

Jesus College, Oxford



Subject Notes: BIOLOGY

Academic Staff

Prof Graham Taylor is the Peter Brunet Tutorial Fellow in Biological Sciences at Jesus College. He is the course convenor for Animal Biology, and teaches a range of topics, including vertebrate and invertebrate diversity, animal behaviour, sensory ecology, biomechanics, and quantitative methods. His research focuses on animal flight and he has a strong interest in evolutionary biology and paleobiology. Some of these research interests are outlined in his book *Evolutionary Biomechanics: Selection, Phylogeny, and Constraint* (OUP, 2014).

Dr Berta Verd is the Associate Professor of Computational and Theoretical Biology at the Department of Zoology and Tutorial Fellow in Biological Sciences at Jesus College. Her group studies vertebrate embryos, in particular those of cichlid fishes, to understand how developmental processes evolve to give rise to phenotypic diversity. Her expertise spans the fields of evolutionary and developmental biology and mathematical biology, with longstanding interests in microscopy, data-driven quantitative methods and machine learning.

About the Course

Biology at Oxford is a single honours degree course taught jointly by the Departments of Plant Sciences and Zoology. The course combines traditional core topics, such as animal and plant evolution and systematics, with modern developments and techniques in all spheres of biology, from the molecular and cellular to the whole organismal and ecological. It makes full use of Oxford's major research expertise in all these areas, and one of the course's major strengths is the fundamental association between teaching and research. We believe that the focus on biology in depth over three or four years, in combination with the tutorial system and world-class scientific research, provides a degree course that is second to none.

Biology at Oxford offers students the choice of leaving the course after three years and graduating with a BA, or continuing to a fourth year and graduating with an MBiol. Progression to the MBiol is contingent on satisfactory academic performance in the first three years. In both streams, you will spend the first year encountering the full range of biology, developing an understanding of the integration between the different levels of organisation and discovering, perhaps to your surprise, the similarities between some of the laws governing interactions between molecules, cells, individuals and even populations. In the second year the depth of material covered increases in preparation for the third year, when you will be able to specialise, pursuing the latest research, both pure and applied, in those subjects that interest you most. The fourth year consists of an extended project, which can be lab or field based, plus advanced research skills training. Recent changes to the course structure have placed additional emphasis on emerging topics relevant to society such as GM crops, bio-fuels, stem cells and ageing.

1st Year: The first year of the course integrates three major themes taken by all students: Diversity of Life, How to Build a Phenotype, and Ecology and Evolution. Each is examined at the end of the first year. Data Handling forms a fourth strand, but as a foundation course that is not examined at the end of the year. In the first year, all practicals are compulsory. They are not necessarily linked to lectures, but focus on providing practical skills relevant to modern biology, from the cellular and molecular to the ecological and taxonomic. There is a one-week residential field course to West Wales in the summer term.

2nd Year: In the second year, students choose three themes from the four on offer: Genomes and Molecular Biology, Cell and Developmental Biology, Behaviour and Physiology of Organisms, and Ecology

and Evolution. Students may attend lectures in all themes. Skills training takes place through practical and quantitative practicals offered throughout the year, as well as extended one and two week specialist courses offered at the end of the second year. It is possible to attend and be examined in Supplementary subjects in your second year. Currently on offer are Chemical Pharmacology, History and Philosophy of Science and Quantum Chemistry.

3rd Year: The themes taught in the second year will extend into the third year, but the degree of specialization will increase as we move yet further towards research-led teaching. Students will be expected to select at least four of the eight specialist options offered. These are nested within the four major themes introduced in the second year. In addition, and where relevant, the content will include a greater focus on applied questions and global challenges. Skills training will continue, with a focus on learning to engage with and critique the scientific literature.

4th Year: In the optional fourth year, students undertake advanced skills training and an extended research project, representing an opportunity to engage in in-depth primary research. The topic may be the student's own idea, or one chosen from suggestions and discussions with members of the departments. Students carry out practical research, either in the lab or field, analyse data using rigorous scientific method and conventions, and write a report. The level expected is similar to early stage graduate work and the results from many of these projects have been published in scientific journals – an early chance to get into print! The breadth of topics is vast; recent examples range from how embryonic cells differentiate into nerve cells, to the impacts of marine protection on coral reef diversity.

Course Assignments: During their third year all undergraduates undertake one extended essay or another piece of written work, and one oral presentation plus a written abstract, both encompassing a critique and synthesis of a chosen research topic. There is complete freedom to choose the appropriate topic, and any subject within the areas covered or touched upon by any of the modules is eligible, but the format of the assignment will be specified by the particular theme.

Oxford is extremely well endowed with a whole variety of facilities of enormous value to our staff and students. These include the University Museum of Natural History, the first purpose-built museum of its kind in the country; the Botanic Garden and Harcourt Arboretum, which include a national reference collection of 7,000 different types of plants; the Fielding Druce Herbarium, which contains some of the oldest and most important botanical collections in the UK; and Wytham Woods, which is one of the best studied broadleaved woodlands in the world. Also based at Wytham is the University Farm, now managed by the Food Animal Initiative (FAI), a business whose aim it is to turn animal welfare benefits into commercially viable systems and thereby to improve farm profits and ethical standards in the farming industry. All are used for teaching in one part of the course or other, and biology students are encouraged to use these facilities to the full, either for serious work, or simply for pure enjoyment.

Joint Schools

There are no Joint Schools for Biology.

Admissions

Six places are typically offered to read Biology, among a total College entry of about 100 undergraduates. The College accepts pre- and post- A-Level candidates without preference; International and European Baccalaureates, and other comparable international qualifications, are also welcome. A strong academic record in biology is essential, preferably supported by any of Mathematics, Physics, Chemistry, Geography, or another science subject. Combinations of other subjects with Biology will also be considered and judged on their individual merits: some of our most gifted students have been those with A-level Biology in combination with other, non-science subjects such as History or English.

The deadline to submit your application via UCAS is 15 October 2021. There is no written test and tutors will not request written work from the candidate's school or college prior to interview.

Offers made to candidates will be conditional upon A-level results (A*AA including Biology and the A* must be in a science or Mathematics) or equivalent qualifications. Candidates for deferred entry will be considered, but you should be aware that applicants who are offered deferred places must be among the very strongest of their cohort. In some cases, an applicant for deferred entry may be offered a place for non-deferred entry instead.

The interviews are designed to enable you to show your enthusiasm for biology, your aptitude to study and your ability to think and use information to construct your own opinions. We are not testing your factual knowledge but your ability to analyse and understand whatever facts you have encountered up to that time – including new pieces of information that we may give you at interview.

If you express an interest in a particular aspect of biology, either on your UCAS application form or at interview, then be prepared to talk about it in an intelligent and informed manner. The interview process is rigorous but sympathetic, so that you can show us your best. The specific selection criteria are given on the Biology web site (<https://www.biology.ox.ac.uk/undergraduate-study#/>).

Postgraduate Studies and Careers

Having spent three or four years exposed directly to original ideas and being encouraged to develop their own, Oxford biology graduates very often go on to become top scientists themselves, or successful professionals in other fields. Many take up careers in industry or commerce, where a broad understanding of scientific processes and complex systems are excellent training for a business environment. Others opt for school teaching with a Postgraduate Certificate in Education and yet others make careers in scientific filmmaking, publishing and journalism.

About a third of Oxford biologists continue studying biology, either by doing research towards a doctorate or by postgraduate training in applied fields such as plant protection, forestry, epidemiology, applied entomology or ecology. There are three branches of Biology at Postgraduate level: Biochemistry, Plant Sciences and Zoology. Graduate research students form one of the largest groups within the Faculty, numbering in excess of 100 during any academic year.

Further Information

A booklet about Biology at Oxford is available from the:

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Department of Plant Sciences, South Parks Road
Oxford
OX1 3RB*

Email: undergraduate.enquiries@biology.ox.ac.uk
Departmental website: <https://www.biology.ox.ac.uk/#/>

Admissions information can be found at <https://www.ox.ac.uk/admissions/undergraduate/courses-listing/biology>

Contact details

If you have any questions about our entrance requirements, or about applying to study at Jesus College, please contact the Admissions Officer:

Tel: 01865 279721
Email: admissions.officer@jesus.ox.ac.uk
Web: www.jesus.ox.ac.uk/study-here

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