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NEWS RELEASE

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$2 Million Grant Will Help People with Disabilities Study Science

WEST LAFAYETTE, Ind. — Students who dream of studying science but face hurdles because of physical impairments, may find new options thanks to a $2 million grant awarded to Purdue University.

"The science community sees a drop in students studying science when they move from undergraduate to graduate work because graduate students need to be able to work independently in laboratories," said Bradley S. Duerstock, an assistant research professor at the Center for Paralysis Research and principal investigator on the project. "Many laboratories do not have the physical space to navigate a wheelchair or adjustable lab equipment that provides people with disabilities the necessary hands-on experience required in a lab. These obstacles are keeping many bright minds from studying and pursuing careers in areas such as biomedical research."

The grant, which is administered by the National Institute of General Medical Sciences and funded by the American Recovery and Reinvestment Act, will support the creation of an Institute for Accessible Science at Purdue. The institute will create an accessible wet laboratory, which is the standard laboratory for scientists to conduct experiments on chemical and biological matter, and a Web-based interactive community for individuals with disabilities currently working in, or are interested, in biomedical research careers.

Duerstock, who is a neuroscientist, is a wheelchair user, and he often uses and creates adaptive-assistive technologies so he can work in the lab.

"This idea originated from a school-wide forum where Brad shared information about the assistive technology that he uses," said Susan M. Mendrysa (pronounced Men-driss-a), assistant professor of basic medical sciences in the School of Veterinary Medicine and project team member. "I'm interested in engaging more students in laboratory work, especially in biomedical research, so pursuing a project where the students are already interested in science is a great opportunity. We just need to eliminate their obstacles."

Only 2 percent of employed scientists and engineers age 35 or younger have a disability, but that demographic represents 10.4 percent of the overall U. S. work force. In 2007 only 1.1 percent of U. S. science or engineering doctorates had a disability. "Thanks to technology today, most laboratory equipment can be adapted for students with disabilities, but we need information to determine the exact needs and available resources," Duerstock said.

To better understand the needs, as well as obstacles, the institute will coordinate a Web-based interactive forum, powered by HUBzero software that was developed at Purdue, to gather student feedback and list examples of research laboratory accommodations. "People like me are working in laboratories and finding creative ways to use equipment or retrofit laboratory space," Duerstock said. "Institutions are going beyond their legal obligations to provide federally mandated access to reduce physical barriers. This forum will be a place we can share ideas and create databases about what is working."

The information collected will help in the design of a graduate-level biomedical research laboratory that will serve as a model for training people with disabilities to perform laboratory techniques with as little assistance as possible. The Accessible Biomedical Immersion Laboratory will utilize flexible laboratory space in the Discovery Learning Research Center, which is housed in the Hall for Discovery Learning and Research at Purdue's Discovery Park.

Six students will be invited to participate in a research program during the summer of 2012. The students, who will have mobility or visual impairments, will test the ergonomics and technologies of the new space. They also will have the opportunity to partner with Purdue researchers to work on projects in the biomedical field.

One of the features these students may be testing is a remote network control feature for scientific instruments in the laboratory. For example, a user could control a microscope in the lab or remotely through a Web browser connected to the Internet. A PC user interface can accommodate many different types of physical impairments, such as using a large computer screen as an alternative to looking through eyepieces for individuals with visual impairments and a keyboard to replace needing to manually turn microscope knobs to aid those with upper limb mobility impairments.

Duerstock and Mendrysa also will be collaborating with interior design faculty in the College of Liberal Arts regarding design aspects. The research team also will be working with faculty from the College of Engineering, School of Veterinary Medicine, Department of Communication, School of Health Sciences and the Envision Center for Data Perceptualization.

"Purdue is at an advantage with our access to technology and individuals' expertise on campus," Duerstock said. "This positions Purdue to become a leading institution in this area. We can be a model institution for students and scientists with disabilities." Efforts also will be focused on encouraging high school, undergraduate and graduate students with disabilities to pursue biomedical science, as well as reaching scientists who have acquired disabilities during their lifetime.

The Purdue grant is one of five recently awarded, and it is part of the NIH Director's ARRA Pathfinder Award to Promote Diversity in the Scientific Workforce. The National Institutes of Health includes 27 institutes and centers and is a component of the U.S. Department of Health and Human Services.

Writer: Amy Patterson Neubert, 765-494-9723, [apatterson@purdue.edu](mailto:apatterson@purdue.edu) This email address is being protected from spambots. You need JavaScript enabled to view it.

Sources: Bradley S. Duerstock, 765-496-2364, [bsd@purdue.edu](mailto:bsd@purdue.edu) This email address is being protected from spambots. You need JavaScript enabled to view it.   
Susan M. Mendrysa, 765-494-8622, [mendrysa@purdue.edu](mailto:mendrysa@purdue.edu) This email address is being protected from spambots. You need JavaScript enabled to view it.

Related websites:  
Bradley S. Duerstock: http://www.vet.purdue.edu/bms/faculty\_staff/duerstock.html  
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