

BIOCHEMISTRY

What is Biochemistry? (from <http://www.biochemsoc.org.uk/education/career.htm>)

As defined by the Biochemical Society, “**Biochemistry is the ‘Chemistry of Life.’**”

It is central to all areas of the biological or life sciences. The aim is to provide an understanding of every aspect of the structure and function of living things at the molecular level. It is a practical laboratory science that applies the molecular approaches of chemistry to the vast variety of biological systems. Biochemists work at all levels and with all types of biological organisms, ranging from biomolecules to man. There are close links with other specialist life sciences, such as Cell Biology, Genetics, Microbiology, Molecular Biology, Physiology and Pharmacology. In fact, in many cases the distinctions between these disciplines are becoming increasingly blurred. They use biochemical techniques, and biochemists work in all these areas. Biochemistry offers the tremendous challenge of seeking to understand the most fundamental of life's processes at the molecular level, and to utilize this knowledge for the benefit of mankind. You will have read, for example, how biochemists, working with colleagues in other disciplines, have developed the new technologies of Molecular Biology and Genetic Engineering. These have enabled the production of therapeutically important human proteins such as insulin and blood clotting factors by cloning procedures, thus avoiding costly, time-consuming and inefficient isolation of these molecules from biological sources; the identification and possible remedying of genetic problems; and the use of DNA fingerprinting in forensic science.”

What is this career like? (from <http://www.biochemsoc.org.uk/education/career.htm>)

“Biochemists work in many walks of life: industry, hospitals, agriculture, research institutes, education and associated areas. Many areas of everyday life as diverse as medical products and diagnostics, new food and its safety, crop improvement, cosmetics and forensic science owe their development or even existence to biochemists.

Industry

Pharmaceutical, food, brewing, biotechnology and agrochemical companies all need and employ biochemists to develop new products and monitor the production, quality control and safety of existing ones.

Medicine

Hospitals, public health laboratories and medical research institutes, as well as the pharmaceutical industry, all require biochemists. Here they provide a diagnostic service, carrying out tests on blood, urine and other body fluids, alongside researching the underlying causes of disease and the methods of treatment.

Agriculture and the Environment

Biochemists and biotechnologists, who often have a biochemistry degree, working in agriculture have been responsible for many developments, such as pest-resistant crops, improvements in crop yields and tomatoes that keep better. They also monitor the environment. Employers include seed companies, local government, the Civil Service and water authorities.

Education

All levels of education offer prospects for biochemists. The combination of biology and chemistry, along with the training in numerical and analytical skills that is given in any area of science, makes biochemistry ideal for teaching throughout the school age range. There are also opportunities for more

advanced teaching, usually associated with research, in universities and colleges, and in medical, dental and veterinary schools.

Away from Science

A science background can be an excellent starting point for many other careers. Biochemistry is a numerate subject that develops analytical thinking, creativity in problem solving, and the ability to handle large amounts of complex information—skills required in jobs in all walks of life, including, for example, sales and marketing, accountancy and finance, journalism, and patent work.”

Related Career Titles (from <http://www.uncwil.edu/stuaff/career/Majors/index.htm>)

Agricultural Scientist	Environmental Engineer	Marine Engineering Tech
Agronomist	Environmental Health	Marine Fisheries/Worker
Animal Scientist	Environmental Protection	Marine Geologist
Aquaculture Farmer	Ergonomist	Marine Sales
Aqua culturist	Fish Hatchery Tech	Marine Tourist Worker
Aquarium & Museum	Fisheries Conservation	Market Research Analyst
Aquarium Technician	Florist	Medical Illustrator
Aquatic Biologist	FDA Inspector	Medical Laboratory Tech
Assayer	Food Scientist-Tech	Medical Librarian
Barrier Beach Mgr	Forester	Medical Technologist
Bio-Engineer	Genetic Eng. Research	Meteorologist
Bio-Technologist	Geographer	Microbiologist
Biochemist	Health Officer	Molecular Biologist
Biometrician	Horticulturist	Mortician
Boat Builder & Repair	Hospital Administrator	Museum/Aquarium Admin.
Botanist	Hydrographic Surveyor	Mycologist
Chem. Oceanographer	Industrial Hygienist	Naval Architect
Chiropractor	Industrial Marine Econ.	Genetic Counselor
Coastal Resources Mgr.	Entomologist	Net Designer
College Professor	Forensic Chemist	Neurobiologist
Color Development Chemist	Limnological Technician	Oceanographer
Commercial Fishing Eng.	Marine-Coastal Consult	Paramedic
Coroner	Marine Bacteriologist	Parasitologist
Crime Lab Analyst	Marine Biologist	Pharmaceutical Sales
Dentist	Marine Ecologist	Physician
Dietitian & Nutritionist	Physical Therapist	Salt Marsh Manager
Ecologist	Public Health Worker	Science Writer
Pharmacy Technician	Science Teacher	Soil Conservationist
Science Lab Tech.	State Parks & Recreation	Systems Analyst
Zoologist	Test-Inspection Tech.	Toxicologist

Wildlife Resources Mgr.	Wildlife Biologist	Science Illustrator
Technical Writer	Film Maker	Water Quality Technician
Geophysicist/Physicist	Seafood Processor-Researcher	Veterinarian
Commercial Inland Water Transportation Worker	Wastewater Treatment Chemist	Underwater Technician

How do you get ready? (from <http://career.utk.edu/students/majors.asp>)

- As an undergraduate, seek laboratory experiences such as research projects, volunteering with professors, summer jobs, or internships.
- Participate in research programs sponsored by organizations such as the National Science Foundation and the National Institutes of Health.
- Consider a certificate program or specialized master's program to qualify for research technician positions.
- Earn a master's degree for greater variety and autonomy on the job.
- Earn a Ph.D. to work on high-level research projects, to direct research programs, to enter high levels of administration, and to teach at four-year post-secondary institutions. Postdoctoral fellowships may also be required.
- Learn to work independently and as part of a team.
- Develop the ability to communicate clearly.
- Gain competencies in computers and mathematics.
- Read scientific journals and join related professional organizations.
- Combine an undergraduate degree in biochemistry with a degree in law, computer programming, business, education, information science or other discipline to expand career opportunities.

Related Major Skills (from <http://www.uncwil.edu/stuaff/career/Majors/index.htm>)

Developing theories	Science and math ability
Conduct research	Perseverance
Attending to data	Analytical skills
Curiosity	Follow-through skills
Utilizing formulas	Perform experiments
Operate scientific equipment	Information handling & organization
Practical knowledge and problem solving	Statistical awareness
Process data	Observation and decision making
Work independently and in groups	Technical skills
Oral and written communication	Remain objective

What about the future? (from www.bls.gov/oco)

Employment of biochemists is projected to grow about as fast as average for all occupations through the year 2014. For additional job outlook information, refer to www.bls.gov/oco.

Available at Albright College Career Development Center's Resource Library

- Great Jobs for Biology Majors, by Blythe Camenson
- Careers for Animal Lovers and Other Zoological Types, by Louise Miller
- Careers for Environmental Types and Others Who Respect the Earth, by Jane Kinney and Michael Fasulo
- Careers for Nature Lovers and Other Outdoor Types, by Louise Miller
- Careers for Plant Lovers and Other Green Thumb Types, by Blythe Camenson
- Careers for Scientific Types and Others with Inquiring Minds, by Jan Goldberg
- Opportunities in Biological Science Careers, by Charles A. Winter
- Opportunities in Biotechnology Careers, by Sheldon S. Brown
- Opportunities in Dental Care Careers, by Bonnie Kendall
- Opportunities in Environmental Careers, by Odom Fanning
- Opportunities in Eye Care Careers, by Kathleen Belikoff
- Opportunities in Forestry Careers, by Christopher M. Wille
- Opportunities in Horticulture Careers, by Jan Goldberg
- Opportunities in Physical Therapy Careers, by Bernice R. Krumhansl
- Opportunities in Physician Careers, by Jan Sugar-Webb
- Opportunities in Public Health Careers, by George E. Pickett & Terry W. Pickett
- Opportunities in Research and Development Careers, by Jan Goldberg
- Opportunities in Sports Medicine Careers, by William R. Heitzmann
- Opportunities in Veterinary Medicine Careers, by Robert E. Swope
- Great Jobs for Chemistry Majors, by Mark Rowh
- Career Opportunities in Science, by Susan Echaore-McDavid
- Careers for Competitive Spirits and Other Peak Performers, by Jan Goldberg
- Careers for Geniuses and Other Gifted Types, by Jan Goldberg
- Careers for Introverts and Other Solitary Types, Blythe Camenson
- Opportunities in Chemistry Careers, by John H. Woodburn
- Opportunities in Energy Careers, by John H. Woodburn
- Opportunities in Environmental Careers, by Odom Fanning
- Opportunities in Forensic Science Careers, by Blythe Camenson
- Opportunities in Medical Technology Careers, by Karen Karni
- Opportunities in Pharmacy Careers, by Fred Gable
- Opportunities in Research and Development Careers, by Jan Goldberg
- Opportunities in Science Technician Careers, by JoAnn Chirico
- The Complete Guide to Environmental Careers in the 21st Century, The Environmental Careers Organization

Disclaimer

Links to Internet sites are provided for your convenience and do not constitute an endorsement by Albright College or the Career Development Center.

Links found at <http://www.uncwil.edu/stuaff/career/Majors/index.htm>.

Job and Internship Search Links

- HireBio <http://www.hirebio.com>
- HireHealth <http://www.hirehealth.com>
- Health Care Job Store <http://www.healthcarejobstore.com>
- Health Care Job <http://healthcarejob.com>
- MedHunters.com <http://www.medhunters.com>
- Pharmaceutical Jobs <http://www.hirerx.com>
- Naturejobs <http://naturejobs.nature.com/js.php>
- Tiny Tech Jobs <http://www.tinytechjobs.com>
- The SciWeb Biotechnology Career Center <http://www.biocareer.com/index.cfm>
- Science Careers <http://www.sciencecareers.org>
- The American Academy of Forensic Sciences <http://www.aafs.org>
- BioMedScientist Jobs <http://careers.the-scientist.com>
- CDC Jobs <http://www.cdc.gov/>
- Pre-Med Internship Opportunities <http://people.rit.edu/gtfsbi/Symp/premed.htm>
- Careers with the Agricultural Research Service <http://www.ars.usda.gov/careers>
- Life Sciences World <http://www.lifesciencesworld.com/>
- BioSpace <http://www.biospace.com>
- BIOTECH Career Center <http://www.biotechcareercenter.com/index.html>
- Sciencejobs.com: the best jobs from the leaders in bioscience <http://www.sciencejobs.com>
- Maritime Employment Opportunities <http://www.maritimeemployment.com>
- Publish and Perish: Guide to On-line Employment and Career Links for the Biomedical Scientist <http://www.his.com/~graeme/emppo.html>
- Biology Jobs <http://www.BiologyJobs.com>
- ChemJobs.net <http://www.chemjobs.net>
- U.S. Department of Health and Human Services <http://www.hhs.gov/jobs>
www.hhs.gov/careers/students.html
- National Institute of Health <http://www.nih.gov>; For internships go to <http://www.training.nih.gov>

Career Planning Links

- Careers in Genetic Counseling <http://www.nsgc.org/career/>
- What is an Animal Behaviorist?
<http://www.animalbehavior.org/ABS/Guides/Careers.pdf>
OR
http://www.animalbehavior.org/ABS/Education/careers_brochure.html
- Health Management Careers <http://www.healthmanagementcareers.org/careers/cfm>
- Careers in Forensic Science <http://www.aafs.org>
- Medical/Health Exploration <http://www.nlm.nih.gov/services/medicaled.html#general>
- Center for Health Careers <http://chc.hcwp.org/occubull.htm>
- Healthcare Career Resource Center: Site includes short history of medical careers, healthcare career information, and information on schools and scholarships
<http://library.thinkquest.org/15569/index.html>

- Biological and Medical Scientists Occupational Outlook Handbook, U.S. Department of Labor <http://stats.bls.gov/oco/ocos047.htm>
- Chemist (Occupational Outlook Handbook) <http://stats.bls.gov/oco/ocos049.htm>
- Organic Chemistry Jobs Worldwide <http://www.organicworldwide.net/jobs/>
- Chemist Jobs <http://www.chemistjobs.com>
- iHireChemists.com <http://www.ihirechemists.com>
- Journal of Young Investigators Science Career Center <http://www.jyi.org/SCC/Index.php>

Professional Association Links

- The American Society for Cell Biology <http://www.ascb.org>
- American Association for Clinical Chemistry <http://aacc.jobcontrolcenter.com/search.cfm>
- American Association of Zoo Keepers <http://www.aazk.org>
- American Aquarium and Zoo Association <http://aza.org/>
- The American Institute of Biological Sciences <http://www.aibs.org>
- International Biometric Society <http://www.tibs.org/>
- U.S. Geological Survey - Biological Resources <http://biology.usgs.gov/>
- RSC's Chemical Science Network <http://www.rsc.org/chemistryworld/index.asp>
- American Academy of Forensic Sciences <http://www.aafs.org>
- American Society of Crime Laboratory Directors <http://www.asclد.org>
- Chemical and Engineering News Online <http://pubs.acs.org/cen/index.html>
- Chem Web: searchable database and publications for students <http://chemweb.com/jobs>
- American Institute of Chemical Engineers <http://www.aiche.org>
- American Institute of Chemists <http://www.theaic.org>