

November 2002

Vol. 2 (2)

Hope College Biology Department Newsletter

The purpose of the Biology Newsletter is to facilitate communication within the Biology Department and between the Department and the Dean of the Natural Science Division, as well as the other departments within the division.

Faculty Kudos Or Way to Go Biology Faculty!!!!

Congratulations go to **Dr. Christopher C. Barney**, T. Elliot Weier Professor of Biology, on his recent appearance in the Dayton Daily News dated November 10, 2002.

Wright State University featured this now famous alum (along with a very professorial photo of same) in a recent ad extolling the virtues of an education where exposure to undergraduate research early in a student's academic career is a vital tool in the learning process. A 1973 graduate of Wright State University, Dr. Barney states,

" When I began looking for a faculty position after completing my Ph.D., I was attracted to positions where I had an opportunity to involve undergraduates in research. I had enjoyed it so much, I wanted to give the opportunity to others."

The Biology Department is pleased that Hope College is where Dr. Barney has chosen to give students the opportunity that he enjoyed as an undergrad.

Stamp of Appr



Dr. K. Greg Murray and Dr. Kathy Winnett-Murray have received notification that they have each approved as "**Certified Senior Ecologist, Ecological Society of America**" effective January 1, 2006 to December 31, 2006 (at which time they will apply for renewal of certification) **Congratulations to both!**



Turtles and Gerbils and Snakes, C

Our Lab Director and Museum Tour Guide Extraordinaire, **Lori Hertel**, has received much deserved recognition for her service to the community in her capacity as museum tour guide. In addition to her responsibilities as Lab Director, Lori gives museum tours to local school children as well as those enrolled in the Head Start program. Her ability to hold the attention of the youngsters and share information with them while sitting on the floor with a 30 pound Boa Constrictor wrapped around her neck has garnered the respect and admiration of faculty and staff alike. Congratulations, Lori, on receiving the **Sigma Xi Outreach Award** and thank you for all you do for the department.

A Vote for the Environment

Dr. K. Greg Murray has been elected to the **Board of Directors of the West Michigan Environment Action Council**. You can access their website at www.wmeac.org

Thank you, Dr. Murray, for all you do on behalf of the community and in the way you represent the Biology Department.

Faculty Publications

Bultman, T.L., and S. Faeth. Endophytic Fungi and Interactions Among Host Plants, Herbivores, and Natural Enemies. In: Tschardtke, T. and Hawkins, B.A. (Eds.). 2002 *Multitrophic Level Interactions*. Cambridge University Press, Cambridge, UK

Swain, E., **J. Stukey**, **V. McDonough**, M. Germann, Y. Liu, S. Sturley, J. Nickels, Jr.. Yeast Cells Lacking the ARV1 Gene Harbor Defects in Sphingolipid Metabolism. *J. of Biological Chemistry*. Vol. 277, No. 39, Issue of September 27, pp. 36152-36160. 2002

Watson, L. Bates, P., **Evans, T.**, Unwin, M., Estes, J. Molecular Phylogeny of Subtribe Artemisiinae (Asteraceae), Including *Artemisia* and its Allied and Segregate Genera. *MBC Evolutionary Biology* 2002, 2:17. September 26.

Swain, E., Baudry, K., **Stukey, J.**, **McDonough, V.**, Germann, M., Nickels, Jr. J. Sterol-dependent Regulation of Sphingolipid Metabolism in *Saccharomyces cerevisiae*. *J. of Biological Chemistry*. Vol. 277, No. 29, July 19, 2002. pp. 26177-26184

Murray, K.G., **Winnett-Murray, K.**, **Hertel, L.** Species Diversity, Island Biogeography, and the Design of Nature Reserves. In: Tested Studies for Laboratory teaching. Vo. 23 (M.A. O'Donnell, Editor). Proceedings of the 23rd workshop/conference of the Association for Biology Laboratory Education (ABLE). 2002.

Murray, K. G., and Garcia-C. Contributions of Seed Dispersal and Demography to Recruitment Limitation in a Costa Rican cloud Forest. IN: D.J. Levey, W.R. Silva, and M. Galetti, eds. Seed dispersal and Frugivory: Ecology, Evolution, and Conservation. CABI Publishing. Pp. 323-338. 2002.

Grant Proposal Submissions

Leah Chase-Wallar submitted the proposal, "Mechanistic and Regulatory Studies of a Neurotransmitter System" to the Towsley Research Scholar Program, which is a junior sabbatical program at Hope.

Virginia McDonough submitted the proposal, "Investigating Sterols and Vesicle Traffic in Controlling Exogenous Fatty Acid Accumulation and Cell Response," to the American Heart Association.

Debbie Swarthout submitted the proposal, Investigating Increased Drought Tolerance in Endophytic Tall Fescue Grasses, to the Council For Undergraduate Research Student Summer Fellowship Program.

News of Biology Alums



Laurie Beth Nederveld ('02) is working with the Robert B. Annis Water Resources Institute in Muskegon non-profit organization affiliated with GVSU working to improve the Muskegon watershed.

Krista A. Brewer ('99)(now Capps) has received her Master of Science Degree in the Environmental Science Program of Indiana University's School of Public and Environmental Affairs.

Heather Wesp ('99) has received her Master's Degree from Northern Arizona University and has accepted a teaching position at Lansing Community College. Heather will be teaching anatomy.

Christopher Lepczyk ('93) has accepted a post-doctoral position at the University of Wisconsin, Madison in the department of Forest Ecology and Management. Chris is defending his Ph.D. dissertation (MSU) on December 5, 2002, and is currently teaching at Lansing Community College.

Christa Van Dort ('02) is currently working at NIH in order to gain more experience before going to graduate school.

Reports from Conference Participants

Donald Cronkite attended the 2002 meeting of the National Association of Biology Teachers October 29 - Nov. 1 in Cincinnati, Ohio. He participated in a presentation on inquiry in environmental science labs developed by the "Toucan Project" which he created for High School teachers at Hope College and he made another presentation called "A Dozen Things You Can Do With A Paramecium."

Leah Chase-Wallar joined approximately 22,000 scientists from across the world at the annual Society for Neuroscience Meeting in Orlando, FL. In her specialty of synaptic neurotransmission, the dynamics of protein trafficking within the cytosolic and membrane compartments seemed to be the hot topic. Trafficking events like these are thought to be ultimately responsible for the plasticity of our synapses, i.e. the strength of synaptic signals can be altered by consistent use. Such plasticity is thought to be involved in memory formation and learning. For more information on this exciting topic, look at the October 25, 2002 issue of Science.

Greg Murray and **Adrienne Hull** ('02) attended the Ecological Society of America National Meetings in Tucson, Arizona this past August. This is the major conference for U.S. ecologists, and it was attended this year by a record 3700 participants. Adrienne got to meet lots of interesting people and hear lots of great talks and she did a very nice job with her poster as well. Their presentations were:

Murray, K.G., M.C. Burkart*, and A.J. Darcy*. Competitive mechanisms of *Vincetoxicum* minor, an invasive groundcover, in a Michigan beech-maple forest. (oral presentation by Dr. Murray)

Murray, K.G., J.L. Andersen, R.M. Thomas*, *L.B. Nederveld**, and R.D. Smith*.
An interdisciplinary course for biology and mathematics majors (poster
presented by Dr. Dr. Murray)

*Hull**, *A.L.*, *G.B. Rotman**, *J. Veldmand**, *M. Garcia-C.*, *W.S. Mungall*, and *K.G. Murray*. Chemical defense and the demography of tropical cloud forest seed banks. (poster presented by *Adrienne Hull*)

Tom Bultman also attended the Ecology meetings in Tucson. He gave an oral presentation entitled, "A test of ethological isolation among entomophilous fungal species sharing common insect visitors" co-authored with A. Leuchtman and T. Peck*.

Harvey Blankespoor and **Jody Murray**, a senior, attended the 7th International Congress on Medical and Applied Malacology in October, in Los Banos, Philippines. Jody presented results from her work in the "Effects of Temperature Change on the Swimmer's Itch Life Cycle."

Greg Murray conducted a workshop on "Ecological Footprints" at a conference on Spirituality and the Environment (co-sponsored by the Interfaith Dialog Association and the West Michigan Environmental Action Council in Grand Rapids, MI.) on November 2.

Kathy Winnett-Murray, **Angela Bunker**, and **Annie Hilbrecht** presented a workshop to West Michigan teachers attending the Grand Valley State University Science Update Seminar on November 13. Their presentation included K-12 science activities developed in conjunction with their REU summer research project on the effects of a prescribed burn on the invasive plant, Autumn Olive. The project was partly funded by a grant from the Michigan DNR, awarded to the Outdoor Discovery Center of Holland, MI., where the research and K-12 programs took place.

* - undergraduate students



Sharing the Load

Department Service Activity Assignments (2002/2003)

Library Liaison

Dr. Allen Brady

Chemistry Dept. Liaison/Jobs

Dr. Maria Burnatowska Hledin

Dr. Leah Chase

Science Day Presenters

Dr. Tom Bultman

Dr. Winnett-Murray

Dr. Barney

Dr. Donald Cronkite

Seminar Coordinators - Fall

Dr. Tom Bultman

Dr. Kevin Eckerle

First/Second Year Advisors

Dr. Christopher Barney

Dr. Leah Chase

Dr. Dan Gerbens

Major Advisors

Dr. Christopher Barney

Dr. Harvey Blankespoor

Dr. Thomas Bultman

Dr. Maria Burnatowska-Hledin

Dr. Leah Chase

Dr. Donald Cronkite

Dr. Timothy Evans

Dr. Virginia McDonough

Dr. Greg Murray

Dr. Kathy Winnett-Murray

Dr. Debbie Swarthout

BUD Coordinator

Dr. Donald Cronkite

Ecology and Evolutionary Biology Coordinator

Dr. Greg Murray

Safety Coordinator

Dr. Dan Gerbens

Radiation Safety Officers

Dr. Timothy Evans

Dr. Leah Chase

Chairperson

Dr. Thomas Bultman

Tenure/Promotion Notebook Organizer

Dr. Thomas Bultman

Animal Care and Use Committee

Ms. Lori Hertel

Dr. Dan Gerbens

Dr. Kathy Winnett-Murray

Museum Coordinator

Ms. Lori Hertel

Field Equipment Coordinator

Dr. Kathy Winnett-Murray

Field Station Committee

Dr. Greg Murray

Dr. Kevin Eckerle

Dr. Timothy Evans

Equipment Maintenance Coordinator

Ms. Lori Hertel

Greenhouse Supervisor

Dr. Debbie Swarthout

GRE Coach/Graduate School Preparation

Dr. Kim Risley

Admission Liaison/Prospective Student Greeter/Visitation Day Presenter

Dr. Bultman

Web Page Administrator

Dr. Donald Cronkite

Admissions Material Updater/Connections

Dr. Thomas Bultman

CCLI Grant Writer

Swarthout et al.

Department Assessment Coordinators

Dr. Greg Murray

Dr. Kathy Winnett-Murray

Summer Research Program Directors

Dr. Thomas Bultman

Dr. Timothy Evans

PEW Undergraduate Symposium Trip Organizers/Attendees

Dr. Thomas Bultman

Dr. Kenneth Brown (Chemistry)

Faculty Search Task Force

Dr. Virginia McDonough

Dr. Christopher Barney

Dr. Greg Murray

Tri-Beta Advisor

Dr. Kevin Eckerle

Equipment Inventory Coordinator

Vacant

DeKruif Award Committee

Dr. Donald Cronkite

Dr. Timothy Evans

Dr. Winnett-Murray

Publicity Writer

Dr. Thomas Bultman

Display Case Coordinator

Ms. Joan Van Houten

Arbiter of AP Credit Appeals

Dr. Donald Cronkite

Building Opening Celebration Committee Member

Vacant

Internal Review Task Force

Dr. Christopher Barney

Dr. Maria Burnatowska-Hledin

Dr. Thomas Bultman

Seminar Coordinators - Spring

Dr. Kevin Eckerle

Dr. Debbie Swarthout

Pre-Health Professions Advisor

Dr. Dan Gerbens

Keeper of the Chocolate

Ms. Joan Van Houten



The Biology Department hosted a number of seminars this semester. Following list of the seminar speakers and the titles of the talks they gave during the semester.

August 30 *Introduction to the Hope College Biology Faculty and Their Research*

September 6 Dr. Donald DeVries. Dow AgroSciences. *Termites: How Bad Behavior Will Come Back*

Haunt You.

September 13 Dr. Blankespoor, Dr. Bultman, and Dr. Evans. Hope College Biology Department. *Off Campus Courses in Biology for Spring/ May 2003: Bahamas, Florida, and the Galapagos Islands.*

September 20 Dr. Meredith Blackwell. Louisiana State University. *Yeasts from the Belly of Beetles: Specificity, and Expansion of Clades.*

September 27 Dr. Peter Bednekoff. Eastern Michigan University. *Testing How Birds in Groups Learn Danger.*

October 11 Dr. Aaron Hoffman. Colorado State University. *Linking Animal Behavior, Movement, and Distribution in a Colorado Mountain Stream.*

October 18 Dr. Elaine Seymour. University of Colorado. Dr. David Lopatto. Grinnell College. *Assessment of Undergraduate Research.*

October 25 Ryan E. Dodde II, M.D. ('89) *Life as a Plastic Surgeon*

November 1 Audrey Hazekamp ('88). University of Michigan Health Systems. *Life as an Exercise Physiologist in Preventive Cardiology.*

November 7 Sigma Xi Annual Invited Speaker. Dr. Wendell T. Hill. Director of Atomic, Molecular, Optical Sciences and Engine Atomic Physics. University of Maryland, College Park, MD. *Atoms, Molecules and Light: AMO Science Shaping the Future.*

November 12 Dr. Alan Knapp. Kansas State University. *Grasslands and Global Change Research.*

November 15 Dr. Robert Morell. National Institutes of Health. *Genetic Causes of Deafness.*

November 22 Dr. Tanya Paull. University of Texas-Austin. *Integration of DNA Repair and Cell Checkpoint Signaling.*

REU SUMMER RESEARCH PROGRAM

The following is a list of students and their faculty mentors that participated in the program of summer-2002 * Indicates non-Hope student

Student: *Christina Pulas
(Clemson University, Virginia)

Mentor: Dr. Bultman
Project: Effects of Neotyphodium Fungal
Isolates and Plant Cultivars on Invertebrate Herbivore Preference.

Student: *Lashawn Grant (Central State
University, Ohio)
Mentor: Dr. Bultman
Project: Effects of Neotyphodium Fungal
Isolates and Plant Cultivars on Invertebrate Herbivore Preference.

Student: Mitch Wacksman
Mentor: Dr. Bultman
Project: Invertebrate Diversity of the
Macatawa Watershed.

Student: Seth DeVries and Aaron Johnson
Mentor: Dr. Bultman
Project: a Multi-trophic interaction: The
Effects of a Fungal Endophyte on the
parasitoid *Aphelinus asychis*.

Student: Kelly Hutchins
Mentor: Dr. Chase
Project: Development of a Mammalian
Expression System for the Neurotransmitter Transporter, System X_c^- , for Future
Structure/Function Analysis.

Student: Isabelle Le and
*Nicole Steele (St. Catherine's College, MN)
Mentor: Dr. Chase
Project: Regulation of System X_c^- activity by Reactive Oxygen Species and Phosphorylation

Student: Robert Bode
Mentor: Dr. Evans
Project: Phylogenetic Relationships in the African plant genus *Palisota* (Commelinaceae)

Student: Stephanie Kortering and John Rodstrom
Mentor: Dr. Evans
Project: Molecular Systematics of the neotropical plant *Canistropsis* (Bromeliaceae)

Student: Bradley Norden
Mentor: Dr. Gentile
Project: Analysis of Mutant Frequencies in Big Blue™ Transgenic Mice Infected with Fasciola Hepatic Aflatoxin B₁

Student: Timothy Stowe
Mentor: Dr. Gentile
Project: Etheno DNA-Base Adductin in Response to Fascioliasis Induced Oxidative Stress and Altered I Metabolism.

Student: Travis Goldwire
Mentor: Dr. McDonough
Project: Characterization of Schizosaccharomyces pombe Strains with Mutations in genes with Homolog Fatty Acid Desaturases.

Student: Devon Quinn
Mentor: Dr. McDonough
Project: Characterization & Localization of the PDR16 protein in Saccharomyces Cerevisial

Student: Dean Stauss
Mentor: Dr. McDonough
Project: Isolation & Characterization of the MON2 Mutation in Saccharamyces Cerevisial.

Student: Jonathan Atwell
Mentor: Dr. Murray
Project: Treefall Gap Dynamics in a Costa Rican Cloud Forest: Physical, Spatial, and Temporal Processes

Student: Ryan Hamby, Qingfei Jiang,
*Patricia Habdas, (Chatham College, PA.)
Mentor: Dr. Risley
Project: Analysis of Herpes Simplex Virus Type 1 and Pseudorabies Virus Cleavage and Packaging Proteins.

Student: Jason Courter
Mentor: Dr. Swarthout
Project: The Physiological Response of Fraser Fir Seedlings to Drought-related Stress in Weedy and Non-weedy Field Locations.

Student: Jennifer Yamaoka and Samara Webb
Mentor: Dr. Debbie Swarthout

Project: Does PEP Carboxylase Influence
Drought Tolerance in Symbiotic Tall Fescue Grasses?

Student: Angela Bunker and Anne Hilbrecht

Mentor: Dr. Winnett-Murray

Project: The Effects of a Prescribed Burn as a Control Method of the Invasive Plant
Elaeagnus umbellata.

Student: Jody Murray

Mentor: Dr. Blankespoor and

Dr. Burnatowska-Hledin

Project: Studies on the Cercarial Gland

Contents of *Trichobilharzia* sp.

Student: Lindsay Rotman

Mentor: Dr. Blankespoor

Project: Role of *Physa integra* as the Snail Intermediate Host for *Trichobilharzia*
physellai



Important News About the Natural Sciences at Hope College.

U.S. News & World Report ranks Hope College fourth nationally behind only The University of Michigan, MIT, and Stanford in excellence in undergraduate research. That success comes from Hope students and faculty working together as collaborators in the discovery process. This is a time to celebrate the joy of research and scholarship and to share the knowledge that has been gained with the entire Hope community of learners.

Congratulations to all students and faculty on your successes.

Jim Gentile, Dean for the Natural Sciences



Biology Student Awards

Spring - 2002

Biology Service Award: Greg Town

Patterson Memorial Award: Adrienne Hull, Matt Nehs

Van Tamlin Award: Matt Nehs

**Timothy Stowe ('03) Received the
Cancer Research Federation Award.**

Featuring a Fascinating Faculty Member

(Someday soon this will be you)

Dr. Thomas Bultman is one of two Biology Department tenure-track faculty members hired last year. He received an A.B. degree in Biology from Hope College in 1978, a M.S. in Biological Sciences from the University of Cincinnati in 1981 and a Ph.D. from Arizona State University in 1985. He taught for 2 1/2 years at the University of Texas - Austin and then for 13 years at Truman State University in Kirksville, Missouri prior to joining the Hope faculty last year.

Tom's research interests are based broadly in the ecology and behavior of invertebrates. He has worked for the past several years on the interaction between fungi that live endophytically within cool season grasses and insects. The ascomycete fungi produce alkaloids that appear to protect the grasses from their herbivores. Tom's lab has found that the fungi not only provide constitutive resistance to some insects but also mediate inducible resistance to the herbivores. Students in his lab are currently studying the effects of variation in the plant and fungal genotype on the defense provided by the fungus to the plant. They are also exploring potential effects of the fungal alkaloids on natural enemies (predators and parasites) of insects feeding on infected grasses. Tom has received funding for these projects from the National Science Foundation and currently has a grant from the United States Department of Agriculture.

Another research focus of the Bultman lab is the pollination-like service flies of the genus *Botanophila* provide for species of *Epichloë* fungi. The fungi produce fruiting structures on the stems of their grass hosts in the early summer that flies visit for oviposition. In the process, flies also transfer mating spores among fungal individuals and thereby cross fertilize the fungus. Students in his lab have been investigating the cost to the fungus of engaging in the interaction with the flies, the method of spore transfer by flies, and the degree of host specificity displayed by flies. Tom has received funding from the National Science Foundation and the National Geographic Society for this work, which has taken him and students to England and Switzerland for field studies.

This fall Tom is teaching both lecture and lab in Biology 150 (Biological Unity and Diversity). Last spring he taught Biology 422 (Invertebrate Zoology) and intends to teach a Field Invertebrates of Florida during May term in the future. Tom is also the Chairperson of the department, having taken over for Dr. Barney. Tom is a councilor for the National Council of Undergraduate Research.

Tom was born in Fremont, MI. He is the oldest of 6 children. His spouse, Judy, is a native of Kalamazoo, MI. They met as Hope students - both were residents in Phelps Dorm. They both enjoy being back in Michigan, near to many of their relatives. They have 3 children. Kelly, the oldest, is a first year student at Truman State University. Bart (15) and Hilary (13) are students in the Hamilton school district, to the south of Holland. Tom enjoys outdoor activities, like hiking, camping, backpacking, nordic skiing and bicycling.