

Globalization in Science Education

By Alma Freeman

After just three years, Emory's Science Experience Abroad (SEA) program is already receiving national recognition. This year, the program was chosen as a "Best Practice" in international education by the Institute of International Educators and received the 2007 Andrew Heiskell Award for Innovations in International Education.

"Science is now an international endeavor," said Preetha Ram, assistant dean for science and Emory chemistry professor of 18 years, "and in order to prepare Emory science students for what is now a global discipline, it is critical that they are exposed to international cultures at an early point in their careers."

The Emory Science Initiatives' Office for Undergraduate Education collaborated with the Center for International Programs Abroad (CIPA) to create a program that would enable science students to stay on track towards their major, pursue their professional and career goals, and incorporate study abroad. Since its launch three years ago, SEA has helped to increase study abroad participation among science students from nine to 20 percent.

Data points to a shift that some say reflects a more global landscape in the field of science. In 2001, 70 percent of all worldwide scientific papers were of non-U.S. origin, while 38 percent of doctorate holders in the fields of science and engineering living in the U.S. were foreign born (according to 2000 U.S. Census data). "When you educate young scientists for the future, they will be working with international scientists and dealing with enormous global issues – it's better that they get used to working in a multicultural arena, and part of the preparation for this is to send young people abroad to discover things for themselves," said Ram.

Despite reasons that suggest it is important for science students to spend time abroad, participation in study abroad programs among undergraduate science students has statistically remained low. In 2002, nearly 40 percent of Emory undergraduates studied abroad, but only nine percent were science majors. Nationally, science students report a number of reasons for their lower levels of participation including: difficulty in meeting sequential course loads, higher course demands, minimal encouragement from faculty, language barriers, and concern over credit transfers from foreign universities.

By offering science students a combination of summer and semester study programs, as well as research, internship, and



Emory students participate in the summer study abroad program in Siena, Italy.



community engagement opportunities, SEA enables students to tailor intellectual experiences to suit individual backgrounds and needs. For those who may be concerned about taking science courses in a foreign language, SEA offers programs in several English-speaking countries, including semester-long programs in world-class universities such as Imperial College in London, University of St Andrews in Scotland, University of Melbourne in Australia, and University of the Virgin Islands.

In order for these programs to flourish, particularly semester-long programs, explained CIPA Executive Director Philip Wainwright, involvement from science faculty at an early stage in program development and student advising is extremely important. Emory's first semester exchange program – the neuroscience and behavioral biology program at the University of St Andrews – grew from faculty connections between the two institutions. Many years of research collaboration between chemistry Professor Dennis Liotta and his colleague

Anthony Barrett of Imperial College paved the way for an ongoing science exchange there. Efforts such as these have led to a growing number of science faculty who now serve as SEA student advisors. After visiting the National University of Singapore and the Korean Advanced Institute of Science and Technology (KAIST) in South Korea in March, Ram and Wainwright soon expect an exchange agreement with the two institutes to become available to Emory science students.

Summer abroad opportunities offering science courses taught by Emory faculty include the chemistry studies program in Siena, Italy, an environment and ecology program in Queensland, Australia, and starting this year, a global health interdisciplinary studies course in South Africa.

Students with prior research experience may also apply for international research fellowships to do work abroad. Participating countries thus far include: France, Italy, Scotland, Spain, Australia, Venezuela, England, South Africa, and Thailand. Before going abroad, an Emory faculty member must partner with the student to prepare them for research and to pair them with a mentor abroad. This program, International Research Experience in Science, is jointly supported internally by funding from the SIRE program in the College, CIPA, and external organizations such as the Howard Hughes International Scholars and the German Academic Exchange (DAAD).

Anthropology and biology major Dorothy Chyung spent a summer at a lab in Thailand conducting anti-malarial drug research. Her experience allowed her not only to explore a different culture, she said, but also exposed her to different research styles, such as recycling lab equipment that is often disposed of here and a different hierarchical structure of command in the lab.

SEA also offers science students opportunities abroad through

internship and community engagement programs. Opportunities include an internship at a vineyard in Italy as well as plans to place Emory science students in an internship program at IBM in the UK. Ram hopes to continue developing these types of programs through the budding Adopt a Scholar Program that encourages Emory alumni around the world to “adopt” an Emory science student. By doing so, alumni could help support students financially while abroad and become an integral part of their experience.

Emory chemistry major Nicholas Justice recalled his experience in Siena, where he completed SEA’s summer, internship, and semester programs during part of his junior year. As an intern at a vineyard just outside Siena, Justice worked alongside Italian interns to analyze wine during fermentation in labs. Although the people with whom he worked at the vineyard weren’t able to speak English perfectly, he picked up Italian quickly and the experience he had navigating through language and cultural barriers has helped him to become more flexible and understanding now back at Emory. “It’s very important to work across language barriers because they exist everywhere, and certainly working in a lab with someone who didn’t speak English taught me a lot about how to work with international guests at the labs at Emory,” he said.

CIPA’s Wainwright emphasized that no matter which route a student chooses to take, the most important decision is to take advantage of study abroad as an undergraduate. “When you look back after you have been practicing medicine for 40 years, you may reflect and wish that you would have taken a little time to enjoy the wealth of opportunity that study abroad offers everyone.” ❁

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Emory Around the World: Study Abroad Facts

Percentage of Emory students that study abroad: **40**

Percentage of national study abroad students who are female: **70**

Number of study abroad programs available to Emory students worldwide: **100**

Percent increase of Emory science students who studied abroad in the last three years: **11**

Emory’s national rank for study abroad participation: **12**

Number of Emory-sponsored, faculty-led summer programs held each year: **20**

Number of U.S. students who studied abroad for academic credit in 2004-2005: **205,983**

Sources: CIPA and Institute of International Education’s Open Doors 2006 Report

