NCW 2007: The Many Faces of Chemistry

Career Profile: Natural Products Chemist

by Eloy Rodriguez

Describe your present position.

I'm currently a professor and research scientist at Cornell University in Ithaca, NY. My laboratory focuses on the organic chemistry and evolution of Nature-based molecules and zoopharmacognosy, the study of how animals medicate themselves.

Did you get to your present position because of your background in chemistry and area of specialization or did life experience(s) take you there?

I have an inborn curiosity about Nature and interest in how things work both at the level of the organism and at the molecular level. I have always enjoyed chemistry; when I was eight years old, I learned to make gunpowder and read about chemicals in the encyclopedia. As a young boy, I watched Mr. Wizard, a science program on television, and thrilled my friends with simple experiments I had seen. In college I learned to love organic chemistry. More important was the fact that as a undergraduate I got involved in the study of natural products, biology, and ecology. I was fascinated with how small molecules play important roles in defense, odor, communication, and in medicine and health.

In what areas of chemistry did you specialize?

During my Ph.D. program I studied the organic chemistry, structure elucidation, and chemical ecology of natural plant products. I also learned about the evolution of natural products and their application to phylogenetics and taxonomy.

Do you use chemistry on a daily basis? Describe what you do on a day-to-day basis.

Daily life revolves around the chemistry and biology of large and small organic molecules. My car is driven by small molecules (gasoline), my body lives, runs on molecular fuel, and dies by molecules that I drink, eat, put on my skin and take as medicine to combat sickness and diabetes. I use pleasant-smelling molecules to combat stinky sweat molecules broken down by bacteria on my body. In my research, I study natural medicines and learn how to make better products for humans and animals. I also perform research in the Amazon and African rain forests, studying animals to learn how they choose natural products to medicate themselves.

Describe the personal skills that have played an essential role in your present position.

Being able to articulate your ideas in ways that everybody understands is essential. I am very personable and take considerable time to talk to all students, especially minority students that come from low-income families and have little to no access to science and mentors. I use that time to teach them about life and the possibility of their being scientists and chemists.

photo by Roger Segelken, Cornell Univ. News Service

Eloy Rodriguez selects a plant for collection in the rain forest in Venezuela. Photo copyright 1997 Cornell University.

What advice do you have for those who wish to pursue this or some other nontraditional career path?

The path you choose should be one that permits you to dream, to be creative, to be a maverick, and to be passionate. At the same time, you must be disciplined and strive to be the best. When you go into an interview or begin a project, make a point to be informed. Empires have collapsed, such as the great Aztec empire, because the leaders were totally uninformed or refused to be informed. Respect humanity, diversity, the environment, and Nature.

How and where can readers learn more about this type of career?

Information about chemistry, biology, and the connections between the two are found throughout the Internet, encyclopedias, books on explorers, inventors, and scientists, the NOVA PBS series, and the Discovery and History Channels. I always read the Tuesday "Science Times" section of *The New York Times* newspaper. Popular magazines and journals such as *Scientific American* and *Discovery* are useful. For more information on my own research visit *http://www.plantbio.cornell.edu/peoplec39f.html?netID=er30* (accessed Jul 2007).

Are there other thoughts or lessons learned that you would like to share with our readers?

Future scientists and academician should always read books, from fiction to nonfiction. Books provide the portals to creativity to inspire you. Be curious about your life and surroundings. Explore the world around you.

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Related Resources

1. Agosta, William C. Medicines and Drugs from Plants. *J. Chem. Educ.* **1997,** *74,* 857.
2. Cannon, Jonathan G.; Burton, Robert A.; Wood, Steven G.; Owen, Noel L. Naturally Occurring Fish Poisons from Plants. *J. Chem. Educ.* **2004,** *81,* 1457.