



President  
Kennedy  
School  
Building Brighter Futures



# Biology

At Barr's Hill we are committed to ensuring science students receive top quality teaching and learning experiences. Students will be taught by experienced members of staff who are passionate about their subject. Students have the opportunity to learn new content but also to complete a number of core practicals to gain a practical endorsement. Alongside the course they will have opportunities and experiences to develop skills that will support them with their future aspirations.

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## Entry Requirements

To take A Level biology you need:

A grade 6 in triple Biology OR A grade 6,6 in The Biology Papers in Combined Science AND A grade 6 in Maths

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## Topics covered

### Year 12 AS topics

- Topic 1: Biological Molecules
- Topic 2: Cells, Viruses and Reproduction of Living Things
- Topic 3: Classification and Biodiversity
- Topic 4: Exchange and Transport

### Year 13 A2 topics

- Topic 5: Energy for Biological Processes
- Topic 6: Microbiology and Pathogens
- Topic 7: Modern Genetics.
- Topic 8: Origins of Genetic Variation
- Topic 9: Control Systems
- Topic 10: Ecosystems.

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## Skills you will develop on the course

Throughout this course you will have the opportunity to develop the following skills:

- Confidence in carrying out and evaluating practicals
- Gaining an understanding of the ethical implications in science
- Debating controversial topics
- Critiquing of scientific articles

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## Assessment

There are three external exams sat in May/June at the end of year 13 and 16 core practicals internally assessed throughout the two years.

### The external exams are:

- Paper 1: Advanced biochemistry, microbiology and genetics (30%)
- Paper 2: Advanced physiology, evolution and ecology (30%)
- Paper 3: General and practical principles in Biology (40%)

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## Educational trips, visits and wider experiences

We commit to organising visits for all students to Warwick or Coventry University where students will gain an insight into life as a Biology graduate, meeting university students and lecturers as well as conducting practicals in a university laboratory.

Students can apply to become a Biology Student Ambassador, where they can gain leadership skills and be involved with the organising and delivery of science clubs across all age ranges at Barr's Hill School. In the spring term, we participate in the British Biology Olympiad Competition, competing against biology students across the country. There is an opportunity to enter the Foxcroft Science essay competition and for eligible students the opportunity to do a Nuffield Research Placement over the summer between Year 12 and 13. All students will also be given the opportunity to do their own research projects in Biology and gain the silver and gold CREST Award, which is internationally acknowledged.

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## What type of students will do well on this course?

To do well on this course you need to be passionate about Biology, dedicated, demonstrate good time management and feel confident to seek support if necessary.

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## For more information contact:

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## Post-School Progression Opportunities

University	Entry requirements	Other similar courses offered
<b>University of Birmingham</b> Biological Sciences BSc (Hons)	AAB to include A Level biology and a second A Level science	Human Biology BSc (Hons) Human Biology with a year in professional placement BSc (Hons) Biological sciences with a study in Continental Europe BSc (Hons)
<b>Coventry University</b> Biomedical science	BBB to include A Level Biology	Biological and Forensic Science BSc (Hons) Human biosciences BSc (Hons) Pharmacology BSc (Hons)
<b>Oxford University</b> Biology BA	A*AA (with A* in Science or Maths and one other Science required)	Biology (MBiol) Human Sciences (MBiochem) Biochemistry BA (Hons)
<b>University of Plymouth</b> Marine Biology BSc (Hons)	120-144 UCAS Tariff points from a minimum of 3 A Levels including Biology	Conservation Biology BSc (Hons)
<b>Aberystwyth University</b> Biology and Climate Change	BBB to BBC to include A Level Biology	Marine and Freshwater Biology BSc (Hons) Plant Biology BSc (Hons) Animal Behaviour BSc (Hons) Biochemistry BSc (Hons) Environmental science BSc (Hons) Equine Science BSc (Hons)
<b>University of Bristol</b> Veterinary Sciences BVSc	AAA or A*AB to include chemistry and one other science	Veterinary Nursing BSc (Hons)

## Career Opportunities

### Microbiologist

#### What would I do?

- monitor and identify microorganisms
- track microorganisms in a range of environments
- monitor and assess samples from a range of sources
- follow regular sampling schedules within a specific environment
- use a variety of identification methods, including molecular techniques, to test samples
- develop new techniques, products and processes
- develop and plan methods to prevent the spread of disease
- develop and register new medicines, vaccines, diagnostic tests and pharmaceutical products
- plan, implement and evaluate new products in clinical trials
- collect samples from different types of environments, such as agricultural sites
- develop products such as enzymes, vitamins, hormones and antimicrobials
- grow microbial cultures, e.g. for use in the food and drink industry or in agriculture
- work with specialist computer software to undertake studies and research
- manage and oversee laboratory work.

**Salary: Starting:** £32,000

**UK average:** £40,000 to £50,000

**Routes in:** Bachelor's degree in Biology, biomedical science

### Pharmacologist

#### What would I do?

- design, plan and conduct controlled experiments and/or clinical trials to improve understanding of a drug's activity
- use computers, high technology measuring systems and other sophisticated equipment to collect, analyse and interpret data
- apply and develop the results of research to work through a variety of applications, such as new products, processes, techniques and practices
- draw up proposals for future developmental tests
- organise and oversee tests of new drugs and medicines, ensure quality control and secure approval for their use
- liaise with regulatory authorities to ensure compliance with local, national and international regulations
- plan, coordinate and supervise the duties of other technical staff and train or mentor early-career pharmacologists.

**Salary: Starting:** £15,285

**UK average:** £40,000

**Routes in:** Bachelor's degree in Biology, Biomedical Science or Biochemistry

### Genetic Counsellor

#### What would I do?

- manage your own caseload of patients - through face-to-face interactions, over the phone and via video (virtual clinics)
- take and interpret family and medical histories to calculate the risk of condition occurrence or recurrence
- assess which genetic tests are most appropriate for each patient
- order genetic tests and arrange medical and/or diagnostic testing of patients as well as testing of relatives
- interpret genetic tests and explain them in easy to understand language to patients and their relatives
- educate patients about inheritance patterns, testing, management, prevention, resources and research
- use counselling skills to promote informed choices and help patients adapt to the risk or condition
- refer patients for appropriate screening relating to their condition
- deal with psychological and ethical issues raised by individuals and their families
- keep patient records and write letters to patients
- work with other medical and healthcare staff as part of a multidisciplinary team of genetic consultants, clinical scientists and other consultants to ensure appropriate follow-up of patients.

**Salary: Starting:** £31,000

**UK average:** £47,000 - £90,000.

**Routes in:** Bachelor's degree in Biology, Biomedical Science