

Florida Institute of Technology– Career Management Services

Career Profile: Biochemistry

Biochemists study the chemical composition of living things. They analyze the complex chemical combinations and reactions involved in metabolism, reproduction, and growth. Biochemists do most of their work in biotechnology, which involves understanding the complex chemistry of life.

Some biochemists do basic research that expands scientific knowledge about the chemistry of living things. Others do applied research—that is, they work to create new products or to solve practical problems. In the field of medicine, for example, biochemists doing basic research may study the ways hormones are formed. Biochemists doing applied research may use the basic findings about hormone formation to develop synthetic hormones that can be produced on a large scale.

Biochemists working in medicine are sometimes called molecular biologists. They study bacteria, viruses, and other organisms to better understand the chemical basis of life. They also determine the effects of chemicals on medical problems such as cancer, aging, or obesity. Biochemists in nutrition analyze food products to measure their vitamins, proteins, carbohydrates, and minerals. They research the effects of freezing or cooking and compute the caloric value of foods.

About half of all biochemists work for colleges and universities, where they teach or do research. Many are employed by private firms such as breweries, drug companies, petroleum producers, and manufacturers. Others work for non-profit research centers or government agencies. A few biochemists are self-employed consultants who advise government or industry.

Although their jobs may differ widely, almost all biochemists do laboratory research at least some of the time. They plan research projects to test theories or to develop new products or processes. They are often assisted by laboratory technicians or research assistants. Biochemists perform a number of tasks, such as weighing chemicals, filtering liquids, distilling ingredients, and growing cultures of microorganisms. They use a variety of tools and instruments, including test tubes, beakers, flasks, electron microscopes, centrifuges, and spectrophotometers. Sometimes they make use of radioactive isotopes. Biochemists must use exact scientific methods in their work.

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. Many biological scientists, such as botanists, ecologists, and zoologists, do field studies that involve strenuous physical activity and primitive living conditions. Biological scientists in the field may work in warm or cold climates, in all kinds of weather.

A Ph.D. degree usually is necessary for research and college teaching, as well as for advancement to administrative positions. A master's degree is sufficient for some jobs in applied research, product development, management, or inspection; it also may qualify to work as a research tech. or a teacher. The bachelor's degree is adequate for non-research jobs.

The median annual wage of biochemists was \$79,390 in May 2010. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$43,050, and the top 10 percent earned more than \$142,420



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

Sources: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2012-13 Edition*
National Association of Colleges and Employers Salary Survey: Winter 2011



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