**Preparing for A Level Biology or want to just develop your Biology further?**

An understanding of Biology is crucial for everyday life. Whether it is in order to understand health and medical advice or protecting our planet from climate change through conservation measures. The role all aspects of BIolopgy play in our lives is ever increasing. Whether you plan to study Biololgy at A Level or if you are just interested in furthering your understanding of the what you have studied at GCSE, here’s some things you can do:

1. **Developing as a Biologist** – through general reading around / watching videos / listening to podcasts etc. to develop your knowledge and understanding

2. **Preparing for the A Level Course -** Starting to explore the topics and their foundations which will be studied in the A Level course.

To be a brilliant Biologist you need to develop your ability to think synoptically, being able to see the bigger picture and how everything begins to link together. Biology stretches from the microscopic to whole ecosystems. Biology is not just about studying cells or even whole organisms but the interactions at every level.

At GCSE you have covered a lot of the key concepts. A Level will now enable you to gain greater depth by exploring topics in greater detail but also encouraging you to see and explore the links between topics. Continuing to develop your numeracy and literacy skills is also key as Biology requires you to interpret data and communicate complex ideas clearly.

This guide has been designed for you to be able to dip in and out of, from looking at general issues and there significance, through to starting to explore some of the topics we will be looking at in Year 12 and 13 so you can do some valuable background reading.

**DEVELOPING AS A BIOLOGIST**

Below includes, a range of resources which provide a great way of staying inspired and engaging with all aspects of Biology.

**WEBSITES**

The Royal Society of Biology **-** <https://www.rsb.org.uk/students>

Welcome Trust – big pictures articles- <https://www.stem.org.uk/big-picture/resource-collection>

**READ**

**THE CONVERSATION.COM** <http://theconversation.com/uk> It provides up-to-date articles from academics and specialists in the field written in a way that is accessible to all, summarising key points in short but insightful articles.

**BBC NEWS** <https://www.bbc.co.uk/news> An excellent source of up-to-date articles – explore the key headings such as Science, as well as the UK, World and other stories.

**NEWSPAPER WEBSITES SUCH AS The Guardian** <https://www.theguardian.com/uk> **and iNews** <https://inews.co.uk/>

Many useful articles and logically ordered – keep an eye on the Environment, Science, Health stories in particular

**WATCH**

**Ameoba sisters** clips – available on You tube

**Secrete universe inside the cell** – showing on BBC 4 on 8th April then should be available on iPlayer

**Alice Roberts Don’t die young** – available on you tube especially, lungs, heart, kidney

<https://www.youtube.com/watch?v=v-NPxRjbNSY&list=PLXuOP0f9aQqhviWgtFXM-Ab98p-J6Rjdd>

**Understanding viruses** – very topical! <https://www.youtube.com/watch?v=8q68qHiKKYw>

**Secrets of the human body - survive** <https://www.youtube.com/watch?v=qVR7iuyG6ow>

**Severn worlds, one planet** or any other David Attenborough – available on BBC iPlayer

**Can Science make me perfect, with Alice Roberts** – Available on BBC iPlayer

**Royal Institute Christmas lectures**, especially Who am I 2018, Life fantastic 2013, Staying Alive 1998, **Chicken, egg and molecules 1980** –- <https://www.rigb.org/christmas-lectures/watch?utm_source=youtube&utm_medium=social&utm_term=description>

**The genius of Charles Darwin,** episodes on you tube <https://www.youtube.com/watch?v=F_IhC_5FfbE>

**Darwins dangerous idea**, episodes on you tube, lots of links to history and societal change <https://www.youtube.com/watch?v=Ic7MZtyMXok>

**24 hours in A&E Heart special** – on Channel 4 player <https://www.channel4.com/programmes/24-hours-in-ae-heart-special>

**LISTEN**

The cell – radio 4 <https://www.bbc.co.uk/programmes/b01mk8vh>

**PREPARING FOR A LEVEL BIOLOGY AT WASELEY HILLS HIGH SCHOOL**

At Waseley we follow the AQA Biology A Level. The course is divided into 8 units

1. Biological molecules
2. Cells
3. Organisms exchange substances with their environments
4. Genetic information, variation and relationships between organisms
5. Energy transfers in and between organisms
6. Organisms respond to changes in their internal and external environments
7. Genetics, populations, evolution and ecosystems
8. The control of gene expression

***In the first term you will cover the first two units. Miss Reilley starts with Biological molecules and Mrs Shepherd with Cells. These two units form the basis of Biology and are the foundation that all the other units build upon.***

**TO DO**

1. Complete the Maths in Biology research tasks at the end of this document.
2. Complete the Working Scientifically and Mathematical skills activities on Doddle – your log on details are YourName15, password – waseley
3. Practise your essay writing skills – you can choose one of the essay titles that follow or could develop one of your own. Use the essay planner to identify the key areas and then write your essay, focusing each paragraph on one of the key areas. Aim to write 500 words and fully reference your work.

Extension

1. Complete the AQA transition guide<https://filestore.aqa.org.uk/resources/biology/AQA-7401-7402-TG.PDF>

**Maths in Biology - Research tasks**

1. Find out what is meant by direct, indirect and inverse proportion.
2. Write a set of instructions about how to find the gradient of a line on a graph.
3. Find out how to calculate magnification.
4. What is a graticule and how can they be used in microscopy?
5. Write a list of units from nanometres up to metres, and include how to convert from one to the other.
6. Write a set of instructions about how to use standard form and also why we use it.
7. Produce 5 examples of how to calculate percentage, using examples of percentages in Science (e.g. percentage yield).
8. Find out about 3 examples of how Maths is used in Science in everyday life and within different careers.

**Essay skills – example titles**

1. Compare the structure of different types of cells (Eukaryotic, prokaryotic).
2. Explain the adaptations of specialised cells.
3. Describe how living things are classified.
4. Discuss the statement ‘ Viruses are not alive.’
5. Explain structure and function of blood and the circulatory system
6. Discuss the importance of plants.
7. Describe human impacts on a named ecosystem and how we can mitigate these changes.
8. Explain the different interactions that occur within an ecosystem.
9. Describe ways that pathogens can spread and the mechanisms the body has to prevent pathogens causing diseases.
10. Explain how vaccination works and the advantages and disadvantages of an immunisation programme.

Example essay planner.

Structure of an Artery

Structure of a Vein

Structure of a Capillary

Function of an Artery

Function of a Capillary

Double circulatory system

Role of red blood cells

Role of platelets

Role of plasma

Types of white blood cells

Function of a Vein

Basic functions of 2 types of white blood cell

Blank essay planner