

Spring 2004

Volume 3 (1)

Hope College

Department of Biology Newsletter

STUDENT ACTIVITIES

Alison McCabe ('05) writes, " I am doing the Chicago Semester (CS) through Hope and Lady Judi Zink from CS set me up with an interview at the **Lincoln Park Zoo** in the conservation sciences area. I took the job.

Currently at LPZ they have an ongoing database on Avian reintroduction and translocation. So my job at the zoo is to start a mammalian reintroduction and translocation database based on the Avian database. Basically we use Access (database) and have species tables where we put in ALL the species information, a source table so we can go back and locate the information, and other tables that categorize all the aspects of the reintroduction or translocation such as site, number of animals released, pre and post training, etc. All of this is very time consuming, but I really enjoy reading the articles and information I find. I normally use University websites in order to locate journal articles and other sources of information. To start, I am researching ungulates and will eventually move to carnivores.

Now my other task at the zoo is a polar bear behavioral study. The two polar bears, Lee and Anana have been doing a lot of pacing (negative behavior). The study we are doing is the 6th phase of the study and is basically a follow-up study to the last one. In the last one, they opened up the doors so that the polar bears could have indoor and outdoor access and this reduced 60% of their pacing. I go out 4 times a day for 15 minutes each and use an ethogram to record their behaviors during 30 second periods. At the end of the 30 seconds, I recorded their position in the tank. After collecting the data we put the data into an Excel file and at the end of April we will analyze the data.

I work with one other intern on this project and a supervisor of the polar bears. On my other project I work by myself but get a lot of help from my supervisors and the Avian database researcher.

I truly love going to the zoo every day and am seriously considering working at a zoo after graduation. I think I have found my calling. Working at Lincoln Park Zoo is a great way to make connections with people and just to learn about conservation and how important zoos are and how dedicated and compassionate people are toward saving animals and caring for them. I would recommend this program and this zoo to anyone interested in Zoology/Conservation, etc."

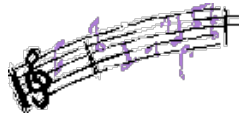
Lisa DeCamp ('04)

Lisa just secured a seasonal position working for the Georgia DNR after graduation to monitor sea turtle nesting on an island off the Georgia coast.

STUDENT ACTIVITIES CONTINUED

Melissa Sulok ('04) writes, "I have two pieces of good news. First, Dr. Slade (University of Kansas where Melissa conducted summer research in 2003) e-mailed me to tell me that the *Journal of Mammalogy* is going to publish a paper coauthored with Dr. Slade in the December '04 issue (tentatively). I am really excited about that. I am so glad I was able to experience the publishing process. It is nothing like I thought it would be.

The second piece of good news is that I got a job at **Brookfield Zoo**. I am going to be a seasonal worker from the end of April until the end of the year. I am working with the west end mammals, which includes Africa the savanna, and the forest, as well as the hoofed stock animals in the yards (zebras, antelope, etc.). I am really excited about the job. I think the experience it will get me will be the necessary step.”



Alisa White ('04) has been accepted into **University of Indiana's Musicology PhD program** and has offered her a **Chancellor's Fellowship**. The Chancellor's Fellowship includes tuition, insurance, and a \$15,000/year stipend for four years, after which there are other equivalent fellowships Alisa can obtain while working on her dissertations.

Congratulations to all of our students! We are very proud of you!

ALUMNI ACTIVITIES

Jody Murray ('03) received an NSF pre-doctoral fellowship. The fellowship provides her with \$30,000 a year for 3 years, which is almost a 50% increase in her current stipend. Jody says thanks so much to **Dr. Blankenspoor** for his letter of recommendation and all of his support while she was at Hope.

Josh Neucks ('99) recently received his letter of acceptance from the Indiana University School of Medicine's Department of Cellular and Integrative Physiology. Josh plans to attend classes beginning in the fall and, hopefully, move in to the MD program a year later. He wrote to thank **Dr. Cronkite** for his letter of support, saying that "it is nice to know that Hope's Biology Department has prepared me well enough to accomplish these goals".

ALUMNI ACTIVITIES (Continued)

Lisa Schanhals (Meyers) ('91) now teaches at Spring Lake High School. One of her students recently earned first prize in the Animal Category at the West Michigan Science Challenge. This project was also mentored, and an extension of the work of **Dr. Winnett-Murray**. Lisa writes, "The director of the fair was so impressed with the project my student did, he wants me to run a workshop for teachers this summer, so that the quality of the other high school projects improves. He asked me what my background was, had I taken a "Science Fair Prep" class for teachers and where, and where did I go to grad school?...assuming I learned data analysis, sci-method, and presentation in grad school.

The answer to why I was able to coach my student so well was HOPE COLLEGE:

- 1) Doing independent research with **Dr. K. Winnett-Murray** and writing a paper for her.
- 2) Cell Biology with **Dr. Cronkite** - he had us do every lab write-up using a different format of scientific communication: newspaper article, journal article, poster, oral presentation, paper, essay. I hope someone still uses this format.
- 3) Research with **Dr. Barney** after graduation on APS grant - I got to make and present a poster at their national meeting.

So, thanks to HOPE again.

Mitch Wacksman ('03) reports that, "Things here (Southern Illinois Graduate School) are excellent. Its getting quite warm down here, which is very nice, it lets me get out on my mountain bike often (new found love). My research is going well. My proposal is done and over with and I'm actually running some

toxicity tests towards my thesis – very exciting, although I’m having to work the bugs out as I go so nothing has worked too well yet. Not to worry though, plenty of time.”



What’s Happening with Faculty

Dr. Leah Chase and **Dr. Janet Andersen** (Mathematics) visited the laboratory of Dr. Ernest Wright at UCLA during the fall. They worked with Dr. Donald Loo in the lab to learn the technique of measuring pre-steady state and steady state currents associated with human glucose transporter, SGLT1, activity when expressed in *Xenopus* oocytes. In addition, they learned how to perform optical experiments to measure voltage-induced conformational changes in SGLT1 associated with transporter activity. Janet and Leah plan on using this technique for the development of a laboratory exercise in the mathematical biology course and in their research on System xc.

Dr. Cronkite and **Dr. Winnett-Murray** attended the Michigan Science Teachers’ Association Annual Meeting March 5 and 6. Four students (Jamin Dreyer ’06), Layne Hillman ’04), Karina Machado ’04), and Amy Zwart ’04), accompanied them and presented a workshop on inquiry learning called “Ask Your Way Through Biology.”

Dr. Winnett-Murray attended the Environmental Education Curriculum Development meeting at Michigan Technological University’s Ford Forestry Center in December 2003. She is collaborating with them on their grant (to the Western UP Center for Science, Mathematics & Environmental Education (MTU) from the Michigan Department of Environmental Quality, as a content reviewer for EE curricula about Michigan Ecosystems. Hope Biology alumnus Pamela Schmidt is a co-PI on this project and is the lead writer for the Ecosystems team.

Dr. Bultman visited Rutgers University and presented the seminar, “Effects of Fungal Endophytes on Pest and Beneficial Insects in Managed and Natural Ecosystems”, to the Plant Biology and Pathology Department. He also visited the Murdock Trust in Vancouver, WA to serve as a panelist for their Faculty in the Life Sciences Research Program.

Dr. Tim Evans served as a panelist for Systematic Biology at the National Science Foundation in April of this spring. This is the second time Tim has been selected for this prestigious service at one of our country’s premiere science-funding institutions.

Dr. Chris Barney attended Experimental Biology 2004 in April (17-21) in Washington, D.C. where he presented a poster titled “Thermal Dehydration in Female Rats.” He also visited with two departmental alums, Brad Andresen and Justin Grobe.

Recent Faculty Publications

Bultman, T.L., G. Bell, and W.D. Martin. 2004. A Fungal Endophyte Mediates Reversal of Wound-Induced Resistance and Constrains Tolerance in a Grass. *Ecology* 85:679-685.

Brady, A. and A.J. Santos. 2004. "Spiders of North America: An Identification Manual." Oxyopidae. Pp. 102-104

Cronkite, D.L. 2005 copyright date but publication is available now. Instructor's Manual for Tobin and Dusheck's Asking About Life, Third Edition, (Belmont, CA: Brooks/Cole).

Cronkite, D.L. 2005 copyright date but publication is available now. A Problem-Based Guide to Basic Genetics, Fourth Edition, (Belmont, CA: Brooks/Cole).

Cronkite, D.L., J. Gentile, J. Andersen. 2004. "An Integrating Culture of Undergraduate Research". In Reinigorating the Undergraduate Experience: Successful Models Supported by NSF's AIRE/RAIRE Program. Editors: Linda Kauffman, Janet Stocks. CUR Publications. Online Version at: www.cur.org/publications.html Paper version available soon.

Murray, K.G., K. Winnett-Murray, and the Ecological Society of America. 2004. The Effect of Eastern Hemlock (*Tsuga Canadensis*) on the Establishment of Interspecific Seedlings. Teaching Issues and Experiments in Ecology Volume 1. Experiments to Teach Ecology. <http://tiee.ecoed.net/vol/v1/experiments/hemlock/hemlock.html>

Note: Virtually every student in Biology 280 for the last 5 years contributed to the development of this laboratory! They might enjoy seeing how lovely it looks on the Ecological Society of America's TIEE link (see above)

GRANT WRITING ACTIVITY

Proposals Submitted Since December - 2003

Debbie Swarthout submitted "Development of an Innovative Interdisciplinary Course in Plant Structural Analyses" to the CCLI Program at the National Science Foundation (NSF).

Leah Chase (PI), **Maria Burnatowska-Hledin** (co-PI) and **James Gentile** (co-PI) submitted, "MIR: Acquisition of Apotome/Fluorescence Microscope Imaging System for Enhanced Research in the Biological Sciences at Hope College" to the Major Research Instrumentation Program at the NSF.

K. Greg Murray (PI), **Tom Bultman** (co-PI), **Ed Hansen** (co-PI), **Debbie Swarthout** (co-PI), and **Kathy Winnett-Murray** (co-PI) submitted "A Strategic Development Plan for the Hope College Field Station" to the Biological Field Stations and Marine Labs Program at the NSF.

Virginia McDonough submitted the proposal "Investigation of the FAT1 Gene Product in Exogenous Fatty Acid Metabolism" to the Hope College Faculty Development Grants Program.

Grant Proposals Funded Since December - 2003

Virginia McDonough received funding from the Albertus Pierters Faculty Development Fund at Hope College (see above). The grant is for \$3,600 for the summer of 2004.

Maria Burnatowska-Hledin received funding from the National Institutes of Health AREA Program for her proposal, "VACM-1, a cul 5 Gene Regulates Cell growth and Angiogenesis". The grant was funded for three years for \$150,000.

HOPE COLLEGE PRESS RELEASES

Posted February 23, 2004

Donald Cronkite Named to National Committee on Genetic Technology

HOLLAND – Dr. Donald Cronkite of the Hope College biology faculty has been appointed to a multidisciplinary committee formed by the National Council of Churches to lead the U.S. ecumenical community's work over the next two years on issues of human genetic technology.

The Human Genetics Policy Development Committee and a complement of seven "Senior Sages" has been charged with replacing the NCC's 1986 policy, "Genetic Science for Human Benefit," with a new policy that will guide the council's educational outreach and public policy efforts in light of new and emerging technologies. The committee's 16 members and a complementary consulting group of seven "Senior Sages" represent a range of denominational, professional, and racial and ethnic backgrounds.

A specialist in genetics, Cronkite has long been active in considering the theological implications of the field. For several years, he was moderator of the Christian Action Commission of the Reformed Church in America, the college's parent denomination, which considered multiple issues including genetics. Locally, he has been active speaking with church adult education classes and other groups concerning various aspects of human genetic technology.

He began teaching genetics in 1972 at the University of Redlands in California. He has been at Hope, where he teaches introductory biology and embryology, since 1978. His publications include "A Problem-Based Guide to Basic Genetics," currently in its third edition.

Cronkite has received both national and campus recognition for his teaching. In 1995, he won the "Four-Year College Biology Teaching Award" presented by the National Association of Biology Teachers. In 1991, he was one of only 700 faculty members recognized nationally with a 1990-91 Sears-Roebuck Foundation Teaching Excellence and Campus Leadership Award. In 1988, he was named a co-recipient of the college's Hope Outstanding Professor Educator (H.O.P.E.) Award by the senior class and also served as Commencement speaker.

The NCC's policy development committee will address moral and ethical implications of the whole range of applications of human genetic technology, along with such related issues as equality of access and regulation. The committee will build on work done by an earlier Exploratory Committee on Human Genetic Technologies, which in 2002-03 reviewed NCC and member communion statements, studies and other materials concerning biotechnology along with their existing education, outreach and advocacy work related to biotechnology and public policy. The exploratory committee's report and recommendations were delivered to the NCC's 2003 General Assembly and resulted in the call for a new policy.

More Press Releases

Posted March 11, 2004

Hope Group Leads Workshop at State Science Teachers Conference

HOLLAND – A team of Hope College faculty and students led a workshop on inquiry-based science lessons during the 51st annual conference of the Michigan Science Teachers Association (MSTA), held in Lansing, Mich., on Thursday-Saturday, March 4-6.

The Hope group presented "Ask Your Way Through Biology" on Saturday, March 6, focusing on a variety of ways to use class time teach the methodology of science as well as science content. Approximately 55 teachers, primarily from the high school level, attended the workshop, one of several presented during the three-day event. Some 3,000 educators

from the elementary through college level attended the conference itself.

The six Hope presenters were: sophomore Jamin Dreyer of Holland; senior Layne Hillman of Attica; senior Karina Machado of Hudsonville; senior Amy Zwart of Grand Rapids; Dr. Donald Cronkite, professor of biology; and Dr. Kathy Winnett-Murray, professor of biology.

Hope, Cronkite noted, emphasizes science methodology in its classes in keeping with its focus on research-based learning experiences outside the classroom as well. He said that the students offered a valuable perspective as veterans of the process.

“The students had done some of these exercises in classes that they took here, so they knew it from the inside,” he said.

Cronkite added that the students presented the material well. “Professor Winnett-Murray and I were quite impressed with our students,” he said. “They were well-prepared and articulate, and many people told us afterward how fortunate we are to have such students.”



2004 Spring Seminar Series

January 8

Dr. Avelina Espinosa - University of Nebraska-Lincoln, Plant Science Initiative and the Department of Plant Pathology. “Host-Microbe interactions: HopPtoD2: a phosphatase as a suppressor of plant cell death.”

January 9

Biology Faculty of Hope College “Summer Research Opportunities in Biology at Hope College and Off-campus.”

January 15

Dr. Sherry Dollhopf, Oceanography Department, Florida State University

“Microbial Biogeochemistry of Saltmarsh Sediments in the Southeastern U.S.A.”

January 16

Dr. Tom Bultman, Chairperson, Department of Biology, Hope College. “Ecology of Fungal Symbionts Living in Grasses: Student Opportunities for Multidisciplinary

Research at Hope College.”

January 19

Dr. Mark Martin, Department of Biology, Occidental College, Los Angeles, CA.

“It’s a Germ-Eat-Germ World: Exploring the Genetics of the Bacterial Predator, *Bdellovibrio bacteriovorus*.”

January 23

Dr. Ranessa Cooper, Department of Biology, Hillsdale College.

“Structural Studies of the Athabasca Sand Dune Willows.”

January 30

Dr. J. Chad Johnson, Post-doctoral Fellow, Division of Life Sciences, University of Toronto at Scarborough. “Pre-copulatory Sexual Cannibalism in Fishing Spiders: The Ecology of an Extreme Sexual Conflict.”

February 3

Dr. James Dearworth, Department of Physiological Optics, University of Alabama at Birmingham. “Imagery by the Retina of the Turtle.”

February 16

Dr. Gregory S. Fraley, Department of Physiology & Biophysics, University of Washington.

“Food, Fat, and Sex: How the Brain Integrates Fat Energetics and Reproduction.”

February 20

Dr. Eugene Studier, University of Michigan - Flint. “Everything You Always Wanted to Know About Bats.”

February 27

Dr. Elizabeth Lewis Roberts, Department of Plant Pathology, Rutgers University.

“Reorganization of the Tribe Balansieae.”

March 5 (Combined Biology/Chemistry Seminar)

Dr. Babak Borhan, Department of Chemistry, Michigan State University.

“The Chemistry of Vision: Riding Shotgun with Retinal During the Isomerization Process that Leads to Visual Transduction.”

April 22 (Biology/Religion/Philosophy Seminar)

Dr. Donald Cronkite, Department of Biology, Hope College

“Finding a Middle Way in the Evolution/Creation Controversy.”

April 8

Dr. Terrence J. Sullivan, Arizona State University

“Genes and Geography: Variation in the Arizona fescue/*Neotyphodium* symbiosis.”

April 16

Dr. Eric Barker, Medicinal Chemistry & Molecular Pharmacology, Purdue University School of Pharmacy. “The Ins and Outs of Endogenous Cannabinoids.”

Indian Scholar Hosted by Biology Department

During the spring 2004 semester Dr. Thara Simon is a visiting scholar in the Biology Department. She is a Senior Lecturer within the Department of Botany at Union Christian College (UCC) in Alwaye, Kerala, India. The school is a relatively small (enrollment = 1,500) institution that helps to serve a burgeoning national population that tops 1 billion people, 1% of which are Christian. Dr. Simon comes to Hope through support from the United Board of Christian Higher Education as part of the Faculty Leadership Development Program. The program is intended to help prepare faculty with less than 15 years of service for administrative leadership positions within their home institutions. Dr. Simon will become chair of her department in the near future.

Dr. Simon has taught courses in botany, microscopy and conservation biology for the past 10 years. Her research interests are in seed morphology and general ecology of Indian plants, particularly of the Acanthaceae.

Thara had never been to the US before and was quite intrigued by the form of our winter precipitation. She unfortunately learned the hard way that ice is slippery, having fallen soon after her arrival in January and fracturing her wrist in 3 places! The caste slowed her down some, but she still was able to accomplish a great deal during the semester.

She has developed collaborations with Dr. Tim Evans, who has assisted her in a taxonomic study of 120 species of Acanthaceae plants. She hopes to submit the work for publication in *Taxon*. Dr. Greg Murray has worked with her on the statistical analysis of ecological/morphological data she collected on plants native to India. She has also been learning molecular techniques from Dr. Evans and Glenda Gentile. Dr. Simon has also been attending lectures on Plant Physiology by Dr. Debbie Swarhout. So, in a fairly short time, Thara has been able to establish several meaningful and productive relationships.

Dr. Simon has noticed several similarities between our campus and hers. Both have a strong residential system (at UCC faculty oversee the dormitories!), meaningful and frequent faculty-student interactions, excellent faculty, and a Christian commitment. One difference she has noticed and would like to emulate on her campus, is our use of students as employees within the department. In general she has also been very impressed with the strong work ethic of the faculty, staff and students. She attributes this to a reward system that we have at Hope, but which is lacking at UCC.

Thara has been active on campus, regularly attending chapel and the gathering on Sunday evenings. She notes that the worship is much different from the traditional style she is accustomed to in India.

Thara and her husband, Jacob, have two children, Maria (8 yrs) and George (4 yrs). She reports that being away from her family has been difficult and she has tried to keep herself busy to keep her mind

occupied.

Dr. Simon will be leaving in late May. We wish her the best as she returns to her homeland and family and hope that we will be able to continue our interaction through exchanges between the two institutions in the future.