

Biologist

Introduction

Biologists study all living things, from plants and animals to micro-organisms, and how they relate to each other and to their environment. Many biologists use their findings to solve problems or develop new products and processes. Biology is a broad subject and there are many specialisms within it.

Work Activities

Specialisms within biology include human biology, other animals (zoology), plants (botany), microbiology, biotechnology, genetics, immunology and biomedical science.



As a Biologist, you may be mainly laboratory-based. However, depending on the area you work in, you might also spend time outside the laboratory, doing fieldwork to collect samples or monitor experiments.

In the laboratory, you'll design and set up experiments, measure and observe change, record results (often using statistics and computer packages) and analyse and display results using a variety of charts, graphs, models and reports (again, using computer software).

You will use many techniques and technologies in your work. These range from making observations with the naked eye to studying micro-organisms by using electron microscopes, and from designing complex individual experiments to testing thousands of samples very quickly using automated testing equipment.

Biologists are involved in either pure or applied research. Pure research, which usually takes place in universities, is the development of knowledge to find out why things happen and to test theories. Applied research is to discover how biology can solve problems, such as finding a new drug to treat disease, improving crop yields, managing pollution and protecting endangered species.

Biological research is at the heart of many issues affecting society today, including GM crops, using genes to tackle disease, and understanding how to control infections like MRSA.

As a Research and Development Biologist, you will work in a university, research centre or maybe industry - especially in pharmaceutical, biotechnology and agrochemical companies.

Testing over a long period of time is an important part of research and development work. For example, it takes an average of 12 years to develop a new drug, from applying for a patent to the drug becoming available in pharmacies.

Whilst you may spend time working alone, either in the laboratory or during fieldwork, your work is likely to bring you into contact with other types of Scientist (Chemists and Physicists) and with Biologists who have a different specialist knowledge from your own (such as Zoological Scientists, Ecologists, Botanists and Biotechnologists).

As a Biologist, you will often lead a team of Technicians, who are responsible for the day-to-day running of the laboratory.

Apart from research and development, there are also Biologists in education, researching and lecturing in universities and teaching in schools and colleges.

Biologists also work in science communication, as Demonstrators in science centres, museums and nature centres, and in the media, for example, as Science Magazine and Newspaper Journalists.

Being able to read, write and speak Welsh may be an advantage when you're looking for work in Wales.

Personal Qualities and Skills

To become a Biologist, you'll need:

- analytical skills, an enquiring mind and the ability to think logically

- a thorough and methodical approach to your work
- organisational skills to plan and carry out experiments
- the ability to explain results clearly and concisely, including in written reports
- teamwork skills
- communication skills
- the ability to use a variety of laboratory equipment
- strong number skills to produce statistics and other numerical data
- the ability to learn and follow safety procedures

As a Biologist, you must also be willing to keep up to date with advances in your specialist area, for example, by reading scientific journals, becoming a member of a professional body like the Society of Biology or going to conferences.

Pay and Opportunities

Pay

The pay rates given below are approximate.

- Starting: £27,500 - £30,000
- With experience: £35,000 - £41,000
- Senior Biologists earn £44,500 - £50,000

Hours of work

You will usually work 35-39 hours a week, Monday to Friday. However, you might have early starts, late finishes, shifts and weekend work, for example, as deadlines approach.

Where could I work?

Employers throughout the UK are companies in the pharmaceutical and agrochemical industries, and in industrial biotechnology.

There are also opportunities in the NHS, and in local and national government departments and agencies, and research councils. Or you might work in university research and teaching posts.

Opportunities for Biologists occur in towns, cities and rural areas throughout the UK.

Where are vacancies advertised?

Vacancies are advertised in science magazines such as New Scientist (which also posts jobs on its website), on specialist recruitment websites, and in national/local newspapers.

Social media websites, such as LinkedIn, Twitter or Facebook, are a great way to network, find vacancies and get in contact with possible employers. Make sure that your profile presents you in a professional manner that will appeal to potential employers.

Take a look at our General Information Article 'Finding Work Online'.

GreenJobs is a job board aimed at people interested in green careers:

www.greenjobs.co.uk/browse-jobs/biology-jobs/

Entry Routes and Training

Entry routes

Most entrants have at least a first (undergraduate) degree, either in a general biology subject (such as biological

science or applied biology) or in one of the very many specialist areas, such as zoological science, biotechnology, biomedical science, ecology or botany.

A great way to get into this career is through an internship. Take a look at our information article 'Internships', for more details.

The course content for general degrees varies depending on the university, although core subjects usually include anatomy, physiology and biochemistry, and the behaviour and ecology of animals and plants. Mathematics, statistics and computer studies are often supporting subjects.

Later on in the course, you'll usually be able to specialise in particular areas of biology, such as genetics, microbiology, immunology and biochemistry.

Sandwich degrees enable you to spend a year in industry, for example, with a pharmaceutical or biotechnology company.

Some universities offer degree courses with a foundation year. This is an extra year for students who don't have the specified science A levels for entry.

Entry might also be possible with an HND or foundation degree, although this will usually be into a technical-level post.

A Higher Level Apprenticeship is also a great place to start. Take a look at our information article 'Apprenticeships – How do I apply', for more details about applying for apprenticeship positions.

Many people with general first degrees go on to take specialist postgraduate MSc degrees or undertake research towards an MPhil or PhD.

Some employers ask for a postgraduate qualification, and you'll usually need one to enter a research post in higher education or a research centre.

Training

You'll have on-the-job training in laboratory techniques and procedures, specialist equipment and software. Some employers enable graduates to gain a postgraduate qualification or technicians to complete a degree while working.

Work Experience

Previous experience working in industrial work placements or having relevant scientific fieldwork would be really useful for this career.

Progression

With a general degree such as biology or bioscience, you can progress to specialise in a very wide variety of areas, including zoological science, botany, microbiology, genetics and immunology. You might need a postgraduate qualification to enter posts in some specialist areas.

Progression within a career could be into a supervisory or management post.

The Society of Biology offers Chartered Status (CBiol) to Members and Fellows of the Society with a Masters-level qualification or equivalent, who can also demonstrate the necessary professional competencies and a commitment to continuing professional development. Please see the Society's website for more information.

Qualifications

To enter a degree course in biological science, the usual minimum requirement is:

- 2/3 A levels where biology is usually essential and you might need at least one other science subject
- GCSEs at grade C/4 and above in your A level subjects
- a further 2/3 GCSEs at grade C/4 and above where either English or maths, or both, can be specified

Some universities ask for chemistry if you don't have this at A level.

Alternatives to A levels include:

- BTEC level 3 qualifications
- the International Baccalaureate Diploma

To get onto a Higher Level Apprenticeship, you will need at least two A levels, or an Advanced Level Apprenticeship.

Some universities accept the Welsh Baccalaureate as equivalent to 1 A level.

Adult Opportunities

Age limits

It is illegal for any organisation to set age limits for entry to employment, education or training, unless they can show there is a real need to have these limits.

Skills/experience

Some entrants have gained skills during industrial work placements or relevant scientific fieldwork.

Courses

If you don't have the qualifications needed to enter a degree, foundation degree or HND course, you might be able to start one after completing an Access course, for example, Access to Science. You don't usually need any qualifications to enter an Access course, although you should check this with the course provider.

A foundation year before the start of a science degree or HND is available at some universities and higher education colleges for students who don't have the science A levels usually needed for entry.

The Open University offers a BSc degree in Natural Sciences, by distance learning.

Funding

Funding for postgraduate study and research is available, through universities, from the Biotechnology and Biological Sciences Research Council (BBSRC).

Further Information

Contacts

- **Civil Service Jobs**
Website: www.civilservice.gov.uk/jobs
- **GreenJobs**
Email: info@greenjobs.co.uk
Website: www.greenjobs.co.uk
- **New Scientist**
Publisher: Reed Business Information Ltd
Email: ns.subs@quadrantsubs.com
Website: www.newscientist.com
- **Open University (OU)**
Tel: 0845 3006090
Website: www.open.ac.uk
- **Biotechnology and Biological Sciences Research Council (BBSRC)**
Address: Polaris House, North Star Avenue, Swindon SN2 1UH
Tel: 01793 413200

Email: webmaster@bbsrc.ac.uk
Website: www.bbsrc.ac.uk

- **Earthworks-jobs.com**
Website: www.earthworks-jobs.com
- **Genetics Society**
Address: c/o Portland Customer Services, Commerce Way, Colchester CO2 8HP
Tel: 01206 796351
Email: theteam@genetics.org.uk
Website: www.genetics.org.uk
- **Royal Society of Biology**
Address: Charles Darwin House, 12 Roger Street, London WC1N 2JU
Tel: 020 7685 2550
Email: info@rsb.org.uk
Website: www.societyofbiology.org
- **Natural England**
Address: Foundry House, 3 Millsands, Riverside Exchange, Sheffield S3 8NH
Tel: 0845 6003078
Email: enquiries@naturalengland.org.uk
Website: www.naturalengland.org.uk
- **Countryside Jobs Service (CJS)**
Address: The Moorlands, Goathland, Whitby, North Yorkshire YO22 5LZ
Tel: 01947 896007
Email: ranger@countryside-jobs.com
Website: www.countryside-jobs.com
- **Countryside Management Association (CMA)**
Address: Writtle College, Lordship Road, Writtle, Chelmsford, Essex CM1 3RR
Tel: 01245 424116
Email: cma@writtle.ac.uk
Website: www.countrysidemanagement.org.uk
- **Natural Resources Wales**
Welsh enquiries
Address: Ty Cambria, 29 Newport Road, Cardiff CF24 0TP
Tel: 0300 0653000
Email: enquiries@naturalresourceswales.gov.uk
Website: naturalresourceswales.gov.uk
- **Cogent Skills**
Science industries
Address: Unit 5, Mandarin Court, Centre Park, Warrington, Cheshire WA1 1GG
Tel: 01925 515200
Website: www.cogent-ssc.com
- **Planet Science**
Publisher: Tinopolis
Website: www.planet-science.com
- **Careers Wales - Welsh Apprenticeships**
Tel: 0800 028 4844
Website: ams.careerswales.com/
- **People Exchange Cymru (PEC)**
Public sector recruitment portal for Wales
Email: peopleexchangecymru@gov.wales
Website: www.peopleexchangecymru.org.uk/home

Related Careers

- Biochemist
- Materials Scientist
- Biomedical Scientist
- Astronomer
- Biotechnologist
- Botanist
- Analytical Scientist
- Analytical Chemist
- Colour Technologist
- Ecologist
- Forensic Scientist
- Biology Laboratory Technician
- Chemistry Laboratory Technician
- Physics Laboratory Technician
- Marine Biologist
- Microbiologist
- Acoustician
- Zoological Scientist
- Toxicologist
- Clinical Research Associate
- Process Development Technologist
- Soil Scientist
- Laboratory Technician
- Scientist
- Physicist