



Guide for

Biologists in California

May also be called: Environmental Analysts; Environmental Planners; Environmental Specialists; Field Biologists; Research Biologists; Research Scientists; and Scientists

What Would I Do?

Biology is the science of living organisms. Biologists study the living world from plants to animals to single cell organisms that are only visible under powerful microscopes. They specialize in specific areas such as plant or marine biology, although there is often overlap between the specialized areas. They may research specific ecosystems, like a forest or river, and work to preserve native plant life or breeding grounds for native animals.

Biologists who work in a research lab may work for biotechnology firms. As members of the biotechnology field, Biologists may search for cures to illnesses in the pharmaceutical industry. They may also work in the development of screening tests that may help doctors diagnose patients or identify individuals with genetic predispositions to certain illnesses.

Some Biologists assess the environmental impacts on proposed construction or transportation projects. They look at the plant and animal life that lives on the land and determine if the project will be harmful to the various species. They assist with completing reports such as an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) or an Environmental Impact Statement (EIS) for the National Environmental Policy Act (NEPA) in order to meet the requirements of the regulations.

Tools and Technology

Biologists use a variety of tools in their job including spectrophotometers, dropping pipettes, commercial fishing nets, benchtop centrifuges, cameras, and microscopes. They use various types of software, such as analytical and scientific, word processing, presentation, and spreadsheet applications.

Important Tasks and Related Skills

Each task below is matched to a sample skill required to carry out the task.

Task	Skill Used in this Task
Collect and analyze biological data about relationships among and between organisms and their environment.	Biology
Supervise biological technicians and technologists and other scientists.	Management of Personnel Resources

Program and use computers to store, process and analyze data.	Mathematics
Prepare technical and research reports such as environmental impact reports, and communicate the results to individuals in industry, government, or the general public.	Inductive Reasoning
Develop and maintain liaisons and effective working relations with groups and individuals, agencies, and the public to encourage cooperative management strategies or to develop information and interpret findings.	Active Listening
Prepare requests for proposals or statements of work.	Written Expression

Source: U.S. Department of Labor [Occupational Information Network \(O*NET\)](http://online.onetcenter.org) at online.onetcenter.org.

Working Conditions

Biologists may work in office buildings, laboratories, industrial plants, or outdoors. Biologists who work in laboratories and industrial plants may need to wear protective eyewear, laboratory coats, hardhats, and respiratory masks. Those who work with unsafe organisms or toxic substances must be trained in proper health and safety procedures and, in some cases, must wear personal protective equipment. Biologists who work outdoors may be exposed to extreme weather conditions and should wear clothing best suited for the current weather conditions.

Most Biologists typically work a standard 40-hour week. Longer or irregular hours may sometimes be required due to project or grant deadlines, or when time-sensitive experiments require them to be in the laboratory or in the field.

Unionization is not common in this occupation. Biologists who work for government agencies may belong to a union such as the California Association of Professional Scientists.

Will This Job Fit Me?

The job of Biologist may appeal to those who enjoy analytical thinking and are eager to develop and promote new ideas and products. This occupation requires good oral and written communication skills, attention to detail, and the ability to work either alone or as part of a team.

What Wages and Benefits Can I Expect?

Wages

A formal salary survey for Biologists is not available; however, their earnings are typically comparable to Biological Scientists, All Other. According to the Occupational Employment Statistics Survey, wages in 2012 for Biological Scientists, All Other in California range from \$57,803 to \$89,227 annually or \$27.79 to \$42.90 hourly. The median wage is \$73,431 annually or \$35.30 hourly. The median is the point at which half of the workers earn more and half earn less.

Benefits

Biologists typically receive excellent benefit packages, including health and life insurance, vacation and sick leave, and pension plans.

What is the Job Outlook?

Biologists should enjoy favorable job prospects. Employment growth should be especially strong in the health care industry and biotechnology firms. Stronger competition among drug and medical technology companies and an aging population are contributing to the need for advancements in the medical field through scientific research.

How Do I Qualify?

Education, Training, and Other Requirements

The majority of Biologists have a Ph.D. However, for some entry-level positions a bachelor's degree in biology is sufficient. Those interested in conducting independent research projects or teaching at a college or university should plan on earning their doctorate or master's degree.

Early Career Planning

High school students interested in becoming Biologists should take courses in biology, life sciences, chemistry, physics, environmental studies, algebra, geometry, trigonometry, statistics, computer technology, and English.

Continuing Education

While continuing education is usually not required, it is important for Biologists to keep up with current findings and technology. Several professional associations offer educational seminars and publications. However, continuing education is required to maintain certain certifications.

Licensing & Certification

Licensing is required for those who work in a medical laboratory. The California Department of Public Health (CDPH) issues the Clinical Microbiologist Scientist license. They do not administer a State examination but require applicants to pass a certifying exam given by an approved certifying organization such as the American Society for Clinical Pathology. The CDPH also requires passing a short quiz on state laboratory law for licensure. Contact the agency that issues the license for additional information. Click on the license title below for details.

- [Clinical Microbiologist Scientist License](#)

Certification is not required for many Biologist positions; however, renewable certifications are offered by various professional organizations. The American Board of Medical Genetics offers certifications for several categories such as Molecular Genetic Pathology. The American Board of Clinical Chemistry, among others, also offers certification. Requirements to take the certifying exams include appropriate education and training in biology and experience in the field. For more information, go to the U.S. Department of Labor's [Career InfoNet website](#) and scroll down to "Career Tools." Select "[Certification Finder](#)" and follow the instructions to locate certification programs.

Where Can I Find Training?

There are two ways to search for training information at www.labormarketinfo.edd.ca.gov/?Pageid=1013:

- [Search by Field of Study](#) to find what programs are available and what schools offer those programs. You may use keywords such as: Anatomy or Biology.
- [Search by Training Provider](#) to find schools by name, type of school, or location.

Contact the schools you are interested in to learn about the classes available, tuition and fees, and any prerequisite course work.

Where Would I Work?

Biologists work in a variety of industries such as education; health care; government; and professional, scientific, and technical services.

Finding a Job

College placement offices and campus recruitment provide job leads for students. Jobs can also be found through direct application to employers, newspaper classified advertisements, online job boards,

and professional organizations. **Online job opening systems** include JobCentral at www.jobcentral.com and CalJOBSSM at www.caljobs.ca.gov.

To find your nearest One-Stop Career Center, go to [Service Locator](http://www.servicelocator.org) at www.servicelocator.org. View the [helpful job search tips](http://www.labormarketinfo.edd.ca.gov/ocguides/JobSearchTips.pdf) at www.labormarketinfo.edd.ca.gov/ocguides/JobSearchTips.pdf for more resources (requires [Adobe Reader](#)).

Yellow Page Headings

You can focus your local job search by checking employers listed online or in your local telephone directory. Below are some suggested headings where you might find employers of Biologists.

- Biotechnology, Products and Services
- Environmental & Ecological Consultants
- Government Offices
- Laboratories
- Pharmaceutical Manufacturing
- Scientific Research

Find Possible Employers

To locate a list of employers in your area, use “Find Employers” on the LaborMarketInfo website at www.labormarketinfo.edd.ca.gov/aspdotnet/databrowsing/empMain.aspx?menuChoice=emp.

- Select the search for employers by occupation.
- Select a geographic area.
- Search for an occupation by keyword, occupation, or category.
- Select one of the top industries that employ the occupation. This will give you a list of employers in that industry in your area.
- Select “View Filter Selections” to limit your list to specific cities or employer size.
- Select an employer for the street address, telephone number, size of business, website, etc.
- Contact the employer for possible employment.

Where Could This Job Lead?

Biologists with a bachelor’s degree, experience, and additional training have the opportunity to advance to more responsible positions. Those with advanced degrees have greater opportunities for advancement. Biologists with a master’s degree usually qualify for applied research positions and teaching positions in two-year colleges. A doctorate offers the best opportunities for higher levels of research and four-year college teaching positions.

Related Occupations

Below is a list of occupations related to Biologists.

- Biological Science Teachers, Postsecondary (SOC 25-1042)
- Environmental Scientists and Specialists, Including Health (SOC 19-2041)
- Microbiologists (SOC 19-1022)
- Natural Sciences Managers (SOC 11-9121)
- Soil and Plant Scientists (SOC 19-1013)
- Zoologists and Wildlife Biologists (SOC 19-1023)

Other Sources

- California Department of Public Health
www.cdph.ca.gov
- American Biological Safety Association

- www.absa.org
American Institute of Biological Sciences
- www.aibs.org
American Society of Plant Biologists
- www.my.aspb.org
Federation of American Societies for Experimental Biology
- www.faseb.org
The American Society for Cell Biology

These links are provided for your convenience and do not constitute an endorsement by the EDD.

For the Career Professional

The following codes are provided to assist counselors, job placement workers, or other career professionals.

System	Code
O*NET – Occupational Information Network at online.onetcenter.org	
Biologists	19-1020.01
Interest Codes (RIASEC) at online.onetcenter.org/find/descriptor/browse/Interests/#cur	IR

The California Occupational Guides are a product of:
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