

# BIOTECHNOLOGY

Biotechnology currently represents a small sector of the Hawaii workforce, but Hawaii is poised with the potential for dramatic change. The completion of the University of Hawaii's John A. Burns School of Medicine and the accompanying research building will bring new challenges to biotechnology.

Biotechnology occupations require higher education or more work experience than the average job, leading to higher average wages than in many other industries. Biotechnology requires individuals with strong math and science backgrounds. Finding experienced workers with specialty skills can be challenging with rapidly changing skill requirements brought on by advances in technology.

Educational attainment clusters are designed to reflect the multiple paths leading into an occupation and are not intended to replace the education and training requirements. Clusters are defined on the basis of the distribution of educational attainment across occupations.

For additional information on biotechnology-related occupations and an expanded report on *Biotechnology: Exploring Jobs for Hawaii's Future*, visit [www.hiwi.org](http://www.hiwi.org).

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HAWAII



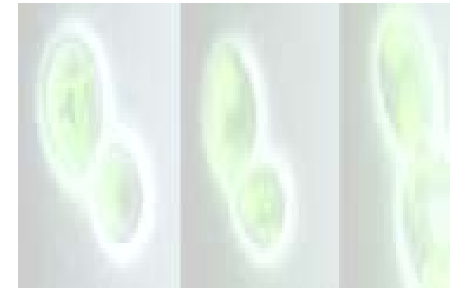
Career Directions



BIOTECHNOLOGY



A Brief Look at  
Jobs ~ Outlook ~ Wages ~ Education



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QUALITY INFORMATION FOR INFORMED DECISIONS

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**BIOTECHNOLOGY**  
Occupation/Description by Education and Training Level

Projected Employment      10-year Growth      Avg. Ann. Openings      Annual Wage      Educational Attainment\*

**Master's degree: One or two years of full-time academic study beyond a bachelor's degree**

**Environmental Scientists and Specialists, including Health:** Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population. Utilizing knowledge of various scientific disciplines may collect, synthesize, study, report, and take action based on data derived from measurements or observations of air, food, soil, water, and other sources.

750      21.0%      20      \$54,090      C

**Market Research Analysts:** Research market conditions in local, regional, or national areas to determine potential sales of a product or service. May gather information on competitors, prices, sales, and methods of marketing and distribution.

500      16.3%      20      \$62,130      C

**Bachelor's degree: At least four years of full-time academic study beyond high school**

**Medical and Clinical Laboratory Technologists:** Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.

790      16.2%      30      \$51,740      SC/C

**Chemists:** Conduct qualitative and quantitative chemical analyses or chemical experiments in laboratories for quality or process control or to develop new products or knowledge.

220      10.0%      10      \$52,250      C

**Microbiologists (Biological Scientists):** Investigate the growth, structure, development, and other characteristics of microscopic organisms, such as bacteria, algae, or fungi.

80      14.3%      <10      \$49,780      C

**Agricultural and Food Scientists:** Conduct research in the genetics, nutrition, reproduction, growth, and development of domestic farm animals. Use chemistry, microbiology, engineering, and other sciences to study the principles underlying the processing and deterioration of foods; analyze food content to determine levels of vitamins, fat, sugar, and protein; discover new food sources; research ways to make processed foods safe, palatable, and healthful; and apply food science knowledge to determine best ways to process, package, preserve, store, and distribute food. Conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth.

100      11.1%      <10      NA      HS/SC/C

**Associate's degree: At least two years of full-time academic study**

**Medical and Clinical Laboratory Technicians:** Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.

630      12.5%      20      \$35,520      SC/C

**Environmental Science and Protection Technicians, including Health:** Performs laboratory and field tests to monitor the environment and investigate sources of pollution, including those that affect health. Under direction of an environmental scientist or specialist, may collect samples of gases, soil, water, and other materials for testing and take corrective actions as assigned.

120      33.3%      10      \$35,020      HS/SC/C

**Biological Technicians:** Assist biological and medical scientists in laboratories. Set up, operate, and maintain laboratory instruments and equipment, monitor experiments, make observations, and calculate and record results.

280      12.0%      10      \$34,400      HS/SC/C

\*Educational Attainment: HS=high school, SC=some college, C=college.

NA = Data not available.

Sources: 1) Education and Training: Bureau of Labor Statistics, U.S. Dept. of Labor; 2) Occupation/Description: Standard Occupational Classification System, Bureau of Labor Statistics, U.S. Dept. of Labor, 2000, [www.bls.gov/soc/](http://www.bls.gov/soc/); 3) Employment, growth, and openings: Employment Outlook for Industries & Occupations, 2002-2012 revised, Hawaii State Dept. of Labor & Industrial Relations, <http://www.hiwi.org/?PAGEID=67&SUBID=128>; 4) Wage: State Occupational Employment and Wage Estimates, November 2004, Bureau of Labor Statistics, U.S. Dept. of Labor, [http://www.bls.gov/oes/current/oes\\_hi.htm](http://www.bls.gov/oes/current/oes_hi.htm); 5) Cell images from The American Society for Cell Biology.