

Students Involved In Summer Research

GENEVA, N.Y. — Lauren Thomson spent the summer of '93 in Massapequa selling kitchenware at Lechter's. She spent the summer of '94 at Cornell University's Agricultural Experiment Station in Geneva, N.Y., extracting nerve ganglia from European corn borers under a high-powered microscope and running electrophoresis gels with Peter Ma.

For her and the other 14 Hobart and William Smith students who had spent previous summers as babysitters, waitresses, clerks, and lifeguards, lab work that involved performing feeding studies with Japanese beetles, testing soil cores for the presence of nematodes, and amplifying deoxyribonucleic acid (DNA) were experiences none of them is liable to forget.

"I really didn't know what to expect," said 18-year-old Amy

Mahar, an incoming freshman from Olean, N.Y., who worked in Mike Villani's entomology lab stressing populations of Japanese beetles and European chafer larvae and looking for nematodes with Amanda Fantauzzo from Rochester. "What we learned is that a lot of research doesn't go the way you expect it to go. There are a lot of variables in nature that affect field research. In high school biology, lab results were pretty easy to predict."

Amy, Amanda, and Lauren were involved in the first year of a three-year, \$550,000 summer research grant received by the biology department at HWS from the Undergraduate Biological Sciences Education Program of the Howard Hughes Medical Institute. "The project involves close collaboration with the Experiment

Station," said Tom Glover, HWS professor of biology and adjunct professor of entomology at the Experiment Station. "Everybody has been extremely supportive of the students."

The students received free room and board at HWS, and a \$2,000 stipend for eight weeks of laboratory work performed at either HWS or the Station. Five days a week, a bus brought nine of them to the station labs of professors Wendell Roelofs, David Soderlund, Mike Villani, Harvey Reissig, Doug Knipple, and Art Agnello. The other six worked in the biology labs at HWS studying physiology and anatomy. In addition to working on an original research project, students had the opportunity to do field work and explore local resources. Those students already matriculated at HWS were designated Hughes Scholars. The few who were incoming freshmen were called Elizabeth Blackwell Scholars.

"In 1987, the Institute launched a grants program to help strengthen education in biological sciences and the fields of chemistry, physics, and mathematics as they relate to biology," said Glover. The purpose of the program was to enhance science education from the undergraduate level on. "Qualified students usually aren't exposed to advanced laboratory settings until graduate school and beyond," he said. This grant targets that problem.

The Howard Hughes Medical Institute is a nonprofit medical research organization in Bethesda, Md. Their principal objectives are the advancement of fundamental knowledge in biomedical science and the application of new scientific knowledge to the alleviation of disease and the promotion of health.

Two days before Lauren Thomson was due to finish her stint in Roelofs' lab, words like "subesophageal ganglion," "neuropeptides," and "PBAN" slide from her tongue without hesitation. "Eight weeks ago I barely knew what they meant," she said. The 19-year-old HWS junior has performed at least 200 dissections on corn borers this summer. Her steadiness with \$400 stainless steel forceps and \$230 scissors, and her hand-and-eye coordination at tolerances of 1 mm and less, has brought praise from both Roelofs and Ma. "Once I start a gel, it takes at least two full days before I see any results," said Thomson, who has a new appreciation for the word patience.

"She is very, very good," said Ma, who admitted he was initially hesitant about working with someone with no previous experience in small-scale dissection. "When you have a kid who comes in with no lab experience and you start to train them and see them progress—that is very exciting." "Peter is a good teacher, a very patient man," said Thomson, who plans to major in biology or biochemistry and go on to medical or grad school after she is graduated.

Using a catheter to take blood samples from bullfrogs that weighed more than a pound apiece, Danusia Maria Hryckowian, an incoming freshman from Troy who worked with HWS professors Joel Kerlan and James Ryan, studied the effects of diving on the pH levels of frogs in the biology lab at HWS. "I had to learn to use the blood gas meter and then calibrated the machine itself because it was new," she

said. "I also learned how to insert a catheter in the sciatic artery." In the same lab, Michael Sergi, a 21-year-old senior from Canton, Mass., was studying how stress levels changed testosterone hormone levels in birds. Using fist-sized Japanese quail, Sergi, who was working with Kerlan on a three-year project, said his research was important in avian biology because hormone levels determined many aspects of avian behavior, including when birds reproduced and when they migrated.

Reauelle King and Nasrene Yadegari worked in Doug Knipple and David Soderlund's entomology labs at the Experiment Station under the immediate supervision of post-doc Stuart Miller. Both women are 21 years old, seniors at HWS this fall, and pre-med students. "We are working on genes in fruit flies," said King. "The genes are suspected to code for the proteins that are GABA receptors and may be important sites of action for insecticides." The two spent many hours setting up polymerase chain reactions to make the proteins which can be used to generate monoclonal antibodies. They started working at the Station in the spring on an independent study project and will continue their lab work in the fall as a senior honors project.

"I've always been interested in biology," said Yadegari. "Just last week, I read an article in *Science* magazine, and for the first time in my life I realized I understood the entire article. That wouldn't have happened before this summer."

"Reauelle and Nasrene are learning very basic molecular biology techniques," said Glover. "They are doing similar work to that being used to decode DNA in

the O.J. Simpson case."

Amy Mahar and Amanda Fantauzzo worked on several research projects in Mike Villani's lab under the supervision of Carol Ferguson and Nancy Consolie.

"It is very good for them to have the opportunity to do hands-on research and be involved in lab situations with people who are at different stages of their professional careers," said Carol Ferguson, visiting assistant professor of Biology at HWS who worked with the students in Villani's lab on a daily basis. Ferguson was one of five HWS faculty mentors on the project, along with Joel Kerlan, Steven Kolmes, James Ryan and Tom Glover. "They're learning that science is not cut and dry and that research is not always straightforward. They are finding out that there are a lot of glitches that have to be worked out as their projects progress." Ferguson said she was particularly glad of the opportunity to act as a mentor for so many young women. "I found it very fulfilling," she said.

Although the program was not specifically targeted at women or minorities, 13 of the 15 students were women. "There were 31 applicants. More women than men applied to begin with," said Ferguson. "We took those that were most qualified and that's just how the numbers worked out."

The other five involved in research at the Experiment Station were Kristen Schaeffer of Rochester, Maria Young of Buffalo, Julie Throop of Whitesboro, and Julie Zelazny of Salamanca.

Demands differed depending on the professor supervising the research project, but all students were required to keep daily lab notebooks and prepare a final summary poster or paper.

Building Farm-City Bonds

The clash between rural and urban New York is seen in many ways. During the legislative session, battlelines are often drawn in the budget debates between lawmakers from upstate New York and those from New York City. The same can be said for the election season. Politicians divide their campaigning between the voter-rich urban areas and the vast expanses of rural New York, often with different messages for the different cultures.

The fighting often goes unnoticed by the public, urban/suburban people are sometimes in heated confrontations with their farm neighbors. Many non-farmers — especially those who are new implants to agricultural areas — sometimes fail to understand some of the things farmers need to do, such as spreading manure, spraying pesticides, and moving their slow-moving agricultural vehicles on the highway.

Non-farmers, today, are often several generations removed from

life on the farm. With farmers making up less than one percent of the state's 18 million residents, it is imperative that farmers build strong positive relationships with their urban neighbors.

Farms provide the state with plenty of open space and they pump \$3 billion into the state's economy. They are concerned about their rights as private property owners, workers' compensation reform, and property tax relief. On the other hand, non-farmers are our customers. They're interested in jobs, as well as having access to high quality, safe, affordable food.

From November 18-24, we celebrate Farm-City Week. During that week, we try and build cooperation and understanding between farmers and their urban counterparts. Keeping the lines of communication open and broadening the understanding between farmers and their city cousins is a mission that's important to both sectors of our country.

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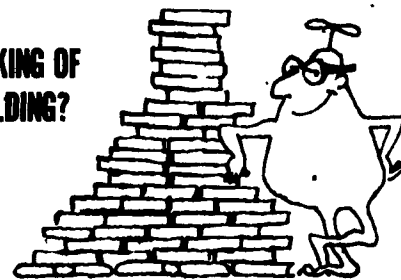
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