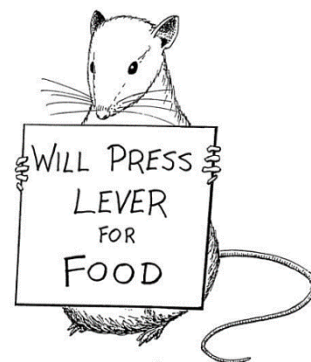


## Career Pathways

### What can I do with a Biology or Biochemistry degree?

**The short answer is: a lot!** And you may not have heard a lot about the options in high school: high-school counselors are often quite focused on a few high-profile jobs (“You’re good at science, you should be a doctor!”). This section will suggest a few of the things you might do with your degree, but you will want to talk to faculty about your specific interests and abilities. Alumni (see [www.nccbiology.com/alumni](http://www.nccbiology.com/alumni)), internships, the folks at Career Development ([noctrl.edu/career-development](http://noctrl.edu/career-development)), our Career Readiness courses, and the wealth of information available from the library or online can also help you find a career that’s a great fit for you.



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## Medicine and the Health Sciences

Medicine might be the most well-known pathway for a Biology or Biochemistry student: when most people picture biology majors, they think of pre-meds in lab coats dissecting something. And in fact a Biology or Biochemistry degree is a great way for a medical career. But a medical career doesn’t just mean medical school and an MD! If you’re interested in practicing healthcare, you could also consider dentistry, veterinary medicine, optometry, physical therapy, physician assistant, pharmacy, occupational therapy, osteopathic medicine, nursing, dietetics, radiation therapy, nuclear medicine, nurse anesthetics, chiropractic, perfusion, and more. There is much more about preparing for careers like these in the section “Pre-Health Pathways.”

## Research

Biology and biochemistry students not intending to pursue a medical career most commonly are interested in research. In a research career, a life scientist develops new understanding, products, or processes. Researchers can specialize in any of dozens of biological fields, such as biochemistry, botany, ecology, development, genetics, microbiology, herpetology, entomology, physiology, evolution, virology, molecular biology, zoology, conservation biology, immunology, plant physiology, marine biology, biophysics, and many more.

**Basic research** usually means seeking to understand living things better: how do organisms respond to changes in their environment? how do bacteria in your gut affect your mood? how do the genetic instructions in a fertilized egg produce a complex organism? how does the immune system respond to a viral infection? Most basic research takes place at universities, government agencies, or private institutions. **Applied research** seeks to solve some kind of practical problem: developing a drug to fight cancer, protecting an endangered plant, correcting a genetic defect, or controlling a disease. University researchers may be engaged in applied research (“translational” research that explores initial application of basic research is currently popular among university researchers), but a lot of applied research takes place in industry (e.g., pharmaceutical, biotechnology, or environmental companies) as well as in hospitals, government agencies, private institutions, etc.

**Where would I do research?** Universities, industry, and other institutions engaged in research frequently hire research technicians with a BS or BA degree. In some situations, these may be laboratory technicians who perform repetitive tasks, but there are also many positions for research associates who have their own research projects or participate intimately in the design and execution of research. An MS degree can open up some opportunities and increase the salary for a technician position, but usually researchers with an MS are doing the same types of work as those with a BS or BA. In order to be the “principal investigator” or the person who gets to decide what research is done, direct students and technicians, apply for grants, etc., you usually need a PhD (doctoral) degree. Almost all academic positions and many industry/government positions also require postdoctoral research training, 2-4 years beyond the PhD. The good news is that PhD students in the life sciences almost always have their graduate tuition paid or waived *and* receive a stipend (currently averaging around \$25,000/year) so that they can concentrate full-time on their research. There is some coursework in a PhD program, and sometimes a teaching requirement, but most of a graduate student’s time is spent working on a research project that will lead to published papers and a dissertation.

## What else could I do?

There are numerous careers in the biological sciences, and many more where life science intersects other fields and a biology or biochemistry degree is desirable. The list below is in no way complete but gives some idea of the possibilities.

- Veterinary medicine
- Public health (education, epidemiology, global health, etc.)
- Secondary education (high-school or middle-school teaching)
- Educational programs at zoos, parks, museums, natural areas, etc.
- Genetic counseling (psychology minor or coursework is very helpful)
- Wildlife management
- Zookeeping (zoos, aquaria, wildlife centers, etc.)
- Scientific writing (English minor or double major desirable)
- Scientific illustration (art minor or double major desirable)
- Biostatistics (math minor or double major desirable)
- Bioinformatics and medical informatics (computer science minor or double major desirable)
- Forestry and conservation biology
- Environmental consulting (environmental studies minor or double major desirable)
- Water quality monitoring
- Forensic medicine or other forensic careers
- Patent law, legal aspects of medical fields, etc. (with a law degree)
- Environmental law (with a law degree; environmental studies minor or double major desirable)
- Health care administration
- Science historian
- Policy development, such as working for NIH, HHS, EPA, FDA, USDA, etc.
- Horticulture and landscaping

- Food microbiology
- Enology (wine science)
- Pharmaceutical sales
- Lab management
- Biomedical engineering
- Fisheries management
- Environmental monitoring
- Park or forest management (e.g., rangers or administrators)
- Quality control for biological industries
- Urban agriculture
- Medical lab technology
- Health education
- Pharmaceutical or biomedical industry administration (with an MBA)
- Wastewater treatment
- Medical writing
- Exercise physiology
- Emergency medical technician
- Health or science policy analyst
- Veterinary assistant
- Environmental engineering
- Food science and product development
- Nutrition and dietetics
- Agricultural production analysis
- Peace Corps or other NGO work (global health, water systems, environmental protection)
- Marketing or market research for biological products
- Physical anthropology (with a double major or minor in anthropology)
- Bioethics (e.g., ethics of genetic modification or health interventions)
- Histology or pathology
- Landscape architecture
- Science journalism
- Fermentation science (brewing industry)
- Phlebotomy
- Cytogenetics
- Educator at a museum, zoo, aquarium, etc.
- Occupational health
- Dairy or poultry production
- Cosmetics
- Textbook writing/editing

- Grant administration
- Lobbying (in areas such as science education, technology, healthcare)
- Financial analysis for pharmaceutical or environmental industry
- Scientific consulting
- Soil or crop science
- Biofuels research and development