

## Bridging the gap: moving from GCSE to A-level Biology

You've decided to study Biology!! Good move 😊

Whether you have studied "Separate Sciences" or Combined Sciences" at GCSE, with AQA or an alternative examination board, will not determine your success at A-level and all the content in the specification will be delivered and supported by subject experts. However, if you would like to get a head-start with the subject, we have some suggestions of how you might use your time to prepare and some activities to increase your understanding from GCSE.

"Why did you choose to study Biology?" This is a simple question that is often asked by interviewers for University and job applications and is often answered with the response "because it fascinates me!". Excellent we all think... "So what have you done to pursue your fascination, other than turn up to class?" ... Hmmmmm.

### Get Involved...

Membership of organisations and experience of volunteering are excellent CV boosting boasts as well as being great fun and helping you learn what careers are out there in your areas of interest.

Thinking about a future in the life sciences? Then join BioNet

**Royal Society of Biology: BioNet** is for school or college students (14-19) who are interested in biology. Biology offers the key to solving many of the world's most pressing challenges: Food security, Alternative energy sources, Healthcare, Climate change.

<https://www.rsb.org.uk/membership/individual-membership/bionet>

Thinking about a future in conservation? Then join Cumbria Wildlife Trust

**Cumbria Wildlife Trust:** Wildlife has a special place in all our hearts. From owls and otters to badgers and bees, the wonders of nature delight us, inspire us, and boost our wellbeing. dedicated solely to the conservation of the wildlife & wild places of Cumbria.

<https://www.cumbriawildlifetrust.org.uk/join>

### Get Ahead...

Familiarise yourself with what you will be studying in your AQA A-Level Biology.

A list of AQA approved text books for this course is shown below. A digital version of a text book is provided to all students at the start of their A level Biology course. A paper copy can be a useful supplement to this.

[AQA | AS and A-level | Biology | Teaching resources](#)

A revision guide to accompany this text book is available and can be found for £7-£8 on online websites.

CGP provide a range of books for the AQA A Level Biology course, their books include a 'head start workbook' which bridges the gap between GCSE and A-level. This workbook can be downloaded to a kindle.

[Head Start to A-Level Biology \(with Online Edition\) | CGP Books](#)

We use the Kerboodle online learning suite to aid the delivery of the course. If you have a kerboodle login already, you can access the digital text book for A-level at any time. Perhaps try reading the

first section “Biological Molecules” (the building blocks of all living things, which is the topic we will start with in September). If you don’t have access, don’t worry, we will get you set up when you arrive. In the meantime, here are some reading materials and activities for you to have a go at.

### Read...

**“Reading is essential for those who seek to rise above the ordinary.” Jim Rohn.**

If you are truly inspired by a subject, you should be motivated to pursue it outside of lessons and the best way to do this is by reading.... Anything related to biology. Books, magazines, webpages even twitter (if you follow reputable science accounts). To give you some ideas, we have compiled a reading list of some favourite books and periodicals on Biology and Science. It isn’t essential that you read them all, but while you have got some extra time, try some of them.

The list is at the back of this document.

### Watch...

We are fortunate to have ready access to so many forms of information. Even some of the programmes intended for much younger audiences explain scientific concepts really well and in an entertaining way. Here are some ideas for what to watch...

Amoeba Sister’s Videos – short, fun, clear and to the point animations that are at an a-level appropriate level of detail.

[https://www.youtube.com/channel/UCb2GCoLSBXjml\\_Qj1vk-44g](https://www.youtube.com/channel/UCb2GCoLSBXjml_Qj1vk-44g)

There is really no substitute for David Attenborough’s original Life on Earth series to take you through evolution from the first cells, to the challenges of colonising sea, then land, then air; to the complexities of human communication.

<https://www.bbc.co.uk/iplayer/episode/b01qgr55/life-on-earth-1-the-infinite-variety>

Science is all about the probability that something will happen: that it would happen anyway due to chance and factors that increase the likelihood that it will happen. In biology there are many different factors that can influence organisms, which makes research particularly challenging.

<https://www.bbc.co.uk/iplayer/episode/p00yh2rc/tails-you-win-the-science-of-chance>

HHMI BioInteractive is transforming science education by bringing the power of stories into the classroom. Developed for high school and higher education educators, HHMI BioInteractive films motivate and inspire learning, engage students in the process of science, and instill curiosity and wonder about the living world. Each film runs about 10 to 30 minutes

<https://www.youtube.com/@biointeractive>

### Listen...

There are a wealth of science podcasts out there to level up your air pods! Check some of these out...

<https://www.bbc.co.uk/sounds/search?q=science>

<https://www.science.org/podcasts>

The top grades at A-level are gained through evidence of further reading and understanding. Now’s the time to start 😊

## **Reading list for A-level Biology.**

One of the things that I am asked by students, all the time, is *“what shall I read to improve my wider understanding of Biology?”*. The easy answer is anything that interests you...after all, you chose to do biology because you find it fascinating (I hope!)

However, I appreciate that there are thousands of potential articles and books that you could enjoy, but don't know where to start, so here is a list of books and magazines that are a great place to start, as recommended by the Biology staff.

### **Magazines and Journals**

#### **Biological Science review.**

We pay for a subscription in the Learning Resource Centre. It is specifically written for A-level Biology students, by current A-level teachers, examiners and biologists who are actively researching their specialist field. It has a wealth of informative articles, some even aimed at improving your ability to apply your knowledge in exams.

#### **New Scientist**

This is not specific to Biology, but is a great way of keeping abreast of the latest developments in science.

#### **Cosmos**

Again, not Biology specific, but a very good science magazine.

### **Books**

#### **Junk DNA, by Nessa Carey**

Our DNA is so much more complex than you probably realize, this book will really deepen your understanding of all the work you will do on Genetics.

#### **The Red Queen, by Matt Ridley**

Its all about sex. Or sexual selection at least. This book will really help your understanding of evolution and particularly the fascinating role of sex in evolution.

#### **Anatomy 101: A Crash Course in Anatomy and Physiology, by Kevin Langford**

This “pocket-sized companion” provides a succinct and accurate introduction to Human Anatomy and Physiology, starting with basic biochemistry and cell biology, before moving on to organ and system function.

#### **The Body: A Guide for Occupants, by Bill Bryson**

We spend our whole lives in one body and yet most of us have practically no idea how it works and what goes on inside it. The idea of the book is simply to try to understand the extraordinary contraption that is us.<sup>1</sup> Bill Bryson sets off to explore the human body, how it functions and its remarkable ability to heal itself. Full of extraordinary facts and astonishing stories *The Body: A Guide for Occupants* is a brilliant, often very funny attempt to understand the miracle of our physical and neurological make up.

#### **Bad Science, by Dr Ben Goldacre**

Ben Goldacre takes us on a hilarious, invigorating and ultimately alarming journey through the bad science we are fed daily by hacks and quacks. This book is essential reading for everyone, let alone scientists, which lifts the lid on the misleading, unethical and ultimately dangerous pseudoscience that we are fed by the media and (worse) social media.

#### **The Selfish Gene, by Richard Dawkins**

As influential today as when it was first published, *The Selfish Gene* has become a classic exposition of evolutionary thought. Professor Dawkins articulates a gene's eye view of evolution - a view giving centre stage to these persistent units of information, and in which organisms can be seen as vehicles for their replication.

### **The Magic of Reality, by Richard Dawkins**

Magic takes many forms. The ancient Egyptians explained the night by suggesting that the goddess Nut swallowed the sun. The Vikings believed a rainbow was the gods' bridge to earth. These are magical, extraordinary tales. But there is another kind of magic, and it lies in the exhilaration of discovering the real answers to these questions. It is the magic of reality - science.

### **Sapiens, by Yuval Noah Harari**

Earth is 4.5 billion years old. In just a fraction of that time, one species among countless others has conquered it: us. In this bold and provocative book, Yuval Noah Harari explores who we are, how we got here and where we're going.

### **The Epigenetics Revolution: by Nessa Carey**

At the beginning of this century enormous progress had been made in genetics. The Human Genome Project finished sequencing human DNA. It seemed it was only a matter of time until we had all the answers to the secrets of life on this planet.

### **The Origin of Species, by Charles Darwin**

In the *Origin of Species* (1859) Darwin challenged many of the most deeply held beliefs of the Western world. His insistence on the immense length of the past and on the abundance of life-forms, present and extinct, dislodged man from his central position in creation and called into question the role of the Creator. He showed that new species are achieved by natural selection, and that absence of plan is an inherent part of the evolutionary process.

### **The Book of Humans: The Story of How We Became Us, by Adam Rutherford**

We like to think of ourselves as exceptional beings, but is there really anything special about us that sets us apart from other animals? Humans are the slightest of twigs on a single family tree that encompasses four billion years, a lot of twists and turns, and a billion species. All of those organisms are rooted in a single origin, with a common code that underwrites our existence. This paradox - that our biology is indistinct from all life, yet we consider ourselves to be special - lies at the heart of who we are.

### **Guns, Germs and Steel: A short history of everybody for the last 13,000 years**

Why has human history unfolded so differently across the globe? In his Pulitzer Prize-winning book, Jared Diamond puts the case that geography and biogeography, not race, moulded the contrasting fates of Europeans, Asians, Native Americans, sub-Saharan Africans, and aboriginal Australians.

### **Smoking Ears and Screaming Teeth, by Trevor Norton**

*Smoking Ears and Screaming Teeth* is a hilarious celebration of the great eccentrics who have performed dangerous experiments on themselves for the benefit of humankind, written with all the wit, humour and eye for the beauties of nature - and machinery and scientific equipment - that have gained Trevor Norton a cult following and critical acclaim.

### **A Short History of Nearly Everything, by Bill Bryson**

*A Short History of Nearly Everything* is his quest to understand everything that has happened from the Big Bang to the rise of civilization - how we got from there, being nothing at all, to here, being us. Bill Bryson's challenge is to take subjects that normally bore the pants off most of us, like geology, chemistry and particle physics, and see if there isn't some way to render them comprehensible to people who have never thought they could be interested in science.