

## **Molecular Toxicology Career Snapshot**

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**Molecular Toxicology (MT)** focuses on the adverse effects of natural and synthetic chemicals on living organisms and how these effects are modulated by genetic, physiological, and environmental factors. The field applies molecular and computational methods to study health, safety, and well-being by concentrating on the hazardous and beneficial qualities of toxic agents, ranging from industrially produced environmental contaminants to naturally occurring herbs. Offered by the Department of Nutritional Sciences and Toxicology (NST): <http://nst.berkeley.edu>

### **Key Skills**

- Prepare for upper division work in the major and sharpen your technical skills by building a strong foundation in the core science requirements (chemistry, organic chemistry, biology, biochemistry).
- Learn techniques of research and analysis by participating in an undergraduate research project, of your own design or through a research program.
- Develop proficiency in all forms of communication, including public speaking and writing, as well as one-on-one advising or tutoring.
- Cultivate leadership, problem-solving, and team-building skills by participating in student organizations and activities.
- Familiarize yourself with the dynamics of a work setting through informational interviews, internships, and volunteer experiences.
- Diversify your life experience by immersing yourself in a foreign culture (e.g., study abroad) or a new environment (e.g., rural, urban).

### **Career Pathways**

The Molecular Toxicology major provides training on the biological, biochemical, and genetic aspects of the field. The daily activities of a toxicologist vary depending on the nature of the particular job. Some in the field employ molecular tools and techniques as well as computer technology to investigate the nature and impact of chemicals. Others will work toward developing educational programs or policies to inform and guide the public of the risks and benefits of chemicals commonly encountered in everyday life. Still others may apply their knowledge of chemicals to the development of consumer and industry products. Generally, the major prepares students for a range of careers in environmental protection, public health, pharmacology, forensic sciences, medicine, pharmaceuticals, biotechnology, or the food industry.

For more information on professional preparation and specialties in the field, check out the Society of Toxicology website: <http://www.toxicology.org>

### **Public and Non-Profit Sector Jobs**

- **Various local, state, and federal agencies:** Develop laws and policies to ensure product safety, proper chemical production and disposal, and environmental protection. Conduct forensic work related to establishing a cause of death or important clues to solve crimes. Investigate public health concerns by working with Poison Control Centers. Conduct lab and field research for municipal departments (e.g., water, utilities, parks) or for governmental agencies, such as the Food and Drug Administration or Environmental Protection Agency.
- **Education:** Teach the biological sciences in educational institutions. Conduct research in the biological sciences for universities or governmental organizations.
- **Research and public service:** Characterize the mode of action of naturally occurring carcinogens and cancer protective agents in food. Study food-borne illness and the microbiological safety of our food and water supply. Investigate environmental and cellular toxins and DNA damage. Identify the anti-microbial activity of natural products.

### Private Sector Jobs

- **Health organizations:** Become a health professional in medicine, dentistry, pharmacy, optometry, physical therapy, and so on.
- **Pharmaceutical industry:** Work on regulation of drugs or other chemicals to determine safety for the consumer market.
- **General consumer businesses:** Develop new and useful products such as pharmaceuticals, industrial chemicals, and consumer products such as soaps, paints, cosmetics, and food additives.
- **Biotechnology firms:** Conduct research and development for new applied technologies.

### Recent Alumni: Where Are They Now?

The Molecular Toxicology major was created in fall 2004, so we currently do not have information about the employment or graduate school destinations of students pursuing this degree. However, the success of graduates from other majors in the College of Natural Resources is a good reflection of the types of career paths that Molecular Toxicology students can follow as well. Courtesy of the UC Berkeley Career Center, take a look at what young Cal alumni are doing now:

<http://career.berkeley.edu/Major/major.stm>

### Internship & Career Resources

- **CNR Newsline:** The College of Natural Resources Newsline is a moderated listserv that will keep you in the loop about research opportunities, internships, job opportunities, and more. To subscribe to *CNR Newsline*, send an email from your primary email account to **majordomo@listlink.berkeley.edu**. Leave the subject heading blank. In the body of the message, type the following command: **subscribe cnr\_newsline**
- **CareerMail:** These Career Center mailing lists target specific career fields and topics, so you can choose whichever ones are ideal for you.  
<http://career.berkeley.edu/MailList/MailList.asp>
- **Internships**  
<http://career.berkeley.edu/Internships/internships.stm>
- **CalJobs:** Search this comprehensive database for full-time, part-time, internship, and summer jobs, both on and off campus.  
<http://career.berkeley.edu/Jobs/CalJobs.stm>
- **UC Berkeley Career Center**  
<http://career.berkeley.edu>