

# MICROBIOLOGIST

ALSO KNOWN AS: **BACTERIOLOGIST** **VIROLOGIST** **MYCOLOGIST** **CLINICAL MICROBIOLOGIST**

**ENVIRONMENTAL MICROBIOLOGIST**

## WHERE SCIENCE FICTION BECOMES SCIENCE FACT.

In the microscopic realm where biology meets technology, Microbiologists conjure solutions to global challenges – they're the architects of a future.

### KEY SKILLS

Skills which may benefit anyone considering a job as a microbiologist include:

- ☑ Aseptic Technique
- ☑ Microbial cultivation
- ☑ Molecular Biology
- ☑ Data analysis
- ☑ Microscopy

### CAREER PROGRESSION

In this role, you may have the opportunity to progress to other positions. Career progression opportunities include:

- Renewable Energy Engineer
- Environmental Engineer
- Artificial Intelligence Engineer
- Chief Operating Officer

### RELATED INDUSTRIES

▶ Food and Beverage ▶ Meat and Seafood Processing ▶ Pharmaceutical and Medical Technology ▶ Renewables ▶ Sustainable Operations

### RECOMMENDED SCHOOL SUBJECTS

- Mathematical Methods
- Physics
- Specialist Mathematics

### CORE SCHOOL SUBJECTS

- General Mathematics
- Essential English
- Biology
- Chemistry

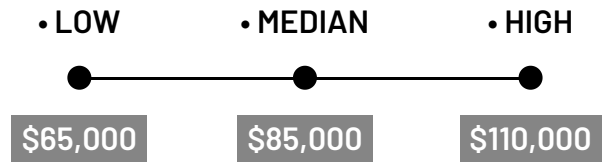
### VALUES & ATTRIBUTES

Values and attributes of anyone considering a job as a microbiologist include:

- ☑ Attention to detail
- ☑ Analytical
- ☑ Safety-conscious
- ☑ Patience
- ☑ Curious
- ☑ Investigative – “Thinker”

### SALARY EXPECTATION

The expected salary for a Microbiologist can vary across different areas of manufacturing and may vary as you become more experienced.



## JOB OVERVIEW

Microbiologists study the world of microorganisms, including bacteria, viruses, fungi, and parasites. Their work is crucial in various fields, from healthcare and pharmaceuticals to food production and environmental conservation. They play a vital role in understanding and combating infectious diseases, developing new medicines and vaccines, ensuring food safety, and harnessing microbes for industrial and environmental applications.

These professionals work in diverse settings, including research laboratories, hospitals, pharmaceutical companies, and government agencies. They design and conduct experiments, analyse biological samples, and interpret complex data. A typical day might involve culturing microorganisms, performing genetic analyses, studying microbial interactions with their environments, or developing new diagnostic tests for infectious diseases.

Microbiologists need a strong foundation in biology, chemistry, and genetics. They must be proficient in various laboratory techniques, including microscopy, cell culture, and molecular biology methods. Skills in data analysis, critical thinking, and problem-solving are essential. Additionally, they should stay informed about emerging infectious diseases, antibiotic resistance, and new technologies in microbiology.

## WHAT WILL YOU DO?

Your role may include duties as follows:

1. Isolate and culture microorganisms for study and analysis
2. Investigate the role of microbes in health, disease, and the environment
3. Develop and test new antimicrobial drugs and vaccines
4. Ensure safety and quality control in food and pharmaceutical production
5. Conduct research to understand microbial genetics and evolution

## HOW TO BECOME A MICROBIOLOGIST

Becoming a microbiologist typically requires at least a bachelor's degree in microbiology or a related field. Many research positions and leadership roles may require advanced degrees. Here are the steps to pursue this career:

1. Complete a bachelor's degree in microbiology, biology, or a related field
2. Gain practical experience through internships or entry-level positions in laboratories or research institutions
3. Consider pursuing a master's or Ph.D. for advanced research positions or specialisations
4. Stay updated with the latest advancements in microbiology through continuous learning and professional development

## VOCATIONAL EDUCATION & TRAINING

While most microbiologist positions require a bachelor's degree or higher, there are vocational education and training options that can provide foundational knowledge and skills in related areas. These courses can be beneficial for those looking to enter the field as technicians or to supplement their scientific education.

- Certificate IV in Laboratory Techniques (MSL40122)
- Diploma of Laboratory Technology (Biotechnology) (MSL50122)
- Advanced Diploma of Laboratory Management (MSL60122)

## UNIVERSITY & HIGHER EDUCATION

A bachelor's degree in microbiology or a related biological science is the most common entry point for this career. These programs provide a strong foundation in microbiology, biochemistry, and molecular biology. Many universities also offer specialised master's and doctoral programs for those seeking advanced positions or research opportunities.

Typical degree options include:

- Bachelor of Science (Microbiology)
- Bachelor of Biomedical Science
- Master of Science in Microbiology
- Doctor of Philosophy (Ph.D.) in Microbiology or Infectious Diseases

These programs offer in-depth knowledge of microbial physiology, genetics, and ecology, preparing graduates for innovative roles in various sectors including healthcare, biotechnology, and environmental science.