

The image features a central blue oval with the text "Biochemistry, Cell, and Molecular Biology" in white. The background consists of several concentric circles, some solid and some dashed, and a large black swoosh that curves around the bottom and left sides of the blue oval.

**Biochemistry, Cell, and
Molecular Biology**

Biomedical Sciences

Some areas of specialization:

- **Biophysics**
- **Biochemistry**
- **Cellular and molecular biology**
- **Genetics**

Immunology

Pathology

Pharmacology

Physiology

Virology

Biomedical Sciences Employers

Colleges and universities

Professional schools: colleges of pharmacy, dentistry, medicine, veterinary medicine, and agriculture

Federal government:

- National Institutes of Health
- Centers for Disease Control and Prevention
- Food and Drug Administration

State and local public health departments

Clinics and hospitals

Private research foundations

Independent laboratories

Pharmaceutical companies

Biomedical Sciences Strategies

Gain laboratory experience through coursework and faculty-led research projects.

Learn to set up, operate, and maintain laboratory instruments and equipment, and monitor experiments.

Seek internships, part-time employment and volunteer opportunities in the biomedical field. Utilize your campus career center for assistance securing government internships.

Take courses in area(s) of specialization, such as genetics or pharmacology.

Join student chapters of professional organizations related to your area of interest to maintain knowledge of your desired field.

Obtain a Ph.D. for teaching and advanced research and management positions, which requires navigating a competitive admissions process with strong faculty recommendations, grades, and relevant experience.

Research

Basic research

Applied research

Healthcare: clinical research (e.g., virology, immunology, enzymology), medical devices, and equipment

Pharmacology: drug properties, interactions, application, and development

Environmental: testing, air, water, and waste management, regulation

Agricultural: crop production, herbicide/pesticide development and application, bio-remediation

Food science: preservation, nutrition

Cosmeceutical: development and application

Forensic: toxicology, DNA analysis, scientific instrumentation

Research Employers

Industry and laboratories:

- **Pharmaceutical, healthcare, agriculture, food processing and safety, environmental, biotechnology**

Private research institutions

Public health departments

State and federal government:

- **National Science Foundation, National Institutes of Health, Centers for Disease Control and Prevention, Food and Drug Administration, Environmental Protection Agency, Department of Agriculture, Armed Services, and Department of Homeland Security**

Colleges and universities

Research Strategies

Choose courses with laboratory components to build experimental and instrumentation skills.

Gain experience in area of interest through internships, research with professors and/or complete a senior research project.

Complete a certificate training program, usually one year, to learn specialized laboratory techniques. Certification requirements vary by state.

Take a course in grant writing, as many scientists and professors seek funding to support their research and teaching.

Earn a master's degree or Ph.D. to advance into college or university teaching or for directing scientific research in government laboratories or industry.

Consider pursuing a postdoctoral fellowship, generally two-three years, after earning a Ph.D. to gain additional research experience.

Healthcare

Medicine

Dentistry

Optometry

Podiatry

Pharmacy

Chiropracty

Veterinary medicine

Occupational therapy

Physical therapy

Public health

Healthcare Employers

Group or private practice

Hospitals

Clinics

Health networks

Nursing homes

Rehabilitation centers

Mental health institutions

Federal, state, and local health departments

Government agencies

Armed services

Correctional facilities

Colleges or universities

Medical schools

Large corporations

Healthcare Strategies

Plan to attend medical school or other related graduate program.

Meet with a pre-health adviser periodically to discuss curricular decisions.

Research accredited institutions. Check graduation rates, success rates on licensing exams, cost, location, etc.

Join related student organizations and demonstrate leadership abilities.

Consider pursuing certification as a medical laboratory technologist or technician. Licensure varies by state.

Secure strong faculty recommendations who will attest to your interest in the healthcare field as well as your academic ability and work ethic.

Research the various fields within healthcare to determine a particular career goal.

Develop a parallel plan in case medical/graduate school admission is denied.

General Biochemistry, Cell, and Molecular Biology Information

A bachelor's degree will qualify one for work as a laboratory assistant, technician, technologist, or research assistant in education, industry, government, museums, parks, and gardens

An undergraduate degree can also be used for nontechnical work in writing, illustration, sales, photography, and legislation

A master's degree allows for greater specialization in a field and more opportunities in research and Some community colleges will hire master's level teachers.

Doctoral degrees are necessary for advanced research and administrative positions, university teaching, and independent research

The biological sciences are good preparation for a career in healthcare that generally requires a professional degree and license such as medicine, dentistry, and veterinary science

Learn laboratory procedures and become familiar with equipment