

Produced by the Office of Foundation, Corporate and Government Relations, *Faculty Grants Quarterly* is an internal newsletter created for Hamilton faculty members to report on funding and research trends of public and private funding sources and the grant and scholarly activities of their colleagues.

Thinking of writing a grant proposal?

Have an idea, but don't know what to do next?

Need help sorting out your budget?

Contact our office.

William Billiter
*Director of Foundation,
Corporate and Government
Relations*
wbillite@hamilton.edu
(315) 859-4384

Amy Lindner
*Associate Director of
Foundation, Corporate and
Government Relations*
alindner@hamilton.edu
(315) 859-4678

Sheri Brennan
Assistant
sbrennan@hamilton.edu
(315) 859-4064



Associate Professor of Geology David Bailey works with students in the networked microscopy lab

Transforming a traditional lab into an interactive learning experience

The geology department has long been renowned for its expertise in innovative pedagogy. Recently David Bailey, Eugene Domack and Barb Tewksbury capitalized on that expertise by winning a \$75,399 grant from the National Science Foundation's Course, Curriculum and Laboratory Improvement Program.

More recently, the George I. Alden Trust matched the NSF's award with an additional \$75,000. The two grants will enable the department to develop a networked microscopy laboratory, as well as implement highly-interactive, collaborative-learning activities aimed at improving the geoscience curriculum.

During departmental meetings last year, the faculty acknowledged that the construction and renovation of new science facilities represented a major commitment by the College, and that the acquisition of equipment – particularly the procurement of

equipment that would best take advantage of the “flexible” classroom design of the new building – would further enhance teaching and research activities. While geology considered a number of ideas, they were particularly interested in obtaining equipment that would have an impact on students in courses across the entire department.

The final decision was to adapt an idea employed by the University of Tasmania — an institution with which Hamilton has a co-operative agreement through its Institute of Antarctic and Southern Ocean Studies. The university had developed a unique networked facility that transformed traditional microscopy activities, often described as isolated or even “cook-book-like,” into engaged, discussion-based work that readily captured student interest.

continued page 2

TRANSFORMING

continued from previous page

In Hamilton's former microscopy lab, students worked individually at microscopes in a setting that hindered collaboration and the development of discussion and inquiry-based activities. Instructors were faced with a variety of limitations that inhibited their ability to introduce interesting activities and manage lab time effectively. For example, class discussion in the traditional setting was limited by the lack of an effective way for all students to easily examine an interesting sample at the same time. Inquiry-based activities were difficult to implement successfully because students worked alone, each examining a different sample at any one time. Labs, therefore, tended to be strongly guided, (e.g., "find the circled grain"), to prevent students from drifting from the focus of the assignment.

To address these issues, the geology department applied for NSF and Alden funding to expand upon the University of Tasmania's design and to develop its own more sophisticated networked microscopy lab. The essential set-up is simple, but extremely effective. Each microscope in the lab is fitted with a color video camera and then hard-wired to a central computing station. The computer is then networked to two LCD projectors that can show images from any two student microscopes at once. The instructor's station serves as a selection device so that he or she may choose the images that are displayed to the entire class.

The department has found that the facility is actively encouraging communication skills and classroom discussion. If an interesting feature is found, the instructor may project the image to a whiteboard at the front of the class and simultaneously compare

Networked microscopy labs have not been widely adapted, and solitary, unengaged activities continue to be pervasive in undergraduate courses. Because the Hamilton facility is an expansion, rather than just an adaptation, of the University of Tasmania facility, it has features that further distinguish it from other networked labs. For example, because the computers are loaded with image processing software, the facility allows students and researchers to save, scale and annotate images for public presentations, research papers or poster presentations.

The geology department is in the process of restructuring its curriculum to integrate the facility into all of its classes and anticipates that it will be used for nearly 2000 student hours per year in their department alone. The new equipment, combined with the allied curricular reforms, is expected to improve students' abilities, interest and general comfort with the microscopic examination of materials, to increase the conceptual understanding of problems and to encourage the development of higher-level thinking skills.

The Course, Curriculum and Laboratory Improvement Program at the NSF is under the aegis of the Directorate of Undergraduate Education. The program seeks to improve the quality of science, technology, engineering and mathematics education for all students, and targets activities affecting learning environments, course content, curricula and educational practices. The adaptation and implementation track of the program funds projects that are expected to result in improved education through adaptation and implementation of exemplary materials, laboratory experiences and/or educational practices that have been developed and tested at other institutions.

"Today's educators increasingly recognize the creative aspects of science instruction. Faculty members consciously structure courses and laboratories to more fully incorporate the investigative process, thereby maximizing the creativity that inspires good science."

— President Eugene M. Tobin in the "From the President's Desk" column, *Hamilton Alumni Review*, Summer 1998

Furthermore, because instructors had to visit each microscope individually to address questions, they could not possibly answer all of the individual questions that arose in a single lab period, and yet, at the same time, they were forced to spend considerable time answering the same questions over and over again for different students. If a student had found something particularly interesting under the microscope, the only way to share the find with other students was to have the entire class queue up and file by to see the feature.

it with an image from another student's microscope. While the class discusses the two images, the instructor or a student may use the whiteboard to draw or make notes in or around the image. Lab time is used much more effectively as questions are answered in front of and for the whole class. The networked laboratory is a dramatic departure from traditional microscopy labs and the geology department is taking the lead in developing non-traditional ways for undergraduates to benefit from microscopy activities.

September 11 and its impact

In the aftermath of September 11, grant programs seem less important and, appropriately so, have received relatively little attention in Washington. Yet most committee chairmen emphasize the need to "get back to normal," and most committees have begun deliberations regarding discretionary spending bills. In an attempt to avoid a confrontation during a national crisis, legislators have dropped some of the most controversial issues and plan to take them up in FY2003 negotiations.

While many are predicting a return to deficit spending, Congress did approve a \$691 billion discretionary spending package that is almost \$30 billion more than the president's original proposal. This package, which may be an indication of what to expect in FY2003, focuses on three primary areas: K-12 education funding; a significant increase to defense spending; and an augmentation to disaster assistance programs.

Additionally, the recent terrorist and bioterrorist attacks have renewed the federal government's interest in and planning of electronic systems for grantmaking. Recent shut-downs in travel and mail underscored the vulnerability of routine government grant practices and the Bush administration has begun to pressure agencies to use electronic rather than paper means to conduct business. In response, many agencies — which are at varying stages of developing their own electronic systems — are beginning to say that electronic grant systems will soon be the absolute rule, rather than a convenient option.

The National Institutes of Health, for example, is expected to pilot its new electronic system in about one year. On a related note, agencies had been working on *Federal Commons*, a central gateway to provide one-stop shopping for grants and other transactions, for several years. However, the effort was slowed by a lack of funding and by a lack of interest from the agencies, many of which developed their own on-line systems.

NEA Chairman Hammond Dies

Michael Hammond, lifelong student of how music and medicine are intertwined, died just one week after becoming chairman of the National Endowment for the Arts.

Hammond was the dean of the School of Music at Rice University in Houston when President Bush nominated him to chair the federal agency that distributes funding for the arts. He was confirmed on Dec. 20, 2001 and took office on Jan. 22, 2002. Hammond joined Rice's faculty in 1986 and has also served as the rector of the European Mozart Academy in the Czech Republic.

Senior deputy director Eileen Mason will serve as acting chairwoman until the president nominates a successor to Hammond. Mason, 58, began her tenure at the Arts Endowment as Senior Deputy Chairman in November 2001. Previously, Mason served on the board of directors of the Montgomery County Arts and Humanities Council in Maryland and as a manager and policy maker at two federal energy agencies.

New Postsecondary Education Director Nominated

In October, President Bush announced his intention to nominate Sally Stroup as the assistant secretary of education for postsecondary education in the Department of Education. Stroup is currently the director of Industry and Government Affairs for the Apollo Group Inc./University of Phoenix. She is not a newcomer to Washington — from 1993 to 2001, she was a professional staff member for the U.S. House of Representatives Committee on Education and the Workforce. Stroup is a graduate of Indiana University of Pennsylvania and Loyola University School of Law in New Orleans.

National Science Foundation budget passed

After months of negotiations, congressional appropriators completed the FY02 funding package for the National Science Foundation. The final bill provides NSF with \$4.789 billion, an 8.4% increase over last year's budget. Most of NSF's directorates are slated to receive an 8% increase — in contrast to the flat or declining funding proposed by the Bush administration. The majority of research and development discretionary

continued, next page

Selected Awards and Submissions

Please join the Office of Foundation, Corporate and Government Relations as we extend congratulations and best wishes to the following faculty members who have recently received awards and submitted proposals.



Vivyan Adair, assistant professor of women's studies and co-director of the ACCESS Project, secured a \$25,000 award from The Frueauff Foundation that will provide general support for the ACCESS Project. Additionally, the ACCESS Project is the

recipient of a \$40,000 subaward from the Department of Education's Fund for the Improvement of Postsecondary Education. The grant, which was part of a 13-college consortium, will support the development and implementation of curriculum for disadvantaged students. Finally, the ACCESS Project entered into a contract worth approximately \$80,000 with the New York State Department of Labor that will provide employment support to ACCESS students.

George Shields, professor and chair of chemistry, has received a \$50,000 award from the American Chemical Society/Petroleum Research Fund for his project, "Accurate Calculations of pK_a Values." Shields also submitted a proposal to the National Science Foundation's Distinguished Teaching Scholar program requesting \$300,000 for "Undergraduate Chemistry and Education: Capturing Student Interest Early."

Mark Bailey, assistant professor of computer science, submitted two proposals, "Improving Performance Using Path Correlation Directed Code Duplication" and "Branch Elimination by Conditional Merging," for \$119,435 each to the National Science Foundation's Operating Systems and Compilers program.

Debra Boutin, assistant professor of mathematics, submitted an application to the Woodrow Wilson National Fellowship Foundation's Career Enhancement Fellowship for Junior Faculty from Underrepresented Groups program.

Hong Gang Jin, professor of Chinese and director of the Associated Colleges in China program, and **De Bao Xu**, associate professor of Chinese and chair of the East Asian languages and literature program, have submitted a proposal to the National Endowment for the Humanities' Exemplary Education Program for \$248,869 to further develop a set of multi-media templates for teaching Chinese language. Jin and Xu also submitted a similar proposal for \$294,568 to the Department of Education's Language Resource Center program.

Ram Subramaniam, visiting assistant professor of chemistry, submitted a proposal to the American Federation for Aging Research for \$47,000 to support his research project, "Molecular mechanisms of age-related oxidative stress- Link between non-enzymatic glycation and inflammatory cytokines".

NSF BUDGET

continued from previous page

spending packages proposed by the administration was scheduled to go to the **National Institutes of Health**. While NIH still stands to receive significant gains, legislators were concerned about the lack of attention given to NSF and opposed the flat spending bill.

NSF's Directorate for Education and Human Resources would receive an 11.4% increase over FY2001, with

\$160 million in new funds being allocated for a new Math and Science Partnership program, part of the administration's "leave no child behind" philosophy. The partnerships initiative will provide funds for states and local school districts to join with institutions of higher education, particularly with their departments of mathematics, science, and engineering, in strengthening math and science education. It is designed to mobilize the mathematicians, scientists and engineers of higher education to be

part of the solution to some of the ongoing problems in primary and secondary education by helping to raise math and science standards, providing math and science training for teachers, and creating innovative ways to reach underserved schools and students.