



# Hope College Biology Department Newsletter

## Congratulations, Dr. McDonough!



Congratulations to **Virginia McDonough**, who was awarded tenure in December. The Biology Department faculty and staff are pleased and proud of the contribution Dr. McDonough makes to Hope College and the natural sciences as a facilitator of learning, a researcher, and a role model to young men and women with an interest in science. Great job, Ginny!



## Grants and Awards to Biology Faculty

The **National Science Foundation** has awarded \$27,760 for support of a project being directed by Professors **Leah A. Chase** and **Christopher C. Barney**. The project is titled:

"Development of a Project-Oriented Neuroscience Laboratory." The Award is being matched by Hope College to bring the total award amount to \$55,520.

The award is effective April 1, 2002 and expires March 31, 2004.

The **National Science Foundation** has awarded \$318,620 to the Biology Department to support Research Education for Undergraduates for the next 4 summers. Congratulations to Professor **Thomas L. Bultman** on successful submission and acceptance of the grant proposal on behalf of the Biology Department.

The **Simon DenUyl Fellowship** is awarded annually to a member of the Hope College faculty who has attained marked distinction in his/her academic career and who proposes a study of considerable scope promising future benefits to the College. Professor **Donald Cronkite** has been awarded a grant of \$3,000 from this fellowship for the summer of 2002. Professor Cronkite will use this award to interview three people in California who are leaders in the creationism/evolution debate. He is currently writing a book on that subject.

Hope College has received a third consecutive award for student research from the **Arnold and Mabel Beckman Foundation** of Irvine, CA. The foundation established the Beckman Scholars Program to enhance the training of the nation's most talented and gifted undergraduates in chemistry and the biological sciences by providing sustained, in-depth laboratory research experiences with faculty mentors.

The \$70,400 award will support a total of four students across the next three years as they conduct research in the biological sciences, biochemistry or chemistry. Hope College is one of only five liberal

arts colleges and one of only 13 institutions nationwide to receive a "Beckman Scholar Award" for 2002. This year's proposal from Hope was written and submitted by Professor **Christopher C. Barney**.

Professor **Timothy Evans** has been awarded a grant from the National Science Foundation Systematics Program to study the pineapple family in South America, a project that he hopes will ultimately help enhance understanding of how a variety of tropical species interrelate.

The three-year, \$140,000 award is coupled to a second award to Dr. Gregory Brown at the University of Wyoming. Students from Hope, the University of Wyoming, and Federal University, Rio de Janeiro, will be involved in all aspects of the work.



## Publication Activity

**Murray, K. Greg** and J. Mauricio Garcia-C. Contributions of Seed Dispersal and Demography to Recruitment Limitation in a Costa Rican Cloud Forest. *CAB International 2002. Seed Dispersal and Frugivory: Ecology, Evolution and Conservation*

**Cronkite, D.** The Hymnal War. *Perspectives*. February, 2002.



## Annual Recognition Luncheon Honors Faculty

Biology Department faculty were among those honored by Hope College for service, academic achievement and professional involvement during the college's annual recognition luncheon on Monday, January 7.

**Donald L. Cronkite** was among those faculty honored for serving on the college's Teaching Enhancement Workshop Committee.

Faculty honored for serving as officers of professional organizations included **James M. Gentile** (President of the International Association of Environmental Mutagen Societies).

**Christopher C. Barney** was recognized for being appointed to the T. Elliot Weier Endowed Chair Professor of Biology and Plant Science.

Several faculty and staff members were recognized as recipients of grants and fellowships, including **Leah Chase, Timothy M. Evans, and Virginia McDonough**.



## TRI-BETA UPDATE

Submitted by Kevin Eckerle

The final fall meeting of the Alpha Eta Chapter of the Beta Beta Beta National Honor Society was held Monday, November 26, 2001. The new officers have been leading new and returning students through the fall semester. So far, Tri-Beta members and the Biology faculty have enjoyed the hospitality of Chris and Julie Barney for a taco party, and we got together for a night of Trivial Pursuit and "Fun with Faculty". Tri-Beta members have also done quite a bit of service work within the department and college. With the emphasis of the Critical Issues Symposium this year on environmental issues, Tri-Beta members helped the college with working display tables and aiding in the set up of a variety of displays. Tri-Beta members and Biology faculty also took their frustrations out on the invasive plant periwinkle, removing as much as possible from the Biology Field Station. Tri-Beta students have also maintained their assistance with the Biology Department's weekly seminar series by escorting each speaker to a luncheon and by providing drinks and goodies for all seminar attendees. During final exam week, BBB served as student hosts for a 6<sup>th</sup> grade science festival and helped them in exploring a biological theme such as photosynthesis. In addition, BBB led the sixth graders on a tour of the department.

Second semester found members of the department enjoying pizza with Tri-Beta members in the greenhouse.

Addison Noreen represented Tri-Beta in the Dance Marathon. Through student and departmental support of the bake/plant sale, Tri-Beta raised over \$250.

Tri-Beta new member inductions will take place on Wednesday evening, April 10.



## Blankespoor Continues Collaborations in China

Submitted by Harvey Blankespoor

Members of the Hope College Biology Department continue to be involved in many activities. Faculty member **Dr. Harvey D. Blankespoor**, spent two weeks in March at Shandong University in Jinan, the People's Republic of China. This was his fourth trip to China - one full year while on sabbatical leave and one semester, on two other occasions. His responsibilities there included teaching Ecology, Biodiversity, and giving campus-wide lectures on graduate school in the USA.

Dr. Blankespoor's latest excursion to China dealt primarily with collaborative research with a microbiologist, Dr. Ping Xu. He uses bacteria to remove sulfur from petroleum products. This will reduce atmospheric levels of sulfur dioxides that result from combustion of coal and gas. As a result, there will be less acid rain. Dr. Blankespoor provides ideas, scientific literature, chemicals, and buys equipment for them as a part of his contribution.



## Biology Department Hosts Assessment Specialist

Submitted by Kathy Winnett-Murray and Greg Murray

If you click on the "Read Our Mission Statement" from the Biology Department's homepage, you will learn that: "The Biology Department is devoted to an integrated approach to the life sciences. This integration finds expression in our department first and foremost by teaching through research. Our

primary mission, therefore, is to conduct this kind of teaching by supporting faculty in the establishment of vigorous research programs and by providing courses and a curriculum that center on inquiry...". To enhance our own continued development as inquiry-based *teachers*, and to gain some external insights about the effectiveness of our department's assessment plan, we recently hosted a visit by Dr. Diane Ebert-May (Dean of the Lyman Briggs School, and Professor of Plant Biology, Michigan State University), who is well known for her scientific research focusing on *how college students learn science*. The visit was co-sponsored by the Hope College assessment Committee and by the Biology Department.

Dr. Diane Ebert-May is a plant scientist who began applying scientific methodology to the study of student learning in science several years ago. Since that time, she has gained recognition in the realm of science education through her publications, her numerous presentations at scientific meetings, her leadership role in professional societies, and as the recipient of several grants for the improvement of science education. Currently, Diane is co-PI (with Dr. Jan Hodder of the Oregon Institute of Marine Biology) of a nation-wide program funded by the National Science Foundation: FIRST II, which is a faculty development project designed to train faculty in the implementation of active, inquiry-based learning in undergraduate science courses.

Diane's visit to Hope began on the evening of January 10 with an informal Mexican dinner served in the botany lab. In response to an invitation distributed to the Natural Sciences Division and to the Education Department, sixteen people participated in the workshop that followed. During the workshop, entitled "Assessment in teaching vs. Assessment in Research", Diane drew several analogies between the inquiry elements of teaching and research, all the while demonstrating techniques for actively engaging students in large (or small) lectures. A major emphasis was placed on the need to collect and evaluate data pertinent to the questions on student learning that are being asked, just as one would in scientific research, and she included several examples from her own work demonstrating methods to do so. One item that sparked a lot of interest was the development of computer-based scoring of concept maps, an assessment tool that has been widely used in the field of education and is becoming increasingly popular for assessing student learning in the sciences.

On January 11, Diane facilitated small-group discussions on topics the biologists had identified as being of particular interest in our on-going assessment efforts. These topics included "Getting the Biggest Bang for the Buck or Maintaining and/or Regaining a Research-oriented Program with the Best of What We've Created in the curricular Reform" and "Biology 150: the First Biology Course". Diane also had meetings with Scott VanderStoep (Carl Frost Research Center), with the department's assessment coordinators (the Murrays) and with individual faculty and students. Diane's visit concluded with a joint Biology-Education Department seminar: "Assessment: Data Collection with a Purpose - Student Learning", which was attended by about 70 students and faculty.

Diane's visit was valuable to us at several levels. First, by having the opportunity to share our assessment plan with an outside expert we feel more confident that we know what we are doing. We've also been challenged to reflect more on the purposes behind the data we're collecting. While some of us had hoped for even more help with specific ideas on where to go in the future with our *program-level assessment*, Diane helped us face up to the fact that there is no single, simple, assessment solution for an entire program. Rather, her focus was on changes and improvements that can be made at the level of how individual faculty are teaching their courses. As such, the workshop was an excellent introduction to active teaching, in-class assessment tools, and interpretation of assessment feedback that was applicable to all disciplines, not just biology. With regard to our mission statement above, we think it is important to have continued opportunities to evaluate our own teaching styles, to address the elements of inquiry that they do or do not possess, and to learn more about how people measure the effectiveness of those different styles in terms of student learning.

## **Students Complete Internships In Fall semester**



Several Hope students were employed in biologically related positions during the 2001 fall semester. Internships provide students opportunities to develop liberal arts skills and apply their knowledge from biology coursework to actual work experiences. Two students, **Megan Burkhart** and **Garth Rotman**, are featured in this issue.

### **Philadelphia Off-Campus Study Program**

Last semester **Megan Burkhart**, a senior from Naperville, Illinois, participated in the Philadelphia off-campus study program. While there she had an internship in the Clinical Genetics Department of the Children's Hospital of Philadelphia (CHOP). Specifically, she worked in the 22q and You Center. "It is the number one place in the world for children with a 22q11.2 deletion to come to," Megan said. "While there I saw patients and their families from all over the world. I was able to shadow genetic counselors and doctors, and observe what they do on a daily basis. I also served as the Clinic Coordinator for the center. When children with the 22q deletion come in they see up to 15 specialists and we coordinate all their appointments for their week long visits. Through this internship I learned a lot about genetics, medicine and how a hospital works. Also, because I worked as the Clinic Coordinator I learned a lot about communication and how to handle all different types of people." Due to her experience at CHOP Megan has decided to pursue a career in genetic counseling.

Additionally, because the previous Clinic Coordinator had left before last summer to go to medical school Megan was offered a full-time job as the Clinic Coordinator. "Next May, after graduation I will be returning to CHOP for a year or two," said Megan. "I would highly recommend the Philadelphia program, or any internship program. An internship is a wonderful way to experience a field and decide if it is the right one for you." Following her employment with the CHOP Megan plans to attend graduate school to obtain a Master's in Genetic Counseling.



### **Rotman Interns in Environmental Outreach**

**Garth Rotman**, a senior from Zeeland, participated in an internship during the fall 2001 semester at the Outdoor Discovery Center (ODC) south of Holland, MI. ODC is a young, developing nature preserve with a commitment to environmental preservation and awareness. Garth worked on tasks ranging from the development of the ODC itself to various outdoor activities. He participated in environmental education programs (setting up and teaching), invasive species management, trail construction and grooming, timber stand management, exhibit development (educational displays), habitat development and restoration, property clean-up, animal husbandry, and sign development. He also wrote a brochure for visitors. He worked with many people and children, educating them about the environment and guiding them on tours on the ODC trails.



While working at ODC, Garth learned much about the outdoors and project management/development. He learned about the different species and ecosystems and how to identify them. He also learned about invasive species such as purple loosestrife and autumn olive and how to control them. He acquired the knowledge needed to organize events and put together educational programs and displays. What Garth values the most from this internship is an appreciation for the outdoors and a love for nature. Garth highly recommends this internship to anybody, as his experiences at ODC proved to be invaluable to him. Garth plans to attend medical school following graduation from Hope.

## Beckman Foundation Awards Grant to Hope for Student Research



HOLLAND -- Hope College has received a third consecutive award for student research from the Arnold and Mabel Beckman Foundation of Irvine, Calif. This year's proposal from Hope was written and submitted by Dr. Christopher Barney, the T. Elliott Weier Professor of Biology. Hope is one of only five liberal arts colleges and one of only 13 institutions nationwide to receive a "Beckman Scholar Award" for 2002. Hope also received awards in 1998, the year that the program began, and 2000.

The foundation established the Beckman Scholars Program to enhance the training of the nation's most talented and gifted undergraduates in chemistry and the biological sciences by providing sustained, in-depth laboratory research experiences with faculty mentors.

The \$70,400 award to Hope will support a total of four students across the next three years as they conduct research in the biological sciences, biochemistry or chemistry. The award will support the students as they conduct research with faculty members full-time during two summers and part-time during the intervening school year.

The students will be biology, biochemistry or chemistry majors who will be juniors at the start of the school year following their initial summer experience. They will be expected to stay involved in research at Hope as seniors, and if they wish will even be able to continue during the summer following graduation. In addition to providing stipends for the students, the award also includes funding for related supplies and travel. The foundation hosts an annual research symposium for the program's student scholars and their faculty mentors each summer.

The Beckman Scholars are among scores of students who conduct research in the sciences at Hope during both the summer and the school year. There were approximately 130 students engaged in such research during the summer of 2001 alone.

The Arnold and Mabel Beckman Foundation was established in 1977. The foundation supports leading-edge research in chemistry and the life sciences, and fosters the invention of methods, instruments and materials to open new avenues of research and application in those disciplines and related sciences. The foundation's support of education ranges from programs for elementary-age students to support for young scientists engaged in research at universities and research institutes.

In addition to Hope, the colleges and universities to receive Beckman Scholars Program Awards for 2002 are: Boston University; California State University, Los Angeles; Duke University; Furman College; Haverford College; San Francisco State University; Smith College; the University of California, Los Angeles; the University of Delaware; the University of Kentucky; Washington University; and Wellesley College.

## Featuring a Fascinating Faculty Member

(Someday soon this will be you)

### Microbiologist Brings Research Experience to Hope

**Dr. Kim Risley** is one of three Biology Department faculty members teaching in a term position this spring. She received a B.S. degree in Microbiology from North Dakota State University (Fargo, ND) in 1994 and a Ph.D. in Microbiology-Immunology in 1998 from East Carolina University School of Medicine (Greenville, NC). Kim completed a post-doctoral research fellowship at Northwestern University Medical School (Chicago, IL) prior to coming to Hope College.

Kim's research interests involve the structural and molecular biology of herpesviruses. For her Ph.D. research (advisor: Dr. Nels Pederson) she studied the properties of a herpesvirus cleavage and packaging protein, UL28. This protein, along with seven other herpesvirus proteins, is essential for packaging newly replicated viral DNA into preformed protein shells known as capsids. Focusing on this crucial step of productive herpesvirus infection, Kim generated and tested several UL28 protein variants for their localization within eukaryotic cells, and their functionality compared to wild-type UL28. Through her research, Kim identified a physical and functional interaction between UL28 and another herpesvirus cleavage and packaging protein, UL15. Kim also generated evidence that UL28 may be evolutionarily conserved among herpesviruses of different species.

Kim has worked with colleagues in a multitude of research areas in microbiology including the effects of human papillomaviruses on cell structure and intracellular signaling, the screening of a feline calicivirus cDNA library, analysis of grain and silage samples for aflatoxins, and the molecular biology of *Rhizobium*. She has also assisted various students and high school teachers with designing and interpreting independent research projects in microbiology.

This spring Kim is teaching Bio 231 (Biology of Microorganisms) and Bio 395-03 (Immunology). She will be teaching two Bio 195 laboratory sections (Introduction to Cell Biology) and Bio 395 (Microbiology) in the Fall. Kim also serves as the Hope College GRE informational session coordinator and the Biology Department's graduate school advisor.

Kim was born in Hibbing, MN (70 miles NW of Duluth/Superior) where her parents currently operate an electrician's business. She has a younger brother, Jim, who is now in a pre-nursing program (after working for several years in various group homes for developmentally disabled adults). Kim met her husband, Brad, in Greenville, NC while she was finishing her graduate work and he was traveling with Maranatha, an Oklahoma Christian University singing group. Brad is now the youth minister at the Holland Church of Christ. Kim likes to spend her free time cooking, sewing, reading, and listening to contemporary Christian music. She and Brad enjoy taking at least one long road trip a year to visit family and friends across the U.S.

