

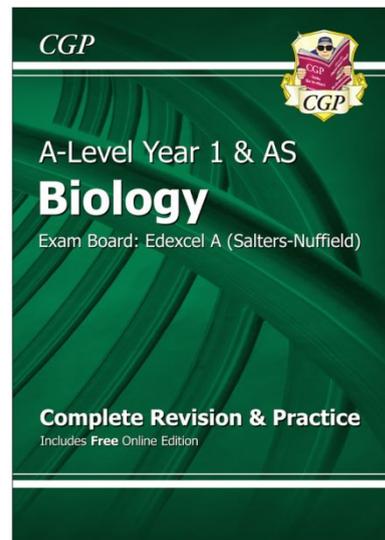
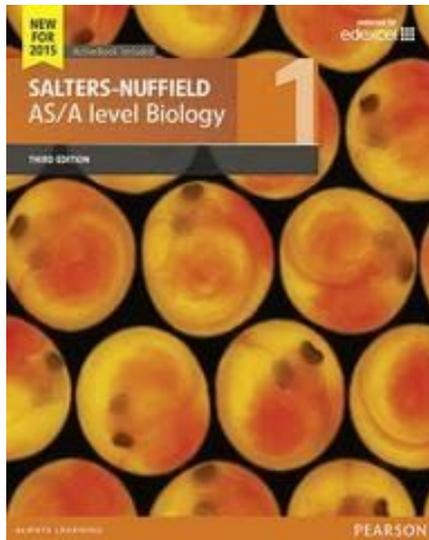


Step Up to Biology A Level

A guide to help you get ready for A-level Biology, including everything from topic guides to online learning resources.

“Whenever you feel sad, just remember that there are trillions of cells in your body and all they care about it **you.**”

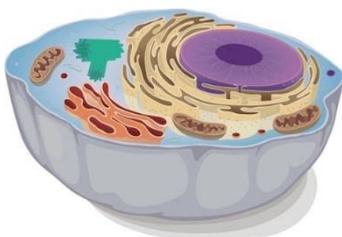
JarOfQuotes.com



At A Level, we study Edexcel A Salters-Nuffield.

The course includes three exam papers (each weighing 33.3%) on the following topics:

- **Topic 1: Lifestyle, Health and Risk**
- **Topic 2: Genes and Health**
- **Topic 3: Voice of the Genome**
- **Topic 4: Biodiversity and Natural Resources**
- **Topic 5: On the Wild Side**
- **Topic 6: Immunity, Infection and Forensics.**
- **Topic 7: Run for your Life**
- **Topic 8: Grey Matter.**





Course structure

The A Level Biology course is structured as follows:

Year 12	
Term 1	Topic 1: Lifestyle, Health and Risk Topic 3: Voice of the Genome
Term 2	Topic 2: Genes and Health Topic 4: Biodiversity and Natural Resources
Term 3	Topic 2: Genes and Health Topic 4: Biodiversity and Natural Resources Topic 5: On the Wild Side - Photosynthesis Topic 7: Run for your Life –Respiration & Muscles
Year 13	
Term 1	Topic 5 - On the wild side – climate changing, Adaptation Topic 7 - Run for your life – Homeostasis
Term 2	Topic 6 - Infection, Immunity and Disease Topic 7 - Run for your life – Exercise, performance enhancing drugs
Term 3	Unit 5: Topic 8 - Grey matter Structured Revision



Pre-Knowledge Topics

A level Biology will use your knowledge from GCSE and build on this to help you understand new and more demanding ideas. Complete the following tasks to make sure your knowledge is up to date and you are ready to start studying:

Cells

The cell is a unifying concept in biology; you will come across it many times during your two years of A level study. Prokaryotic and eukaryotic cells can be distinguished on the basis of their structure and ultrastructure. In complex multicellular organisms cells are organised into tissues, tissues into organs and organs into systems. During the cell cycle genetic information is copied and passed to daughter cells. Daughter cells formed during mitosis have identical copies of genes while cells formed during meiosis are not genetically identical

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/cells-and-organelles>

<http://www.bbc.co.uk/education/guides/zvjycdm/revision>

And take a look at these videos:

<https://www.youtube.com/watch?v=gcTuOpuJyD8>

<https://www.youtube.com/watch?v=L0k-enzoeOM>

<https://www.youtube.com/watch?v=qCLmR9-YY7o>

Task:

Produce a one page revision guide to share with your class in September summarising one of the following topics: Cells and Cell Ultrastructure, Prokaryotes and Eukaryotes, or Mitosis and Meiosis.

Whichever topic you choose, your revision guide should include:

Key words and definitions

Clearly labelled diagrams

Short explanations of key ideas or processes.

Biological Molecules

Biological molecules are often polymers and are based on a small number of chemical elements. In living organisms carbohydrates, proteins, lipids, inorganic ions and water all have important roles and functions related to their properties. DNA determines the structure of proteins, including enzymes. Enzymes catalyse the reactions that determine structures and functions from cellular to whole-organism level. Enzymes are proteins with a mechanism of action and other properties determined by their tertiary structure. ATP provides the immediate source of energy for biological processes.

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/biological-molecules-and-enzymes>

<http://www.bbc.co.uk/education/guides/zb739j6/revision>

And take a look at these videos:

<https://www.youtube.com/watch?v=H8WJ2KENIKO>

<http://ed.ted.com/lessons/activation-energy-kickstarting-chemical-reactions-vance-kite>

Task:

Krabbe disease occurs when a person doesn't have a certain enzyme in their body. The disease effects the nervous system. Write a letter to a GP or a sufferer to explain what an enzyme is.

Your poster should:

Describe the structure of an enzyme

Explain what enzymes do inside the body



DNA and the Genetic Code

In living organisms nucleic acids (DNA and RNA) have important roles and functions related to their properties. The sequence of bases in the DNA molecule determines the structure of proteins, including enzymes.

The double helix and its four bases store the information that is passed from generation to generation. The sequence of the base pairs adenine, thymine, cytosine and guanine tell ribosomes in the cytoplasm how to construct amino acids into polypeptides and produce every characteristic we see. DNA can mutate leading to diseases including cancer and sometimes anomalies in the genetic code are passed from parents to babies in disease such as cystic fibrosis, or can be developed in unborn foetuses such as Down's Syndrome.

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.bbc.co.uk/education/guides/z36mmp3/revision>

<http://www.s-cool.co.uk/a-level/biology/dna-and-genetic-code>

And take a look at these videos:

<http://ed.ted.com/lessons/the-twisting-tale-of-dna-judith-hauck>

<http://ed.ted.com/lessons/where-do-genes-come-from-carl-zimmer>

Task:

Produce a wall display to put up in your classroom in September. You might make a poster or do this using PowerPoint or similar your display should use images, keywords and simple explanations to:

Define gene, chromosome, DNA and base pair

Describe the structure and function of DNA and RNA

Explain how DNA is copied in the body

Outline some of the problems that occur with DNA replication and what the consequences of this might be.

Evolution

Transfer of genetic information from one generation to the next can ensure continuity of species or lead to variation within a species and possible formation of new species. Reproductive isolation can lead to accumulation of different genetic information in populations potentially leading to formation of new species (speciation). Sequencing projects have read the genomes of organisms ranging from microbes and plants to humans. This allows the sequences of the proteins that derive from the genetic code to be predicted. Gene technologies allow study and alteration of gene function in order to better understand organism function and to design new industrial and medical processes.

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.bbc.co.uk/education/guides/z237hyc/revision/4>

<http://www.s-cool.co.uk/a-level/biology/evolution>

And take a look at these videos:

<http://ed.ted.com/lessons/how-to-sequence-the-human-genome-mark-j-kiel>

<http://ed.ted.com/lessons/the-race-to-sequence-the-human-genome-tien-nguyen>

Task:

Produce a one page revision guide for an AS Biology student that recaps the key words and concepts in this topic. Your revision guide should:

Describe speciation

Explain what a genome is

Give examples of how this information has already been used to develop new treatments and technologies.



Assessment and marking

You will be assessed throughout the two years with periodic mock exams, end of year 1 exams, three terminal exam papers, all at the end of Year 13, and all core practical competencies.

Paper 1 - 2 hours – All AS and topic 5 and Topic 6

Paper 2 - 2 hours – All AS and topic 7 and topic 8

Paper 3 – 2 hours - All topics 1-8, core practical and pre-release.

Assessed work should always be stored in the front of your Biology folder (see below).

When you receive feedback, you should respond to it in green pen.

The Biology department uses a mixture of summative and formative feedback to help you improve your work. This means you may not receive a 'grade' or 'mark' on your work.

An example exam papers and the full specification can be located on the Edexcel website for your consideration:
<https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/biology-a-2015.html>

Your folder

You will be given a Lever Arch folder to store your work in. This should be where all your work is stored. You need to ensure that you:

- Use dividers
- Store all marked work in your folder
- Store all hand-outs and revision materials in your folder
- Your notes

