

Biologist

Biologists study plants, animals, and their environments.

Quick Facts: Biologists

Wages Earn \$69,990 - \$76,660 per year

Employment Large occupation

10 Year Growth Average growth

Annual Openings High

Preparation

A biologist typically needs to:

- ✚ have a high school diploma or equivalent
- ✚ have at least a bachelor's degree in a biological science

Working Conditions

In a typical work setting, biologists:

- ✚ Have a moderate level of social contact. Biologists often work alone while collecting and analyzing data.
- ✚ Work indoors in laboratories. However, wildlife biologists do fieldwork outdoors.
- ✚ Must be very exact in their work and follow precise steps in their observations. Errors could ruin months of work or endanger the environment.
- ✚ May travel to remote areas and live in primitive conditions while conducting studies. This mainly applies to wildlife biologists.

Wages

In Alaska, biologists earn a median wage of \$69,990 - \$76,660 per year.

Employment and Outlook

In Alaska, 492 biologists work in this large occupation.

Location	Employment	10 Year Growth	Annual Openings
Alaska	492	5.5%	16
	Large	Average	High

Overview

Biologists study plants, animals, and their environments.

Biologists study plant and animal life ranging from single cell organisms to large animals. Their findings help solve problems, such as plant diseases or possible extinction of some animals. They also research ways to solve problems in human health.

Some biologists do basic research. They study the world to gain knowledge. Other biologists do applied research. They use knowledge gained from research to create new products or processes.

Biologists read articles and attend conferences to learn more about their research area. They determine research questions and design experiments to study those questions. Depending on the type of organism they study, biologists conduct experiments in a lab, forest, or other site.

They may work with the organisms themselves, or have research assistants do much of the work for them. If they have assistants, scientists train them how to conduct the research and keep records.

Once data is gathered, biologists analyze the data. They interpret the results and write reports. They may present their findings at conferences.

Some biologists teach at colleges and universities. If they have a teaching certificate, they can also teach at high schools.

There are several subfields in biology:

- ✚ **Biochemists** study the chemical makeup and processes of living things.
- ✚ **Biophysicists** study the electrical and mechanical energy properties of cells and organisms.
- ✚ **Microbiologists** study the growth, development, and characteristics of bacteria and other small organisms.

Skills and Abilities

Biologists need to:

- ✚ Communicate
- ✚ Understand written information.
- ✚ Read and understand work-related materials.
- ✚ Write clearly so other people can understand.
- ✚ Understand spoken information.
- ✚ Listen to others and ask questions.
- ✚ Speak clearly so listeners can understand.
- ✚ Reason and Problem Solve
- ✚ Combine several pieces of information and draw conclusions.
- ✚ Analyze ideas and use logic to determine their strengths and weaknesses.
- ✚ Use reasoning to discover answers to problems.

- ✚ Follow guidelines to arrange objects or actions in a certain order.
- ✚ Develop rules that group items in various ways.
- ✚ Notice when something is wrong or is likely to go wrong.
- ✚ Understand new information or materials by studying and working with them.
- ✚ Recognize the nature of a problem.
- ✚ Think of new ideas about a topic.
- ✚ Judge the costs and benefits of a possible action.
- ✚ Think of original, unusual, or creative ways to solve problems.
- ✚ Concentrate and not be distracted while performing a task.
- ✚ Recognize when important changes happen or are likely to happen in a system.
- ✚ Use Math and Science
- ✚ Use scientific methods to solve problems.
- ✚ Choose a mathematical method or formula to solve problems.
- ✚ Use math skills to solve problems.
- ✚ Add, subtract, multiply, and divide quickly and correctly.
- ✚ Manage Oneself, People, Time, and Things
- ✚ Check how well one is learning or doing something.
- ✚ Manage the time of self and others.
- ✚ Motivate, develop, and direct people as they work.
- ✚ Work with People
- ✚ Use several methods to learn or teach new things.
- ✚ Teach others how to do something.
- ✚ Change behavior in relation to others' actions.
- ✚ Be aware of others' reactions and understand the possible causes.
- ✚ Perceive and Visualize
- ✚ Identify a pattern (a figure, object, word, or sound) that is hidden in distracting material.
- ✚ Imagine how something will look if it is moved around or its parts are rearranged.
- ✚ Quickly and accurately compare letters, numbers, objects, pictures, or patterns.

Helpful High School Courses

Helpful electives to take in high school that prepare you for this occupation include:

- ✚ Anatomy and Physiology
- ✚ Computer Applications

Wages

Wages for biologists vary by subject area. Wages for a few types of biologists are given below.

United States	HR	\$28.18	\$39.50	\$55.60
Alaska	HR	\$30.49	\$36.85	\$43.00
Anchorage	HR	\$30.76	\$37.93	\$43.89
Fairbanks	HR	\$27.95	\$34.85	\$40.55
Southeast	HR	\$30.75	\$37.88	\$45.47

Annual Wages Biochemists and biophysicists

Location		25%	Median	75%
United States	YR	\$58,620	\$82,150	\$115,640

Biological scientists, all other

Alaska	YR	\$63,430	\$76,660	\$89,440
Anchorage	YR	\$63,970	\$78,890	\$91,290
Fairbanks	YR	\$58,140	\$72,500	\$84,330
Southeast	YR	\$63,970	\$78,780	\$94,570
United States	YR	\$57,160	\$75,150	\$90,140

Microbiologists

Location		25%	Median	75%
Alaska	YR	\$56,590	\$69,990	\$79,480
United States	YR	\$48,980	\$67,550	\$96,900

Wages vary by level of education. Biologists who have a master's degree earn more than those who have a bachelor's degree. Those who have a PhD earn more than those who have a master's degree. In general, salaries are highest for those working in private industry and lowest for those working for colleges or universities.

Biologists who work full time usually receive benefits. Typical benefits include sick leave, paid vacation, and health insurance. Some employers also provide a retirement plan.

Employment and Outlook

The table below provides information about the number of workers in this occupation in various regions. It also provides information about the expected growth rate and future job openings. These figures do not include biologists who teach at colleges or universities.

Location	Employment	&	Growth		>>>>	Annual openings
			This occupation	All occupations		
Alaska	492	&	5.5%	5.8%	>>>>	16
United States	70,500	&	3.7%	6.5%	>>>>	2,160

Employment

- ✚ Major employers:
- ✚ Research and testing firms
- ✚ Drug manufacturing firms
- ✚ Colleges and universities

Outlook

Growth is expected to be slower than average. There will be strong competition for basic and applied research positions. Federal funding for basic research has grown. However, at the same time, the number of newly trained scientists has increased. Thus, the job market for research positions and research funding will remain competitive.

Drug manufacturing firms should continue to create new jobs for biologists. Biologists will also have a good chance of finding work at biotechnology firms. They will be needed to correct environmental problems, such as the negative effects of pesticide use. Some will find opportunities in environmental regulatory agencies.

Job prospects will be best for those with advanced degrees.

Education after high school

With a bachelor's degree in biology you can be a research assistant. You usually need a master's degree in biology for jobs in applied research. In biology, you study life science, chemistry, math, and computer science. You also learn to work in a lab and use computerized equipment.

You must have a doctoral degree (PhD) to lead research projects or teach at a college or university. When working on your doctoral degree you focus on an area of biology, such as microbiology or botany.

Many colleges and universities have bachelor's degree programs in biology. Fewer have doctoral and master's programs.

On-the-job training

Biologists may spend six months to a year doing on-the-job training. You learn about equipment, procedures, and goals of the lab you are working in.

Work experience

After completing a doctoral degree, some biologists work as postdoctoral fellows (postdocs). These university positions last for several years. Postdocs get experience working with other biologists. This research can lead to a teaching or research job at a university.

Military training

The military provides advanced training for some types of life scientists. However, it does not provide the training to become a biologist.

Cassey, C. (2017, July 1). Alaska Career Information System. Retrieved and Edited March 16, 2017, from www.akcis.org

Cassey, C. (2017, October 1). Labor and Workforce Development- Alaska Economic Trends. Retrieved March 16, 2017, from <http://labor.alaska.gov/trends/>