



5 hours in... Biology

Research shows that the most successful students (i.e. those that make the most progress and get the highest grades) are doing between 20 and 25 hours of independent study per week by the end of Year 13. That may seem a lot, but it's something that you would build up to over the course of your A-Levels. In Year 12, we're talking something more like 15 hours per week. This equates to roughly 5 hours of independent study per A-Level per subject.

Remember that your independent study is divided into three types – **Consolidation, Reactive and Proactive**. How this is divided may vary from week to week or between subjects but one approach could be:

Consolidation - 45mins

Straight after a lesson, or that evening / the following day you should reread your notes, talk a topic through with somebody, write summaries, mindmaps, flashcards e.g. for equations, definitions, facts you need to recall etc. You could watch a youtube video to consolidate the lesson. Miss Estruch's videos are excellent and cover the whole specification - <https://www.youtube.com/@MissEstruchBiology>. Use these videos throughout the two years, she also has lots of tips to help you. Also Seneca is useful to consolidate your learning - <https://senecalearning.com/en-GB/> (this may also sometimes be set for homework by your teacher) or cognito has revision topics and questions to consolidate <https://cognitoedu.org/course/b3-alevel-aqa>

Reactive – 3hrs

This is your 'homework'. Each of your teachers should give you at least 1 hours' worth of homework each week. This could be linked to current work, upcoming exams or preparation work for required practicals. This could include making notes for the next lesson, or completing questions on the current topic. It can also involve completing practice exam questions and finishing off any notes from the lesson. You will also need to write up required practicals.

If you find this takes more than 1 hour, that's fine, you can take this from the proactive phase (not from the consolidation phase though). Equally, if you find you finish your reactive work quickly, spend more time on your proactive work.

Proactive – 1hr 15mins

This is the section that will broaden and deepen your overall understanding of the subject you are studying. It will not necessarily involve work that has been set by your teacher, but instead it is about you doing the extra practice questions, reading articles, watching videos, TED talks etc. In biology, this might contain some of the following:

- Complete a set of practice past paper questions – available from the exam board website or use physics maths tutor to do questions on a particular topic area <https://www.physicsandmathstutor.com/biology-revision/a-level-aqa/> (1 hour)
- Use Seneca Learning to complete and add to class notes (if not used for consolidation) (30 min)
- Use cognito website to test your knowledge further (if not used for consolidation) (30 min)
- Use the specification checklist to evaluate your understanding (10 mins)
- Answer questions from your revision guide (30 mins)
- Answer questions from the online textbook – kerboodle (30 min)
- Creation of knowledge organisers (1 hour)
- "Read, Cover, Write and Check" sections of Knowledge organisers (30 mins)
- Watch a TED talk on a relevant topic (20 mins)
- Read a scientific magazine or newspaper report (see ideas below) (30 min)
- Read a biology based book (see below for ideas) (30 min)

Useful links

Additional Reading List for A Level Biologists

Magazines, Newspapers and journals

New Scientist

Scientific American

Nature

Science

Biological Sciences Review

British Medical Journal

Any scientific articles in newspapers (eg the Guardian on Wednesday)

Websites

<http://biologymad.com/master.html?http://biologymad.com/usefulwebsites/usefulwebsites.htm> - has links to a variety of different places you can find revision resources and study practice.

Other places for additional reading

- <http://www.ibiblio.org/virtualcell/index.htm> – An interactive cell biology site
- <http://www.accessexcellence.org/RC/VL/GG> – A web site showing illustrations of many processes of biotechnology
- <http://www.uq.oz.au/nanoworld> – Visit the world of electron-microscopy
- <http://www.dnai.org/a/index.html> – Explore the genetic code
- <http://nobelprize.org> – Details of the history of the best scientific discoveries
- <http://nature.com> – The site of the scientific journal
- <http://royalsociety.org> – Podcasts, news and interviews with scientists about recent scientific developments
- <http://www.nhm.ac.uk> – The London Natural History Museum's website with lots of interesting educational material
- <http://www.bmj.com> – The website of the British Medical Journal
- http://www.bbc.co.uk/news/science_and_environment - The BBC news page for Science and the Environment

Books

Research these on Amazon and select a few to read:

Richard Dawkins:

The Selfish Gene

The Blind Watchmaker.

Unweaving the Rainbow

Climbing Mount Improbable

The Ancestor's Tale

Steve Jones:

Y: The Descent of Men

In the Blood: God, Genes and Destiny

Almost Like a Whale: The 'Origin of Species' Updated

The Language of the genes

Matt Ridley

Genome: The Autobiography of a Species in 23 Chapters

The Red Queen: Sex and the Evolution of Human Nature

The Language of Genes

Francis Crick: Discoverer of the Genetic Code

Nature Via Nurture: Genes, Experience and What Makes Us Human

James Watson:

DNA: The Secret of Life

The Double Helix: Personal Account of the Discovery of the Structure of DNA

Lewis Thomas:

The Lives of a Cell: Notes of a Biology Watcher.

The Medusa and the Snail: More Notes of a Biology Watcher Barry Gibb: The Rough

Guide to the Brain (Rough Guides Reference Titles)

Charles Darwin: The origin of species

Armand Marie Leroi: Mutants: On the Form, Varieties and Errors of the Human Body

David S. Goodsell: The Machinery of Life

Ernst Mayr: This Is Biology: The Science of the Living World

George C. Williams: Plan and Purpose in Nature

Steve Pinker: The Language Instinct

Edward O Wilson: The Diversity of Life

Primo Levi: The Periodic Table

Richard Leaky: The Origin of Humankind

Bill Bryson: A Short History of Nearly Everything