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NEWS

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Students race bacteria in MIT competition

By Jessica Remitz
For The Collegian

When thinking of a relay race, the first thing that comes to mind is a swim meet or a track and field event.

But for the students of the 2005 iGEM project, what comes to mind is E. coli.

On Nov. 5 and 6, seven Penn State students brought their synthetic biology experiment, an E. coli relay race, to the Massachusetts Institute of Technology (MIT) for the third annual intercollegiate Genetically Engineered Machine, or iGEM, competition.

The product of their work is a bacterial relay race, in which the motility of E. coli is channeled through DNA segments and used to instigate swimming, said faculty instructor Steve Walker.

Lane Weaver, a research student, said the bacteria

then travel across the lane to set off another E. coli sample, simulating a relay race. The applications of the project are seen in biological sensors in the environment and DNA programming, Weaver said.

"The idea is to create a programming language for cells, to get them to do things in coordinated fashions. Getting these different parts to stop and go is a useful way to harness molecular movement," said Tom Richard, the faculty adviser for the project.

The competition was originated by Drew Endy, a biological engineering professor at MIT. This is the first year Penn State participated in the program.

"The first year it was done, only MIT was involved. Last year, there were five schools at the competition, and this year there were 13. This is going to be an annual competition, so we're hoping to get the word out and get even more participation for next summer's team," Weaver said.

The students heard about the project through Richard and Pat Cirino, another faculty adviser for the project.

"We decided to start a team last March and raised over $12,000 through colleges and institutions on campus to get the project running," Cirino said. "Research Experiences for Undergraduates paid for two students to work on the project, and we gave stipends to others through the money raised to help work."

More than a dozen students worked on the project, but only seven went to the competition, Anthony Tascone (senior-biochemistry and molecular biology) said. Students were in the lab up to 10 hours a week

PHOTO: Andrew Gehman

Jon Badalamenti (junior-biochemistry and molecular biology) pipettes bacterial DNA for the third annual intercollegiate Genetically Engineered Machine (iGEM) competition. Seven Penn State students participated in the contest.

working before the competition, he said. Work on the project will continue in the spring semester. At the competition in November, none of the projects were finished, as creating and assembling something of this difficulty is nearly impossible to accomplish in less than six months, Richard said.

Another conference is scheduled in Tucson, Ariz., in March 2006. A panel of synthetic biologists will be there, allowing students to participate in a professional scientific process, Weaver said.

"We're continuing work on the project in the spring semester," Weaver said. "Ideally, we'd like to publish our results, but that will really depend on how far we can take the idea. Either way, we were successful in that we were able to represent Penn State among many other big-name schools."

Faculty adviser Ming Tien said students have made progress on the project, and the possibility of publication is an incentive for them to keep working.

"The opportunity for undergraduate students to participate in cutting edge research can be life changing," Richard said.

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