

Under the Microscope ***Biotechnology Jobs in California***

**Employment Development Department
Labor Market Information Division
Information Services Group
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Note to readers: Although the report is dated June 2004, the occupational wages and growth trends cited in the Biotechnology Careers section of this report have been updated, and are current as of July 2005.

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What They Do

Greenhouse Assistants carry out a variety of research tasks and experiments in the controlled environment of a greenhouse. They help researchers with experiments by maintaining equipment, recording results, keeping records, and making sure pests or plant diseases do not ruin the experiment. Greenhouse Assistants may run experiments on their own under the close supervision of researchers. They may also help study plants, analyze tissue samples, and prepare plants for DNA and cellular studies.

The main task of a Greenhouse Assistant is to care for plants being studied as part of biotechnology research projects. The projects they work on may be to create more robust crops, with better yields, or that can withstand harsh conditions. Some plant experiments involve placing genes that produce drugs into plants, to provide an inexpensive way of making pharmaceuticals.

Their wide-ranging responsibilities may include planting seeds, watering and weeding the plant beds, planting rooted plants, and nurturing root cuttings for new plantings. Greenhouse Assistants may operate machinery and equipment such as tractors, mowers, sprayers and assorted power tools.

Greenhouse Assistants in the biotechnology industry must take great care in their work because the plants they deal with may be the products of recombinant DNA research or other specialized experiments. These plants may also be rare or unique and may need extra care.

*Greenhouse Assistants in the biotech industry share characteristics of Agricultural & Food Science Technicians and Life, Physical, and Social Science Technicians, All Other. Detailed descriptions of these occupations may be found in the Occupational Information Network (O*NET) at online.onetcenter.org.*

Important skills, knowledge, and abilities include:

- w Biology – Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
- w Science – Using scientific rules and methods to solve problems.
- w Oral Comprehension – The ability to listen to and understand information and ideas presented through spoken words and sentences.
- w Quality Control Analysis – Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
- w Near Vision – The ability to see details at close range (within a few feet of the observer).
- w Number Facility – The ability to add, subtract, multiply, or divide quickly and correctly.

Training/Requirements

- w High school diploma or associate degree or equivalent.
- w Possess up to two years of greenhouse or plant experience.

Greenhouse Assistants

What's the California Job Outlook?

While the Bureau of Labor Statistics does not collect data on Greenhouse Assistants, the occupations listed below are found in the biotechnology industry and have similar duties. The California outlook and wage figures are drawn from all industries and represent occupations comparable to Greenhouse Assistants.

Standard Occupational Classification	Estimated Number of Workers 2004	Estimated Number of Workers 2014	Average Annual Openings	2007 Wage Range (per hour)
Agricultural & Food Science Technicians				
19-4011	4,300	4,900	140	\$12.91 to \$20.87
Life, Physical, and Social Science Technicians, All Other				
19-4099	7,100	8,600	320	\$15.09 to \$29.32

These figures do not include self-employment.

Average annual openings include new jobs plus openings due to separations.

Source: www.labormarketinfo.edd.ca.gov, Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.

Additional Sources of Information

Occupational Information Network (O*NET)
<http://online.onetcenter.org>

What They Do

Laboratory Assistants help chemists, physicists, and other scientists in conducting tests, experiments, and analyses. They work in a variety of areas of biotechnology such as research, production, or process monitoring. Specific duties vary according to the purpose of the laboratory, and the type of tests completed. Laboratory Assistants always work under the direction of a scientist or team leader. They clean and maintain lab equipment and ensure the lab is stocked with necessary supplies.

Their responsibilities might include set-up; equipment maintenance, calibration and monitoring; troubleshooting; and sample labeling. They may also be responsible for maintaining samples, growth media and specimens, and ensuring quality control. Test results must be recorded and compiled daily, entered into computerized databases or entry books, and charts or graphs prepared to illustrate results.

*Laboratory Assistants in the biotech industry share characteristics of Biological Technicians and Life, Physical, and Social Science Technicians, All Other. Detailed descriptions of these occupations may be found in the Occupational Information Network (O*NET) at online.onetcenter.org.*

Important skills, knowledge, and abilities include:

- w Biology – Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
- w Science – Using scientific rules and methods to solve problems.
- w Oral Comprehension – The ability to listen to and understand information and ideas presented through spoken words and sentences.
- w Mathematics – Using mathematics to solve problems.
- w Reading Comprehension – Understanding written sentences and paragraphs in work related documents.
- w Operation and Control – Controlling operations of equipment or systems.

Training/Requirements

- w Certification or associate degree in the laboratory sciences.
- w Have up to two years of laboratory experience. (See **Additional Sources of Information.**)

Laboratory Assistants

What's the California Job Outlook?

While the Bureau of Labor Statistics does not collect data on Laboratory Assistants, the occupations listed below are found in the biotechnology industry and have similar duties. The California outlook and wage figures are drawn from all industries and represent occupations comparable to Laboratory Assistants.

Standard Occupational Classification	Estimated Number of Workers 2004	Estimated Number of Workers 2014	Average Annual Openings	2007 Wage Range (per hour)
Biological Technicians				
19-4021	9,000	11,100	360	\$15.68 to \$26.46
Life, Physical, and Social Science Technicians, All Other				
19-4099	7,100	8,600	320	\$15.09 to \$29.32

These figures do not include self-employment.

Average annual openings include new jobs plus openings due to separations.

Source: www.labormarketinfo.edd.ca.gov, Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.

Additional Sources of Information

American Institute of Biological Sciences
 (202) 628-1500
www.aibs.org

Society of Industrial Microbiology
 (703) 691-3357
www.simhq.org

Biotechnology Industry Organization
 (202) 962-9200
www.bio.org

Occupational Information Network (O*NET)
<http://online.onetcenter.org>

Clinical Research Occupations

Animal Handlers	51
Animal Technicians	53
Bioinformatics Specialists	55
Biostatisticians	57
Clinical Research Associates	59
Medical (Technical) Writers	61

Manufacturing Occupations

Assay Analysts	65
Biochemical Development Engineers	67
Instrumentation/Calibration Technicians	69
Manufacturing Engineers	71
Manufacturing Research Associates	73
Manufacturing Technicians	75
Process Development Associates	77
Process Development Engineers	79
Production Planner Schedulers	81

Regulatory Affairs Occupations

Documentation Coordinators	85
Documentation Specialists	87

Quality Systems Occupations

Microbiologists	91
Quality Assurance Auditors	93
Quality Control Analysts	95
Quality Control Engineers	97
Quality Control Inspectors	99
Safety Specialists	101
Validation Technicians	103

Information Systems Occupations

Library Assistants	107
Scientific Programmer Analysts	109

Marketing and Sales Occupations

Customer Service Representatives	113
Graphic Designers	115
Sales Representatives	117
Technical Services Representatives	119

