



(Left to right) Alanna Costelloe-Kuehn, Noah McKenna, and Viktoriya Pavlenkovich

RESEARCH OPPORTUNITY

Bard-Rockefeller Semester in Science Begins

An opportunity to do laboratory research at a premier biomedical facility in New York City drew three juniors to the first Bard-Rockefeller Semester in Science (BRSS). Bard College's ongoing partnership with the internationally respected Rockefeller University has been augmented to offer BRSS, a one-semester program designed for advanced science students, particularly those in the fields of neuroscience, biochemistry, molecular biology, developmental biology, biophysics, and genetics. In addition to working in the laboratory with Rockefeller University faculty, BRSS students take specially designed courses there and in the Bard Globalization and International Affairs (BGIA) Program.

Attending BRSS last semester were Alanna Costelloe-Kuehn of East Greenbush, New York; Noah McKenna of Jamaica Plain, Massachusetts; and Viktoriya Pavlenkovich of Mogilev, Belarus. All of them are concentrating in biology. They lived in Bard Hall, a Manhattan residence and classroom facility that is home base to BGIA.

Costelloe-Kuehn worked in the neurobiology and behavior laboratory of Rockefeller Professor Donald W. Pfaff. She assisted with research studying neurons thought to be in charge of the “general arousal” to stimuli that is necessary before any motor or emotional reaction can be activated. She took part in a project that sought to identify the “master cells” in the lower brain stem. “These neurons are thought to be responsible for general arousal and are uniquely connected to both the midbrain and the spinal cord,” she explained. By injecting dyes into both of these regions, researchers can identify the master cells by their double labeling. Working with mice and rats, Costelloe-Kuehn performed the surgeries necessary for the dye injection and two weeks later dissected brains and spinal cords, looking for double-labeled cells in the brain.

McKenna’s research took place in the sensory neuroscience laboratory of James Hudspeth, who is F. M. Kirby Professor at Rockefeller and a Howard Hughes Medical Institute investigator. McKenna participated in a project studying the details of the hair cells in the human inner ear. When these cells die—from loud sound or with age—hearing is lost. McKenna’s part of the research sought to learn what causes stem cells to form new hair cells. “Does the signal come from the hair cell or the stem cell?” said McKenna. “If we can figure out the exact signal, then one day we might be able to reactivate the hair cells in human ears and restore hearing.”

Pavlenkovich worked in the neurogenetics and behavior laboratory of Leslie Vosshall, who is Chemers Family Associate Professor at Rockefeller. Using fruit flies (*Drosophila melanogaster*) as a model, researchers are seeking to determine how different olfactory systems interact, in order to recognize and detect a large number of structurally distinct odor molecules. Researchers had generated a transgenic line of flies that could not detect odors, with the goal of observing the survival rate of transgenic flies and “wild” flies sharing a scarce food source. The researchers were considering “rescuing” one olfactory neuron at a time and in that way observing the survival rate.

At BGIA, the three students took Issues in Global Public Health. Left to her own devices, Pavlenkovich might have chosen a course closer to her biology concentration, but she discovered that Issues in Global Public Health broadened her horizons in an exciting way. For Costelloe-Kuehn and McKenna, the course was crucial. “If I weren’t in New York City this semester, I would probably commute here once a week for this class,” said Costelloe-Kuehn. “It’s a unique opportunity to learn from women who are working

internationally in public health fields.” McKenna, who found the required reading especially thought provoking, said the course complemented a career goal: “I love research for a number of reasons, but I can see myself doing research only if it has the potential to save lives or abate suffering.” Otherwise, he said, he sees himself going into medicine or civil engineering, “establishing sustainable public health systems.”

McKenna and Costelloe-Kuehn enjoyed their new “campus” of New York City. “My favorite things have been the cheap eats, great neighborhoods, and great jazz,” said McKenna. Costelloe-Kuehn attended lectures, concerts, and films at Rockefeller. Walking daily across Manhattan between Rockefeller and Bard Hall, she took different routes and discovered new territory. Pavlenkovich, saying she wasn’t a “city girl,” admitted to missing Annandale.

Having come to BRSS to participate in professional research, the Bardians made the significant discovery of how demanding it can be. McKenna and Pavlenkovich each

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spent 35 hours a week in their laboratories, in addition to classes and assignments. “Research takes a huge amount of time,” said McKenna, “but in order to get anything done that I can be proud of, I have to put in the hours.”

“The lifestyle here at Rockefeller gives me a clue as to what it would be like to be a graduate student,” said Pavlenkovich, whose long-term goal is to earn a Ph.D. in molecular biology. “You can study biology in college and learn a lot of theory, but until you actually experience biology research, you don’t know quite what it is.”

Costelloe-Kuehn also valued the chance to work with professional research scientists. “As a student, I appreciate the teaching strengths of the Bard faculty,” she said, “but seeing the world I would enter if I went into research as a career is also an important experience.”

With its laboratory research and graduate school-level responsibilities, BRSS demonstrates once again Bard’s confidence in its undergraduates’ success within demanding educational situations.

—Debby Mayer