

Biology

Brief Overview of the Course <i>(for further details, please see our Sixth Form Prospectus)</i>	
Exam Board: OCR Specification web link: https://www.ocr.org.uk/qualifications/as-and-a-level/biology-a-h020-h420-from-2015/ Module 1: Practical Skills (covered in Year 12 & 13 throughout the course)	
Topics Covered: Year 12 Module 2: Foundations in Biology • Biological molecules • Enzymes • Cell Structure • Biological Membranes. • Cell Division, Cell Diversity and Cellular Organisation Module 3: Exchange and Transport • Exchange surfaces • Transport in Plants • Transport in Animals Module 4: Biodiversity, Evolution and Disease • Variation, Classification and Selection • Biodiversity, Conservation and Preservation • Communicable diseases and the immune system	Topics Covered: Year 13 Module 5: Communication, Homeostasis and Energy • Nerves & Hormones • Animal & Plant responses • Excretion • Respiration • Photosynthesis Module 6: Genetics, Evolution and Ecosystems • Patterns of inheritance • Cellular control • Manipulating genomes • Ecosystems and Populations • Conservation and Sustainability Plus a three-day residential field trip.

Please follow the instructions in the boxes below. The aim of these activities is to introduce you to the study of Biology at Advanced Level by:

- reinforcing your core knowledge and understanding of your chosen subject;
- encouraging you to think more deeply about your subject;
- supporting you to develop a deeper understanding of and appreciation for your subject as an academic discipline.

Core Knowledge and Understanding

Please complete the following tasks. There are links below each question to help you discover the answers.

Task 1: Why is water such an important and unusual substance which is essential for life?

Try to summarise in under 500 words how the various properties of water make it a medium necessary and suitable to support the existence of life.

Link to support:

https://www.youtube.com/watch?v=HVT3Y3_gHGg

Task 2: Biological Molecules

Research and draw large clear diagrams of the structure of glucose, a triglyceride, an amino acid.

Task 3: Cell Structure:

Microscopy has changed hugely since the early models of the light microscope used by Anton van Leeuwenhoek and Robert Hooke. The development of the electron microscope has further enhanced our knowledge and understanding of cytology (the study of cells). The additional structures revealed by the electron microscope are referred to as cell ultrastructure

Produce **three posters** showing the ultrastructure of a:

- Plant Cell
- Animal Cell
- Prokaryotic Cell

You should hand draw the diagrams and add labels and your own annotations (do not just cut and paste). Your annotations should briefly explain the roles of the cell organelles including: the nucleus, cell surface membrane, mitochondria, chloroplasts, vacuoles, ribosomes, Golgi apparatus, centrioles, rough and smooth endoplasmic reticulum and lysosomes.

Links to support:

<https://www.stem.org.uk/resources/elibrary/resource/28508/secrets-cells-suitable-home-teaching#&gid=undefined&pid=1>

<https://www.thesciencehive.co.uk/cell-structure-a-level>

<https://www.youtube.com/watch?v=URUJD5NEXC8>

<https://learn.genetics.utah.edu/content/cells/>

Recommended Reading List and the Department's 'Top Pick' Title

As an A Level student, we want you to value academic endeavour (scholarship) and develop a thirst for learning in your chosen subject.

Please find the full subject reading list alongside our prospectus on the Sixth Form section of the STRS website here: [Sixth Form Prospectus • Sir Thomas Rich's School](#)
We would encourage you to explore as many of these titles as you can.

Our most highly recommended books that you read before September are:

Bill Bryson: *The Body: A Guide for Occupants*

Isabella Tree: *Wilding: The Return of Nature to a British Farm*

Steve Jones: *Y: The Descent of Men*

Other Recommended Activities

Please find below a selection of suggested additional activities that the department feel it would be useful for you to explore prior to starting the A Level course in September. In many ways, this could be the most important thing you can do between now and September and hopefully will serve to stimulate your love of Biology and desire to study it in further depth.

Pre-A Level Biology specific links:

There is a publication called **Head Start to A-Level Biology**, by CGP Books, which aims to bridge the gap between GCSE and A Level. You will find this a very useful book to work through. The link to this from Amazon is:

https://www.amazon.co.uk/s?k=cgp+head+start+to+a+level+biology&crd=X3HWKQ4F03MB&prefix=cgp+head+%2Caps%2C184&ref=nb_sb_ss_ts-doa-p_1_9

There are also a collection of Pre-A-Level Biology resources and activities (or links to them), which can be found at: <https://www.gcsepod.com/getting-ready-for-ks5/>

Ted talks (most are around the 5 minute mark so maybe you could try and watch one a day: <https://www.ted.com/talks?topics%5B%5D=biology&topics%5B%5D>

30 Animals That Made Us Smarter: interesting examples of how studying animals have allowed us to develop new engineering solutions. <https://www.bbc.co.uk/programmes/w13xttw7/episodes/player>

