

Florida Institute of Technology– Career Management Services

Career Profile: Biological Sciences

Biological scientists study living organisms and their relationship to the environment. They perform research to gain a better understanding of fundamental life processes and apply that understanding to developing new products or processes. Research can be broken down into two categories: basic and applied. Basic research is conducted without any intended aim; the goal is simply to expand on human knowledge. Applied research is directed towards solving a particular problem. Most biological scientists specialize in one area of biology, such as zoology (the study of animals) or microbiology (the study of microscopic organisms).



Aquatic biologists study micro-organisms, plants, and animals living in water. Marine biologists study salt water organisms, and limnologists study fresh water organisms. Much of the work of marine biology centers on molecular biology, the study of the biochemical processes that take place inside living cells. Marine biologists sometimes are mistakenly called oceanographers, but oceanography is the study of the physical characteristics of oceans and the ocean floor. Biochemists study the chemical composition of living things. Botanists study plants and their environments. Microbiologists investigate the growth and characteristics of microscopic organisms such as bacteria, algae, or fungi. Many microbiologists use biotechnology to advance knowledge of cell reproduction and human disease. Physiologists study life functions of plants and animals, both in the whole organism and at the cellular or molecular level, under normal and abnormal conditions. Biophysicists study how physics, such as electrical and mechanical energy and related phenomena, relates to living cells and organisms. Zoologists and wildlife biologists study animals and wildlife—their origin, behavior, diseases, and life processes. Zoologists usually are identified by the animal group they study—ornithologists study birds, for example, mammalogists study mammals, herpetologists study reptiles, and ichthyologists study fish. Ecologists investigate the relationships among organisms and between organisms and their environments, examining the effects of population size, pollutants, rainfall, temperature, and altitude.

Biological scientists usually are not exposed to unsafe or unhealthy conditions. Those who work with dangerous organisms or toxic substances in the laboratory must follow strict safety procedures to avoid contamination. Marine biologists encounter a variety of working conditions. Some work in laboratories; others work on research ships, and those who work underwater must practice safe diving while working around sharp coral reefs and hazardous marine life.

A Ph.D. is usually necessary for independent research, particularly in academia, as well as for advancement to administrative positions. A bachelor's or master's degree is sufficient for some jobs in applied research, product development, management, or inspection; it also may be sufficient to work as a research technician or a teacher. Many with a bachelor's degree in biology enter medical, dental, veterinary, or other health profession schools, or find jobs as high school science teachers.

The average annual starting salary for a bachelor's degree in biological sciences \$41,797.

For more information on a career in Biological Sciences contact the Career Management Services Office or your academic advisor.

Sources: Occupational Outlook Handbook, Bureau of Labor Statistics www.bls.gov/oco
National Association of Colleges and Employers Salary Survey: Winter 2011



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