there are opportunities for class discussions, paired discussions and small group practical work. Lessons and homework tasks also build initiative, research skills, retrieval practice, organisation, mathematical and literacy skills. Practical sessions are completed to help consolidate understanding, and to develop new skills and techniques. Many of these are PAG tasks and so count towards the practical endorsement at the end of the full A level course. Past paper questions are used throughout the topics to assess understanding. Mark schemes are also used to help stress the need to use A level specific terminology.	Links to careers and further studies are signposted throughout the course. These include university degrees in medical, health, veterinary, ecology subjects, also nursing and midwifery. Apprenticeship opportunities in health and social care, dental nursing, veterinary nursing, ecology. Practical work and PAGs give students opportunities to work collaboratively and develop their LORIC skills. There are explicit links throughout the course for students to evaluate how the subject matter relates to society and enables them to understand contemporary issues as responsible citizens. Independent study enables students to develop research skills and become responsible for closing knowledge gaps.	Each topic has an end of unitest which contains a mixture of multiple choice, short and long answer questions. The tests are made using past paper questions and contain a range of AO1, AO2 and

Impact:

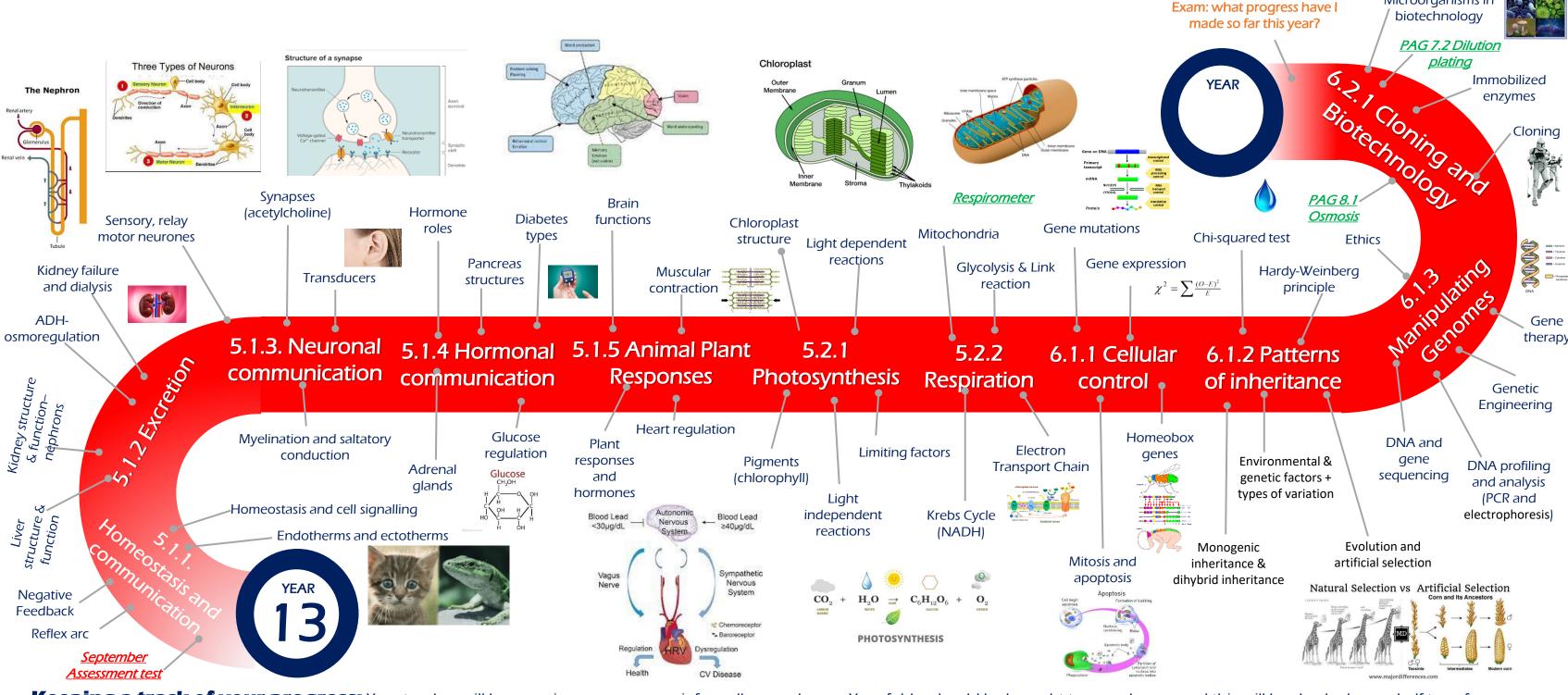
By the end of the Year students will be confident with the fundamental and more complex principles, knowledge and application of this knowledge.

They will be able to understand what they need to do in response to all exam style questions and LOR questions; they will be able to revise effectively as they head towards studying Science degrees. Thinking will have developed from GCSE level and links between any prior knowledge made with have been developed upon.

What will you be learning in Year 13 Science?

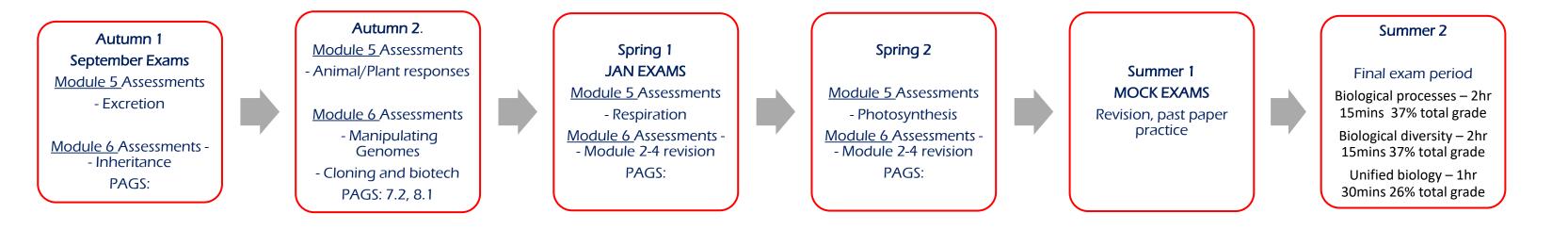
The topics you will study in Year 13 build on your **knowledge** and **understanding** of the **GCSE content and Year 12 work** to provide the foundations and principles for further study in science.

This foundation of knowledge, as well as the **practical skills learnt**, will equip you well. The skills you learn in each topic will prepare you for future career as well as to be curious, innovative, and independent scientists!



Microorganisms in

Keeping a track of your progress: Your teacher will be assessing your progress informally every lesson. Your folder should be brought to every lesson, and this will be checked every half term for evidence of work and consolidation. You will have home-works on mathematical skills, projects and will be expected to consolidate every lesson. Record of assessments:



The Big Picture—Intent: The second 60% of the Biology course builds on the foundations of the first year. It provides students with detailed knowledge and understanding of some more challenging concepts and through these explanations students develop a love of Biological concepts and refine their questioning skills taking a deep dive into communication, homeostasis, energy, genetics and ecosystems.

Year 13 Biology

Content / Units	Skills	Knowledge	Prior— Year 12	Next
OCR A Biology H420 Communication, homeostasis and energy. Genetics and ecosystems.	AO1: develop knowledge and understanding of practical skills; Maths skills including statistical tests. A02: Application of knowledge and understanding A03: evaluation of data, practical methods, conclusions, graphical data.	Develop knowledge and understanding of: Practical skills (planning, implementing, analysis and evaluation), Communication, homeostasis and energy which includes: excretion, neuronal and hormonal communication, plant and animal responses, photosynthesis and respiration. Genetics and ecosystems which includes: Cellular control, genetics, manipulating genomes, cloning and biotechnology, ecosystems and populations and sustainability.	Pupils studied practical skills, cellular components, biological molecules, exchange surfaces and transport in plants and animals. Communicable diseases, biodiversity and evolution. Maths skills including statistical tests.	Apprenticeships

Implementation Marches Futures Links **Summative Assessment** Five 55 minute lessons per week, split between two teaching staff – one three times, the Each topic has an end of unit Links to careers and further studies are signposted other, twice. test which contains a mixture throughout the course. These include university Most tasks are completed independently, but there are opportunities for class discussions, degrees in medical, health, veterinary, ecology of multiple choice, short and paired discussions and small group practical work. Lessons and homework tasks also build subjects, also nursing and midwifery. long answer questions. The initiative, research skills, retrieval practice, organisation, mathematical and literacy skills. Apprenticeship opportunities in health and social care, tests are made using past Practical sessions are completed to help consolidate understanding, and to develop new dental nursing, veterinary nursing, ecology. paper questions and contain skills and techniques. Many of these are PAG tasks and so count towards the practical Practical work and PAGs give students opportunities to a range of AO1, AO2 and endorsement at the end of the full A level course. work collaboratively and develop their LORIC skills. AO3 questions. Past paper questions are used throughout the topics to assess understanding. Mark There are explicit links throughout the course for Three exams: Biological schemes are also used to help stress the need to use A level specific terminology. students to evaluate how the subject matter relates to processes (2 hr 15 mins), A01 and A02 are embedded within the lessons with A03 tasks and discussions are covered society and enables them to understand contemporary Biological diversity (2hrs 15 as appropriate. issues as responsible citizens. mins) and Unified biology (1 Independent study enables students to develop hr 30 mins). research skills and become responsible for closing knowledge gaps.

Impact:

By the end of the Year students will be confident to pursue a Biology degree and relevant career areas. Practical skills and fundamental knowledge of the subject will be secure and they will have developed into complete Biologists.