

BIOLOGY

What is a biologist?

Biology is the study of life, from the simplest organism to the complexities of the human species. A biologist studies the interaction of biological systems with the environment and focuses on applying biological concepts to the solution of practical problems.

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What do they do?

Biology is a broad and multi-faceted discipline with many branches such as genetic engineering, molecular biology, animal physiology, genetics, ecology, marine science, zoology, environmental biology and forensic science. A zoology degree involves the study of aspects of animal science, ranging from structural and physiological to behavioural and environmental. Zoology provides fundamental knowledge relating to three areas of concern to society, namely the environment and its conservation, food production and human and animal health. Botany encompasses all aspects of plant biology, from molecular biology to ecosystems, from the smallest green unicellular organisms to the tallest forest trees. Molecular biology and genetics involves the study of all aspects of the cell and the processes it undertakes. Genetics is a fascinating and topical discipline which covers exciting new developments such as genetic engineering, transgenic animals (containing genetic material

transferred from another species) and genetically modified plants. Environmental biology is the scientific study of the interactions between organisms and their natural and man-made environments. Knowledge of environmental biology is central to man's ability to understand and manage the world's environmental problems. Biology is one of the most rapidly changing and expanding sciences. Biologists work in a variety of areas, from scientific research, to conservation and environmental monitoring, to technical work in the food and drinks industry. Biologists are currently working on problems that critically affect our lives such as cancer, AIDS and other diseases, biological control of pests, increased food production, conservation biology and global warming. This knowledge is fundamental to effective management of the world's resources in such a way that we can improve our health and the quality of our lives and those of future generations.

As a biologist you could...



work in pharmaceutical companies, researching new drugs



study the shifts in plant and animal communities resulting from climate change



be involved in the development of genetically-modified organisms



develop and research genetically modified crops

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Career opportunities

Biology is the most dynamic and expanding area in science. Biology impinges on almost every aspect of our lives and there is an enormous range of job opportunities for biologists. Studying biology gives you the skills and opportunities to advance human knowledge and understanding in today's world, in order to make a difference to tomorrow's world. Many graduates go into research in industries concerned with pharmaceuticals, agricultural chemicals, biotechnology, food processing and storage, brewing, biodeterioration and pest control, sewage and water treatment. Zoology provides an excellent education that is relevant for a variety of careers from field-based environmental research to fisheries and aquaculture, conservation to wildlife management, agriculture to pest control, laboratory based research to medical research, forensic science to the chemical industry, marine biology, teaching, journalism, film production

and wildlife photography. Botany graduates have an excellent knowledge of the plant sciences and they are much sought after by employers. Traditionally they take up positions in a wide variety of careers such as: environmental consultants, pollution biologists, molecular biologists, plant molecular biologists and cell biologists. Career opportunities for botanists have never been better, with many employed in rapidly expanding areas such as plant genetics and biotechnology. There has never been a more exciting time to be a biologist. Biological issues are regular front-page news in the national press, as society strives to come to terms with advances in our understanding of health, genetics, the environment and the struggle to conserve our planet's biodiversity. Saving threatened species, feeding people, GM organisms, curing diseases - the 21st Century offers many challenges to a biologist.

Did you know?



Tracking the human genome

If we knew the genetic make-up of a human being at birth, we could conclude what sort of person that human being will grow up to be. We could infer what sorts of interests, fears, strengths and weaknesses she will have, what sorts of diseases she will be susceptible to, and what sorts of drugs would cure them. Through genetic manipulation we could even create designer human beings, who will grow up to have just those features we would like them to have.

Brilliant butterflies

Butterflies are a charismatic group of organisms that have been the focus of intense study by evolutionary biologists. All of the wing colours and patterns we see today have derived from the same ancestral wing pattern by the action of natural selection.



Fighting cancer

The U.S. National Cancer Institute has identified 3,000 plants that are active against cancer cells. 70% of these plants are found in the rainforest. Twenty-five percent of the active ingredients in today's cancer-fighting drugs come from organisms found only in the rainforest.



All the fruits of the forest

At least 3,000 fruits are found in the rainforests; of these only 200 are now in use in the western world. The Indians of the rainforest use over 2,000.



All of riches of the forest

Currently, 121 prescription drugs currently sold worldwide come from plant-derived sources. And while 25% of western pharmaceuticals are derived from rainforest ingredients, less than 1% of these tropical trees and plants have been tested by scientists.

