

AG BIOTECHNOLOGY

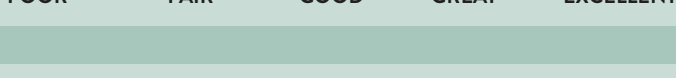
AgCareers.com developed career profiles for high demand jobs in the agricultural industry. These career profiles are a helpful resource for students and job seekers to explore new roles in the industry, as well as for career educators.

Bioinformatics Scientist

JOB OVERVIEW

- Use **technology and computer science** to study and find solutions in biology
- Build **innovative frameworks for data integration** and automated data mining
- Apply **computer tools** to transform genomics data into higher yielding crops and pest control solutions
- Use **databases of genetic info** to find ways to identify and treat diseases

JOB OUTLOOK



EDUCATION NEEDED

Master's in genomics, bioinformatics, computational biology or a similar field

RECOMMENDED H.S. COURSES

Ag education, biology, chemistry, physics, computer courses, mathematics

TYPICAL EMPLOYERS

Research firms or human health, biotechnology and crop sciences companies



Marine Biologist

JOB OVERVIEW

- Design **controlled laboratory & natural field experiments**
- Observe **marine wildlife & organisms** in their natural habitats
- Collect **water, mineral & plant samples** to test in laboratory
- Dissect & **preserve marine life** for future studies
- Monitor **environmental pollution** & create plans to notify government officials

JOB OUTLOOK



EDUCATION NEEDED

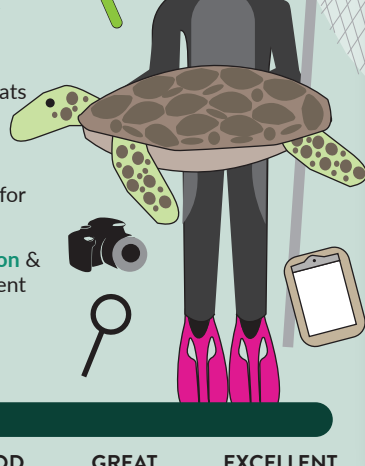
Bachelor's or Master's in Marine Biology or a closely related field

RECOMMENDED H.S. COURSES

Ag education, biology, earth science, mathematics

TYPICAL EMPLOYERS

Aquaculture farms, government agencies, universities, zoos, aquariums, research firms



Microbiologist

JOB OVERVIEW

- Examine **bacteria, fungi, viruses and other parasites** to see how they grow and interact with their environment
- Isolate & make cultures of **bacteria and other microorganisms**
- Conduct **tests** on food and water samples to detect harmful microorganisms
- Prepare **reports** regarding findings on disease outbreaks and clinical trials

JOB OUTLOOK



EDUCATION NEEDED

Doctorate degree in microbiology; lab experience is helpful

RECOMMENDED H.S. COURSES

Ag education, biology, animal science, physics, mathematics, English

TYPICAL EMPLOYERS

Universities, research firms, government agencies, animal health companies

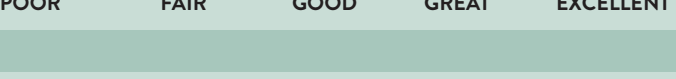


Molecular Biologist

JOB OVERVIEW

- Examine **genetics**, gene variation and relationships between them
- Develop **new methods** to diagnose & treat diseases
- Detect & **identify** environmental pollutants
- Genetically **engineer** & test new crops
- Grow **bacteria** in order to determine product effectiveness
- Design & **execute experiments**

JOB OUTLOOK



EDUCATION NEEDED

Bachelor's, Master's or Doctorate in a life science with a concentration in molecular biology

RECOMMENDED H.S. COURSES

Ag education, biology, chemistry, physics, mathematics

TYPICAL EMPLOYERS

Research firms, government agencies, hospitals, universities, pharmaceutical companies



Nematologist

JOB OVERVIEW

- Study **nematodes** and their interaction with plants
- Isolate, **mount, count and identify** nematode, soil and plant specimens
- Develop **microbial nematicide products** including soil applications and seed treatments
- Determine the **mode of action of nematicides** including indirect and direct effects
- Look at **nematode resistant genes** that could be incorporated in crops

JOB OUTLOOK



EDUCATION NEEDED

Bachelor's in biology, entomology or ecology

RECOMMENDED H.S. COURSES

Ag education, biology, horticulture, chemistry, mathematics, environmental sciences

TYPICAL EMPLOYERS

Universities, seed and chemical companies, government agencies



Plant Biologist

JOB OVERVIEW

- Conduct and **support research** on plant production, breeding and genetics
- Build **innovative frameworks for data integration** and automated data mining
- Apply **computer tools** to transform genomics data into higher yielding crops and pest control solutions
- Use **databases of genetic info** to find ways to identify and treat diseases

JOB OUTLOOK



EDUCATION NEEDED

Bachelor's or Master's in botany, horticulture, plant pathology, weed science or agronomy

RECOMMENDED H.S. COURSES

Ag education, biology, chemistry, foreign language, mathematics

TYPICAL EMPLOYERS

Biotechnology companies, universities and government agencies



Plant Geneticist

JOB OVERVIEW

- Conduct **research to understand, improve or create** new varieties of plants or crops
- Look at a **plant's DNA** to examine ways to improve shape, size, production level, pesticide and disease tolerance
- Cross breed plants** to breed new subjects for trials and to build a seed bank
- Identify **genes responsible for** certain plant features and functions

JOB OUTLOOK



EDUCATION NEEDED

Bachelor's, Master's or Doctorate in biology, botany or biochemistry

RECOMMENDED H.S. COURSES

Ag education, biology, chemistry, mathematics

TYPICAL EMPLOYERS

Seed and chemical companies, universities, non-profit companies, research firms

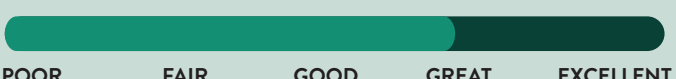


Plant Pathologist

JOB OVERVIEW

- Study the **health of plants**; identify diseases, pests and other health problems plants may experience
- Perform **tissue sampling, mechanical inoculation** and bio-assays
- Perform **complex data analysis** to using parametric and non-parametric statistical models
- Design & **implement new screening methods** and platforms for existing or emerging diseases

JOB OUTLOOK



EDUCATION NEEDED

Bachelor's, Master's or Doctorate in botany, horticulture, plant pathology or biology

RECOMMENDED H.S. COURSES

Ag education, biology, chemistry, horticulture, environmental science, mathematics

TYPICAL EMPLOYERS

Seed research & biotech companies, government agencies, universities



Regulatory Scientist / Specialist

JOB OVERVIEW

- Responsible for the **management and strategy of a product** through the regulatory process
- Conduct **studies and communicate** findings to regulatory agencies to ensure crop and chemical safety
- Apply **computer tools** to transform genomics data into higher yielding crops and pest control solutions
- Use **databases of genetic info** to find ways to identify and treat diseases

JOB OUTLOOK



EDUCATION NEEDED

Bachelor's in plant biology, genetics, biochemistry or related field; knowledge of ag law may also be required

RECOMMENDED H.S. COURSES

Ag education, biology, chemistry, mathematics

TYPICAL EMPLOYERS

Biotechnology and breeding companies, government agencies, universities



Zoologist

JOB OVERVIEW

- Study **behavior of animals** and wildlife as well as diseases and genetics
- Analyze and **collect** potential pollutants from animal habitats
- Dissect and **perform autopsies** on deceased animals
- May **conduct animal education** courses or workshops
- Care for **animals under your study** by feeding, medicating and cleaning

JOB OUTLOOK



EDUCATION NEEDED

Bachelor's or Master's in zoology, biology or ecology

RECOMMENDED H.S. COURSES

Ag education, biology, chemistry, anatomy, animal science, natural resources, mathematics

TYPICAL EMPLOYERS

Zoos, wildlife centers and parks, aquariums, conservation groups, research firms, government agencies, universities



PROFESSIONALS IN AG BIOTECHNOLOGY CAN EXPECT TO EARN AN AVERAGE OF \$62,800 PER YEAR