

Summer Work: A Level Biology

In order to succeed at A Level you need to have the right learning behaviours. At Solihull Sixth Form College we use the VESPA Mindset system to help students develop & maintain these behaviours. Your summer work for A Level Biology is designed to prepare you for this.

Task 1: Vision

Write a paragraph introducing yourself and your goals to your A Level biology teacher. Make sure you include:

- Why you want to study A Level Biology
- What biology topics you find the most interesting
- What biology topics you find hard
- How do you learn best
- What you want to be doing in 6 years' time

Task 2: Effort

Biological Molecules

This will be preparation for the first week's lessons. You must produce a poster or a set of notes (with diagrams) showing the structure of various biological molecules. Answer the following questions in your poster or notes.

- 1) What is a **polymer** and **monomer**?
- 2) What is a **condensation reaction** and a **hydrolysis reaction**?
- 3) Draw out the structure of the following molecules:
 - a. **Alpha glucose & beta glucose**
 - b. **Triglyceride & phospholipid**
 - c. **Amino acid**
 - d. **DNA & RNA Nucleotides**

Task 3: Systems

Make sure you have all the correct equipment you need for your lessons:

- Pen and A4 paper (not in a spiral bound book)
- Scientific calculator
- 30 cm ruler
- Sharp pencil
- Pencil eraser
- Ring binder & dividers to keep all your notes, handouts, homework and assessment in
- A diary to keep a record of key dates

Task 4: Practice

Extended work on a topic of your choice

This piece of work must come from one of the following areas of Biology:

- Health & disease
- Genetics
- Cells
- Ecology

When you have done your research you need to present this in the most **creative** way you can. For example you may wish to do a **model, poster or PowerPoint**. Try and be **as imaginative and creative** as possible but still have the **science**.

It should be the equivalent to 2 sides of A4 writing (as if you were completing an essay)
Below are some ideas of what you might want to research.

Topic	Areas of study
Health & Disease	HIV & AIDS Diseases of the lungs How do the different COVID-19 Vaccines work?
Genetics	Mitosis & Meiosis How do DNA mutations affect proteins? How natural selection leads to evolution
Cells	Prokaryote & Eukaryote Structures The Ultrastructure of a cell Light vs Electron Microscopes
Ecology	The importance of biodiversity What is a species? The environmental issues concerning fertilizers

- Any A Level textbook or website will help you.

Task 5: Attitude

Over the summer keep yourself up to date with current biological research and read around the subject. Keep a record of what you have read/listened to so you can refer to it in the future e.g. university applications and job interviews.

- **Wider Reading:**
 - *The Immortal Life of Henrietta Lacks* by Rebecca Skloot
 - *Frankenstein's Cat* by Emily Anthers
 - *How To Make a Zombie* by Frank Swain
 - *The Vital Question: Why is life the way it is?* by Nick Lane
 - *Tamed: Ten Species that Changed our World* by Alice Roberts
 - *Junk DNA: A Journey Through the Dark Matter of the Genome* by Nessa Carey
 - *Life on the Edge: The Coming of Age of Quantum Biology* by Jim Al-Khalili & Johnjoe McFadden
 - *Other Minds: The Octopus and the Evolution of Intelligent Life* by Peter Godfrey-Smith
- **Science News:**
 - newscientist.com
 - nature.com
 - bbc.co.uk/news/science_and_environment
 - sciencedaily.com
- **Radio/Podcasts**
 - Inside Science: bbc.co.uk/programmes/b036f7w2
 - Infinite Monkey Cage: bc.co.uk/programmes/b00snr0w
 - Museum of Curiosity: bbc.co.uk/programmes/b00k3wvk
 - The Natural Selection: naturalselectionpodcast.weebly.com
 - Radiolab: wnycstudios.org/shows/radiolab
 - Ted Talks Science and Medicine podcasts.com/tedtalks-science-and-medicine

Make sure you bring your completed tasks to your first Biology lesson in September.