While research and scholarship are the defining features of graduate student education, science communication is increasingly seen as a fundamental tool of a successful scientist. Two community service opportunities in particular have drawn graduate students away from the bench and into New York City classrooms to augment their communication skills by teaching to an eager crowd: Columbia University Neuroscience Outreach, or CUNO, and the Afterschool Science, Technology, Engineering, and Mathematics, or STEM, Mentoring Program sponsored by the New York Academy of Sciences.

Kelley Remole’11 Ph.D. was a doctoral student when she founded CUNO in 2006 to place graduate student scientists in classrooms throughout New York City. CUNO has grown from three volunteers who visited one school to 34 CUNO volunteers who visited 16 schools in the 2010-2011 school year under current CUNO president Cate Jensen (doctoral candidate in the Department of Neuroscience). In that year alone, CUNO volunteers contributed to the education of nearly 1,000 New York City school students, who interacted with scientists, learned about the brain through hands-on lessons, and often touched a preserved human brain. Ms. Jensen explains the motivation behind the visits: “Neuroscience is a multidisciplinary field with broad public interest, so it is a handy tool for engaging even young children in science. Our goal at CUNO is not to

Grad Students Go from Bench to Blackboard

By Kelley Remole, Ph.D., and Heather McKellar, Ph.D.
turn every child we meet into a future researcher, but instead to increase scientific awareness and understanding. We make the brain accessible and fun rather than mysterious and distant."

Most CUNO projects are single sessions, but a new initiative is under way for multiple visits. Celia Gellman, a research technician in psychiatry at P&S and the New York State Psychiatric Institute, led pre- and post-doctoral scientists from Columbia and Mount Sinai School of Medicine in a series of visits to seventh grade science classes at the Hewitt School in Manhattan. Subject matter included the use of the scientific method and experiments investigating the human senses and earthworm behavior. Ms. Gellman hopes to continue the program in 2012.

In 2011 CUNO partnered with the Dana Foundation, a non-profit organization that promotes brain science research and education, to help New York City high school students prepare for the regional competition of the International Brain Bee. Heather McKellar’11 Ph.D. organized 12 Columbia graduate students to run a preparation workshop attended by 30 high school students. CUNO hopes to expand the collaboration with the Dana Foundation next year.

Graduate students at P&S also sought teaching experiences outside the university by becoming science education fellows at the New York Academy of Sciences. In 2010, the academy partnered with New York City in the Afterschool STEM Mentoring program, in which graduate students and postdoc mentors in STEM fields are placed in underserved communities to engage middle school students in science lessons. In the first year, 120 fellows from universities throughout New York City visited 84 sites that had more than 2,100 students. The largest cohort of fellows was from Columbia University; 27 mentors volunteered more than 650 hours to teach modules on life sciences, robotics, and ecology.

One fellow, Dr. McKellar, was a mentor at a fifth grade afterschool site at the Marble Hill Community Center in the South Bronx. She taught the genetics and cell biology curriculum supplied by NYAS and designed by Cold Spring Harbor Laboratory and augmented the curriculum with original lesson plans she developed as a CUNO volunteer.

Meghan Groome, Ph.D., director of K12 science education initiatives at NYAS, says the program has shared benefits. “The program helped Colum-
Putting graduate students in classrooms gives grade school, middle school, and high school students a chance to meet and learn from scientists

Graduate students gain confidence in their teaching ability while the impact on the kids they mentored is immeasurable. Imagine for a second what it must be like to have a real live scientist bring a human brain into your classroom or help you extract DNA from your cheek cells. The kids were so excited they forgot their preconceptions of science as being boring or hard.”

Richard Robinson, Ph.D., associate dean for graduate affairs, was involved in the initial planning of the NYAS STEM program and continues to work with the academy to improve the program and advocate for Columbia’s STEM mentors. He encourages graduate students to learn about and participate in these kinds of programs. “These programs not only provide an opportunity for our students to gain valuable experience and insight into the teaching of science, but also emphasize the importance of scientists giving back to their communities,” he says.

Columbia reinforced its commitment to science outreach by hiring Dr. Remole as director of neuroscience outreach for the future Jerome L. Greene Science Center on the Manhattanville campus. Dr. Remole is planning the public education spaces in the center and designing programs to augment outreach activities on campus.

These science outreach programs plus other efforts at the medical center, such as the Mott Hall Science Mentoring Program, benefit the volunteers and mentors by supplying organizational structure, pedagogy training, and curriculum ideas while also allowing graduate students to move beyond supplied lesson plans. This flexibility for creativity fosters a sense of ownership of the materials and encourages scientists to continue their educational efforts. For the school students taught by graduate students, lessons supplement their science education and provide them with the rare opportunity to meet and learn from scientists. It is our hope that the continued support of the Columbia administration and the increased exposure of these programs across campus will allow more members of the community to help us enhance science education throughout New York City.

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