



COLLEGE OF LIBERAL ARTS & SCIENCES

The Department of

# BIOLOGY

[www.biology.uiowa.edu](http://www.biology.uiowa.edu)

Winter 2012

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Changes to Biology  
Undergraduate and  
Graduate Programs

Former Dean Maxson  
Rejoins Department  
of Biology

Strengthening  
Connections in China



# NEW FACULTY



**VEENA PRAHLAD** Most proteins function efficiently within a narrow range of optimal conditions. Yet, cells and organisms not only survive a wide variety of environmental and physiological fluctuations, but have evolved to colonize a vast diversity of environmental niches. Our lab seeks to understand how organisms function in, and adapt to, varying and stressful environments. To begin to understand this, we focus on an ancient and highly conserved transcriptional program that minimizes the accumulation of damaged and misfolded proteins upon exposure to stress. This transcriptional program, called the heat shock response, is implemented by the transcription factor, heat shock factor 1 (HSF1). Upon exposure to extreme environments, HSF1 activity increases the intracellular levels of specific cytoprotective proteins called the heat shock proteins (HSPs). HSPs are molecular chaperones that maintain protein conformation and help refold or degrade damaged proteins that can result due to stress, thereby restoring cellular function. In isolated cells and unicellular organisms, the heat shock response is autonomously controlled by every cell. However, in the metazoan *C. elegans*, although the heat shock machinery is present in every cell, the ability of the cell to activate a heat shock response is centrally controlled by the animal's nervous system.

In our lab we ask how the nervous system controls HSP gene expression in non-neuronal cells. Specifically, we investigate how the sensory perception of suboptimal conditions or stress is signaled by the nervous system, which signaling pathways are involved, how the signals are transmitted to non-neuronal cells to regulate protein folding and HSP gene expression, and how the neuronal regulation of the heat shock response impacts organismal growth and reproduction. The model organism *C. elegans* provides powerful genetic, cellular, and molecular tools to address these questions. Protein aggregation and misfolding is associated with many debilitating human diseases such as Huntington's disease, ALS, Alzheimer's disease, muscular dystrophy, etc., in addition to cell and tissue aging. Our findings regarding how organisms control protein folding homeostasis through neuronal signaling will also influence the way we think about degenerative diseases of aging and age-related pathology.



**ALBERT ERIVES** Genetic functions are stored in the DNA that makes up a genome. How is this information stored in DNA? This question has two complementary answers: a molecular answer and an evolutionary-process answer. The molecular part tells us something very fundamental about the core, primitive, and logical operation upon which life is based: a gene can be turned ON or OFF. On the one hand, there are parts of the DNA sequence of genes that encode directly the information for making proteins and functional RNAs. On the other hand, there are parts of the DNA sequence of genes that encode regulatory information about when and where to make those proteins and RNAs. After at least a decade of genomic surveys, it turns out that the regions that code for this regulatory information often outnumber the parts that code for proteins directly. And, the more complex an organism is, the more this ratio is skewed.

My laboratory is investigating how regulatory functions are encoded in DNA sequence. We have found that developing models of how regulatory functions evolve is essential to figuring out how they work. We usually address these issues in the context of important problems in developmental biology or key events in animal phylogeny. Our primary experimental system is the *Drosophila* genus and its many species, characterized by evolving egg size, developmental timing, and genome size. We use a combination of genomics, biochemistry, genetics, and bioinformatics to investigate these questions. Lastly, we are also developing and maintaining online tools for cataloguing and describing genetic regulatory functions.

For more information about the Department of Biology's faculty, please visit our website at [www.biology.uiowa.edu](http://www.biology.uiowa.edu)

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## PHOTO ON THE COVER

A false-colored montage of fluorescently-labeled neurons in the cerebral cortex of transgenic mice. Image provided by Dr. Andrew Garrett, a Fall 2009 Neuroscience Ph.D. graduate and former member of Dr. Joshua Weiner's lab in the Department of Biology. Dr. Garrett and other members of the Weiner Lab published a paper in the April 26, 2012 issue of the journal, *Neuron*, that illuminates the mechanisms by which "sticky" molecules, called protocadherins, promote interactions between developing brain cells that regulate their growth.

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## A LETTER FROM THE DEO

As the saying goes, time flies when you're having fun. And what a busy and exciting year we have had thus far in 2012. Albert Erives joined our faculty in January with research interests in gene regulation, evolution, and genomics. We also completed a search in neurogenetics of aging with the hiring of Veena Prahlad. Veena brings

expertise to the department in this area as part of an interdisciplinary cluster dedicated to the study of the aging mind and brain, called the Aging Mind and Brain Initiative (AMBI). We will soon interview for two new positions associated with the AMBI and the newly formed Genetics cluster. For more information on clusters, visit <http://provost.uiowa.edu/clusters>

The rejuvenation of the department has not stopped with the hiring of new faculty. We have proposed improvements to the graduate program and have already made changes to the undergraduate curriculum. Please read about this in more detail on pages 4 and 5. Adjustments to both programs will improve student learning experiences in several critical aspects needed in the competitive landscape of the 21st century. I thank Chi-Lien Cheng (previous Associate Chair for Graduate Studies) for stewarding the graduate program through a difficult series of years. There are no words for thanking Joe Frankel (previous Associate Chair for Undergraduate Studies) for his many years of tireless service to the department. Joe will officially retire in May 2013 with 50 years of service!

Thanks to the enthusiastic efforts of Lori Adams, our Director of the Biology Honors Program, the department is now the new administrative home of the Iowa Biosciences Advantage (IBA) program. This recently renewed NIH-funded program supports minority and underrepresented students in gaining research experience. Our department faculty and staff play leadership roles in three NIH-funded interdisciplinary programs — the P30 grant awarded to faculty member, Steven Green; the T32 grant in Genetics, recently renewed by faculty member, Daniel Eberl; and now the IBA program.

The Department is indebted to the Developmental Studies Hybridoma Bank (DSHB) and its Director, Dr. David Soll, for the recurring commitment of \$50,000 for two graduate student fellowships. In addition to these recurring donations, the DSHB donated \$143,000 to the graduate program and provided \$10,000 to the department retreat on October 27, 2012, the first in the last four years.

I hope you enjoy this edition of the newsletter.

Dr. Bernd Fritzsich  
Departmental Executive Officer (DEO) and Professor



# BIOLOGY UNDERGRADUATE AND GRADUATE EDUCATION UNDERGOING CHANGES

## NEW INTRODUCTORY BIOLOGY COURSE SEQUENCE

By Dr. Bryant McAllister, Associate Chair for Undergraduate Studies and Associate Professor; and Dr. Brenda Leicht, Lecturer and Curriculum Coordinator. Input provided by Dr. Joe Frankel, Professor

The introductory biology curriculum is undergoing changes this year. Principles of Biology I & II were developed by departmental faculty and initiated in 1994 under the guidance of Professor George Cain. These long-standing courses and their associated labs that have been the foundation of the undergraduate biology program are being phased out during the 2012-13 academic year. Meanwhile, a redesigned and reorganized introductory curriculum is taking their place.

The first course of the introductory sequence, Foundations of Biology, was started in Fall 2012. It is being taught under the supervision of Dr. Brenda Leicht. As the name implies, Foundations of Biology covers the unifying concepts of living systems — emphasizing the chemistry of life, its cellular basis, genetic inheritance and expression, and evolutionary process.

The accompanying laboratory introduces students to the experimental foundations of biology. Throughout the semester students will perform three separate multi-week projects that complement each of the three major

content areas of the lecture — cell structure and metabolism, genetic inheritance, and evolution of populations.

The second course of the series, Diversity of Form and Function, debuts in Spring 2013 under the supervision of Dr. Mark Holbrook. This course will emphasize the diversity of living systems starting with the major branches in the tree of life and ending with the roles of different organisms that support ecosystem function. A major focus of this course is the structures and pathways responsible for maintaining individual homeostasis, especially in plants and animals. The accompanying lab will use student-driven enquiry to build on the experimental and communication skills learned during the first semester.

Instructors involved in these new courses have attended the National Academies Summer Institutes on Undergraduate Education over the past several years and are putting into practice the Institutes' methods of scientific teaching. These efforts have also been supported by a grant

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from the College of Liberal Arts and Sciences (CLAS). Active engagement of students in learning is a key principle of scientific teaching. Even with upwards of 600 students in Macbride Auditorium, demonstrations, controlled conversations, and “clickers” are used to engage students in course materials. The electronic “clicker” device is instrumental in these large lectures because the lecturer can assess the understanding of the class in real time. Thus, lecture contents are shaped by these immediate measures of comprehension.

This revised introductory biology curriculum still serves as the foundation for both the Biology Bachelor of Arts and Bachelor of Science majors and for other life science majors on campus. It is, therefore, essential that students gain proficiency in a broad range of conceptual material in addition to acquiring skills used in modern laboratory investigations and in communicating findings of experimental analyses. The availability of online courses is currently undergoing a major expansion in higher education. However, online courses are not a surrogate for the “hands-on” experiences delivered through these courses. With this revision of the curriculum, the department is renewing its commitment to providing a comprehensive and contemporary introduction to biology for undergraduate students studying the life sciences at the University of Iowa.

## PROPOSED NEW “I-BIO” GRADUATE PROGRAM

By Dr. Joshua Weiner, Associate Chair for Graduate Studies and Associate Professor

Nearly a year ago, upon assuming the role of Associate Chair for Graduate Studies, I wrote in this space about the need to reimagine and revitalize the Biology Graduate Program in the face of economic constraints that have made the recruitment, matriculation, and training of graduate students — never easy in the best of times — more difficult. In the spring semester of this year, I submitted to our faculty a plan of proposed program improvements, which were thoroughly debated and modified over several meetings, and subsequently adopted. While full implementation of the new program must await approval by the Graduate College and the Board of Regents over the current academic year, we are already working hard to improve graduate education in Biology.

Pending approval of the name change, our program will be called “I-Bio,” Integrated Biology Graduate Program. This new name and image reflects the uniqueness of our departmental program among the many interdisciplinary programs across campus, in which our faculty also participates. Research in our department integrates: 1) multiple levels of analysis — from the molecular to the ecological; 2) multiple organisms — from single-cells (yeast) to genetic and embryological model systems (flies, nematode worms, frogs, zebrafish, mice) to natural populations and their symbiotic relationships; 3) multiple scales of biological time — from embryogenesis to aging to phylogenetic analyses. No other graduate program on campus can offer incoming students such a broad range of research to explore. Our focus on basic biological questions offers students the firm foundation that is necessary for any biomedically applied studies that they may wish to pursue in their research careers. Along with an all-new I-Bio website currently under construction and a savvy, web-based marketing campaign, this proposed name change will help us to appeal to the kind of students we most want to recruit.

I-Bio represents much more than “window-dressing,” however. We are implementing new procedures and courses that will better train our graduate students for “a life in science.” Our aim is to produce well-rounded Ph.D.’s who will not only excel in research, but who will also be our next generation of gifted teachers and enthusiastic



*Proposed “I-Bio” logo*

communicators of science to the general public. Students will now undergo teaching assistant training and practice as a group during their second semester, increasing class cohesion while reducing the department’s first-year costs to enable a much larger incoming class size. Our popular Graduate Student Seminar Series, which provides our students with opportunities to develop effective speaking skills, will now be a required course. A new seminar course called COSMOS (Concepts, Models, and Systems in Biology) will take an important biological question and explore it at all levels of analysis, exposing students to the department’s uniquely integrated approach to the breadth of biology. A series of “Career Lunches” will bring to the department successful individuals from a wide range of teaching, research, and outreach careers to talk with students about their experiences and the many career options open to well-trained scientists.

These and other planned improvements will allow our program to not only survive, but to thrive. Most importantly, I-Bio will provide a better training experience for the next generation of fully engaged, well-rounded scientists who will represent excellence in research, teaching, and service.

## FORMER DEAN MAXSON REJOINS DEPARTMENT OF BIOLOGY



Linda Maxson, former dean of the University of Iowa College of Liberal Arts and Sciences (CLAS), stepped down from her position on June 30, 2012, and subsequently rejoined the Department of Biology faculty. Maxson served as dean of the CLAS for 15 years.

Throughout her illustrious career at the University of Iowa, Maxson was instrumental in many of the changes that occurred to the CLAS. She hired over 300 of the 600-plus CLAS faculty members, and 43,000 students have earned degrees from the university's largest college during her time spent as dean. Maxson also saw the college renamed and the construction or renovation of 10 buildings on campus.

Maxson earned a Bachelor of Science in Zoology and a Master of Arts in Biology from San Diego State University (SDSU) and a Ph.D. in Genetics through a joint doctoral program from the University of California at Berkeley and SDSU. Prior to accepting the position as dean of the CLAS at the University of Iowa, Maxson was a teacher and administrator at several

universities including the University of Illinois at Urbana-Champaign, Penn State University, and the University of Tennessee, Knoxville.

Her career achievements extend into the scientific field as well. Maxson's accomplishments in molecular evolutionary biology have taken her to four continents for fieldwork, allowed her to publish over 115 papers in premier journals, and author three editions of a genetics textbook. To recognize her achievements, Iowa City Mayor, Matt Hayek, declared April 23 "Dean Linda Maxson Day" at a farewell celebration held on April 23, 2012.

In addition to her return to the Department of Biology as a professor, Maxson is working on proposals to improve STEM (Science, Technology, Engineering, and Mathematics) teaching in the state of Iowa.

Chaden Djalali, former professor and chair of the Department of Physics and Astronomy at the University of South Carolina, was chosen as Maxson's replacement. Djalali began his duties as dean on August 15, 2012.

References: Andresen, K. (May 11, 2012). Djalali named dean of UI College of Liberal Arts and Sciences. *Iowa Now*.

Hung, T., & Andresen, K. (April 19, 2012). 'The best job in the world.' *Iowa Now*.

## Alumni Spotlight: Dr. Mark Mattson FORMER BIOLOGY STUDENT RECEIVES ALUMNI FELLOWS AWARD

Mark Mattson, Ph.D. Biology, 1986, received the Alumni Fellows Award from the University of Iowa College of Liberal Arts and Sciences (CLAS) in 2012. Each year, the award recognizes up to six CLAS alumni for their outstanding contributions to society, their professions, the College, and the University of Iowa.

Dr. Mattson earned his Ph.D. from the Department of Biology in 1986. As a graduate student in Dr. Eugene Spaziani's lab, Mattson played a key role in establishing much of what is known about the cell biology of hormonal control in crustaceans. He is the author of over 500 original research articles and the editor of 10 books in the fields of aging and neurodegenerative diseases. As a result of his numerous publications and accomplishments, he is one of the most highly cited neuroscientists in the world.

He has received numerous awards for his major contributions to the understanding, prevention, and treatment of Alzheimer's disease, Parkinson's disease, ALS, and stroke. Currently, Dr. Mattson is the Chief of the Laboratory of Neurosciences at the National Institute on Aging in Baltimore where he researches ways to put aging-related disease on hold using cutting-edge technologies aimed at understanding brain aging and the development of neurodegenerative disorders. He is specifically interested in discovering whether calorie restriction can help avoid brain damage and disease. Dr. Mattson is also a professor in the Department of Neuroscience at Johns Hopkins University.

The Alumni Fellows program was established by former CLAS Dean Linda Maxson in 1999. Recipients of the award are invited to campus for a two-day visit and are given the opportunity to visit their home department to speak to classes, meet with small groups of faculty and students, and make a public presentation about their experience since leaving the University of Iowa. For more information about the Alumni Fellows program, please visit [clas.uiowa.edu/alumni/alumni-fellows](http://clas.uiowa.edu/alumni/alumni-fellows)

Reference: College of Liberal Arts & Sciences website. *2012 Alumni Fellows*. Retrieved from <http://clas.uiowa.edu/alumni/2012-alumni-fellows>

# STRENGTHENING CONNECTIONS IN CHINA

By Dr. Bernd Fritzsch, Departmental Executive Officer (DEO) and Professor

In Fall 2011, the College of Liberal Arts and Sciences (CLAS) was looking for someone with connections to China to accompany UI President Sally Mason on a trip to Hong Kong, Taiwan, Shanghai, and Beijing. Since I have ongoing scientific connections with researchers in Hong Kong, Taiwan, and Shanghai, I was selected as the CLAS representative to the president's delegation. After more than six months of meticulous planning, the delegates left for Hong Kong, the first stop. We all arrived safely before the weather turned bad. I left earlier than the other delegates to spend time with my collaborators to expand already strong connections on the role of transcription factors in ear development. In the few days before the remaining delegation arrived, we managed to further fine tune the resubmission of a paper to PNAS (Proceedings of the National Academy of Sciences) and initiated a completely new area of research involving a newly generated series of mutations that we expect to play a role in the decision process of neurosensory differentiation in the ear. This area of research is important to understand how lost sensory hair cells of the ear can ultimately be replenished through proliferation and appropriate differentiation.

The six days of my stay in Hong Kong were not exactly a holiday! I not only worked during the day with collaborators at the University of Hong Kong, but I also gave two research seminars. One seminar was at the University of Hong Kong Medical Center, and the other was at the Hong Kong University for Science and Technology. The latter was particularly stressful as our president, Sally Mason, a biologist by training, was attending the presentation (see image). From the fact that she continued to talk to me after the seminar, I deduced that it was reasonable!

The remaining time I spent with the delegation was a flurry of activities, jetting from Hong Kong to Taiwan in one day (and night stay) before we moved on. Within that day, we visited



From left to right: H. Benjamin Peng, Bernd Fritzsch, Sally Mason, Ken Mason, Michael Loy

a university in Taiwan, had an evening with alumni, and just barely enough time to make it to the airport for Shanghai. While the alumni turnout was great in Hong Kong, it was outstanding in Taiwan. This was certainly in large part related to the long-standing connections between the University of Iowa and Taiwan, and the fact that Hong-Yuan Lee, the Minister of Interior of Taiwan, is an alumnus of the University of Iowa. As it turned out, the wife of one alumni had studied in Austria, and here I was speaking German to a Chinese in Taiwan!

The next day we were off to Shanghai. After a morning session at East China Normal University, I separated from the delegation to give a presentation at yet another university where one of my colleagues works. Dr. Wei-Qiang Gao was the first to demonstrate that undifferentiated cells in the ear of neonatal mice can be forced to differentiate as hair cells if treated with the transcription factor *Atoh1*. After that, I was supposed to fly home. Unfortunately, the weather that had barely missed Hong Kong when we arrived brought enormous rain to Shanghai. The rain was so heavy that we were grounded for several hours. After a 72-hour ordeal, I finally made it home, exhausted from the trip but excited about the energy these extremely well-trained, young investigators radiated for their field of research. There is no doubt the future will see even stronger connections formed with Chinese universities — the designated goal for this visit.

## INAUGURAL MIDWEST AUDITORY NEUROSCIENCE SYMPOSIUM

Researchers with an interest in auditory neuroscience had an opportunity to learn about the latest research directions at the 2012 Inaugural Midwest Auditory Neuroscience Symposium held May 18-19, 2012, in the Biology Building East on the University of Iowa campus. Organized by the Iowa Center for Molecular Auditory Neuroscience (ICMAN), the symposium brought together prominent auditory researchers from the University of Iowa and Midwest. Several renowned investigators were the keynote speakers including Robin Davis (Rutgers University), Dwayne Simmons (UCLA), Stefan Heller (Stanford University School of Medicine), and Yehoash Raphael (University of Michigan). For more information about the ICMAN, please visit [www.biology.uiowa.edu/icman](http://www.biology.uiowa.edu/icman)

# ACCOLADES

## FACULTY/STAFF AWARDS AND HONORS

**Josep Comeron, Ph.D.** - Appointed to a four-year term on the National Institutes of Health (NIH) Genetic Variation and Evolution Study Section

**Dan Eberl, Ph.D.** - Co-recipient of Diversity Catalyst Award

**Bernd Fritzsich, Ph.D.** - National Academies Education Fellow in the Life Sciences (2012 – 2013)

- Selected to attend The National Academies Midwest Summer Institute on Undergraduate Education held June 11-16, 2012, in Minneapolis, MN.

- Associate Director, Aging Mind and Brain Initiative (AMBI)

**Erin Irish, Ph.D.** - National Academies Education Fellow in the Life Sciences (2012 – 2013)

- Selected to attend The National Academies Midwest Summer Institute on Undergraduate Education held June 11-16, 2012, in Minneapolis, MN.

**Amy Korthank, Senior Academic Advisor**, is one of ten advisors selected to the 2012-2014 Class of Emerging Leaders with the National Academic Advising Association (NACADA). For more information about NACADA, please visit [www.nacada.ksu.edu](http://www.nacada.ksu.edu)

**Sarit Smolikove, Ph.D.** - Iowa Center for Research by Undergraduates (ICRU) Distinguished Mentor Award (2012)

**Christopher Stipp, Ph.D.** - Career Development Award (Fall 2012)

## Biology Professor Elected to Prestigious Academician Position

Professor Chun-Fang Wu was elected as a prestigious academician of Academia Sinica, the most preeminent academic institution in Taiwan. Academia Sinica was founded in 1928 to promote and undertake scholarly research in sciences and humanities. Wu was elected during the Convocation of Academicians that was held from July 2 - 5, 2012, in Taipei, Taiwan.

Being elected an academician is one of the highest honors that can be earned in the academic field in China. Wu is now part of the Academia Sinica Convocation that meets every other year, and he will serve in this position for life.

For more information about Academia Sinica, please visit [www.sinica.edu.tw/](http://www.sinica.edu.tw/)

For more information about these and other faculty/staff awards and honors, please visit [www.biology.uiowa.edu/news.php](http://www.biology.uiowa.edu/news.php)

## YEARS OF SERVICE IN THE DEPARTMENT OF BIOLOGY

### 50 YEARS

**Joe Frankel**  
Professor

### 35 YEARS

**Jeffrey Denburg**  
Professor

### 30 YEARS

**Jerry Beach**  
Lab Technician/  
Drosophila Kitchen  
Coordinator

### 25 YEARS

**Jan Fassler**  
Professor

**Steven Green**  
Professor

**Diana Kruse**  
Business Manager,  
Developmental  
Studies Hybridoma  
Bank (DSHB)

### 20 YEARS

**Linda Gerhold**  
Lecturer

### 15 YEARS

**Amy Korthank**  
Senior Academic  
Advisor

**Linda Maxson**  
Professor

**Atsushi Ueda**  
Assistant Research  
Scientist (Wu Lab)

### 10 YEARS

**Matthew Brockman**  
Senior Systems  
Administrator

**Josep Comeron**  
Associate Professor

**Mark Holbrook**  
Lecturer

**Bryant McAllister**  
Associate Professor

### 5 YEARS

**Susan Dean**  
Assistant in  
Instruction

**Ken Mason**  
Lecturer

**Valerie Reeb**  
Core Facility  
Research Specialist,  
Roy J. Carver Center  
for Genomics (CCG)

This list of employees is based on the years of service up to 2012.



## DID YOU KNOW?

**The Department of Biology employs over 200 faculty, staff, and students.**

# SUMMARY OF NEW GRANTS AWARDED IN FISCAL YEAR 2012 (JULY 1, 2011 – JUNE 30, 2012)

The **Department of Biology** was awarded a \$5,000 Assessment Innovation Grant from the Office of the Provost as part of the University of Iowa's initiative to renew emphasis on assessment of student learning. The Department of Biology proposed a plan to develop an assessment tool that will serve as a baseline to measure gains in student learning as they progress through courses required for the Biology major. The department's proposal was submitted by Dr. Lori Adams along with assistance from faculty members Dr. Brenda Leicht and Dr. Bryant McAllister.

**Andrew Forbes, Assistant Professor of Biology;** Charles E. Linn, Cornell University; and Jeffrey L. Feder, University of Notre Dame; received a three-year, \$300,964 collaborative grant from the National Science Foundation. Their research will focus on the origins of biodiversity by studying whether new species can be generated from interactions between *Rhagoletis pomonella*, a plant eating insect, and its three insect parasites, *Diachamsa alloeum*, *Diachasmimorpha mellea*, and *Utetes canaliculatus*. The researchers hope to determine whether the formation of new species can create new niches for other life forms to exploit, in turn creating a chain reaction of biodiversity. For more information about Dr. Forbes' research, please visit [www.biology.uiowa.edu/labs/forbes/](http://www.biology.uiowa.edu/labs/forbes/)

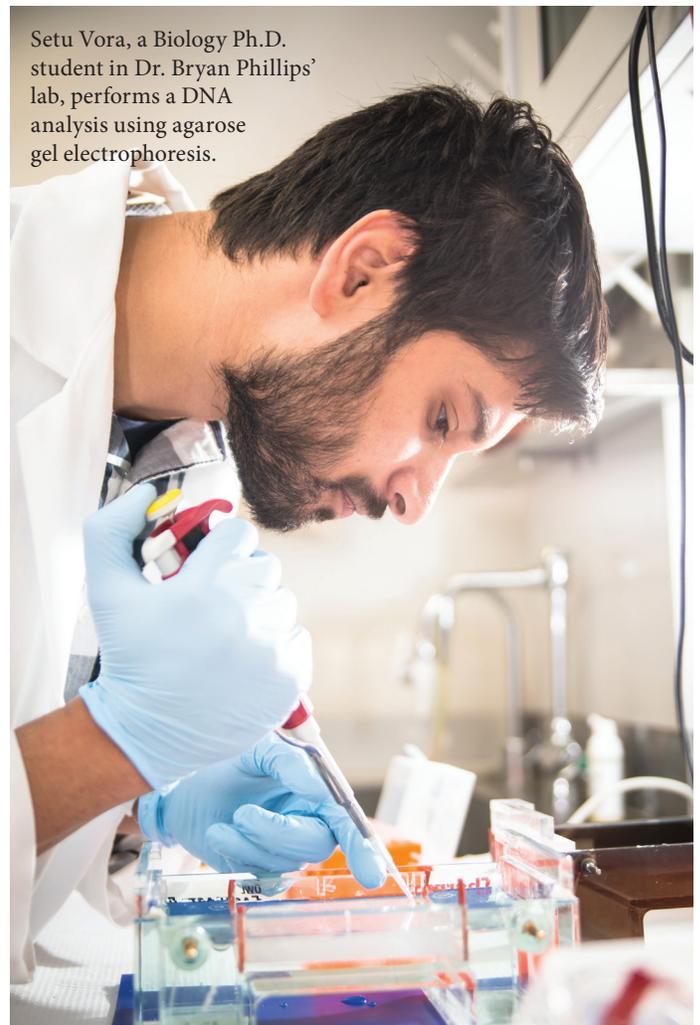
**Maurine Neiman, Assistant Professor of Biology,** and **John Logsdon, Associate Professor of Biology,** were awarded a four-year, \$876,752 grant from the National Science Foundation. The project will study the reasons that cause living organisms to engage in sexual reproduction (i.e. produce genetically diverse offspring) instead of asexual reproduction (clonal reproduction).

Neiman also received a one-year, \$20,000 grant from the National Geographic Society to study the maintenance and persistence of sexual reproduction in natural populations of a New Zealand snail. For more information about Dr. Neiman's and Dr. Logsdon's research, please visit [www.biology.uiowa.edu/neiman/](http://www.biology.uiowa.edu/neiman/) and [euplotes.biology.uiowa.edu](http://euplotes.biology.uiowa.edu)

**Bryan Phillips, Assistant Professor of Biology,** received a four-year, \$713,275 grant from the American Cancer Society. His research focuses on Wnt signaling pathways that utilize beta-catenin to specify cell fate. While Wnt signaling is an integral part of animal development, overactive Wnt signaling has been linked to a host of cancers and metastases including colorectal cancer.

**Sarit Smolikove, Assistant Professor of Biology,** received a three-year, \$450,000 grant from the National Science Foundation. Smolikove's grant will be used to study the behavior of chromosomes during the biological process called meiosis — a specialized cell division that results in the formation of gametes, or reproductive cells. The division that occurs during this process reduces the number of chromosomes by half. Changes in chromosome numbers are the leading known causes for serious birth defects. For more information about Dr. Smolikove's research, please visit [www.biology.uiowa.edu/smolikove/](http://www.biology.uiowa.edu/smolikove/)

**Christopher Stipp, Associate Professor of Biology,** was awarded a one-year, \$30,000 grant from the University of Iowa Holden Comprehensive Cancer Center. The grant will be used to study a potential mechanism that allows for invasion by an aggressive breast cancer cell type. Breast cancer is typically thought to metastasize to other parts of the body when cancer cells lose contact with their neighbors. This allows them to invade underlying tissues. However, some cell types seem to go against this trend and invade in groups or clusters of cohesive cells.



Setu Vora, a Biology Ph.D. student in Dr. Bryan Phillips' lab, performs a DNA analysis using agarose gel electrophoresis.

# BIOLOGY HONORS PROGRAM

Learn about the Biology Honors program at [www.biology.uiowa.edu/undergraduate\\_honors.php](http://www.biology.uiowa.edu/undergraduate_honors.php) or contact Dr. Lori Adams ([lori-adams@uiowa.edu](mailto:lori-adams@uiowa.edu), 319-335-1322)

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## BIOLOGY HONORS SCHOLARSHIPS

### *Avis Cone Undergraduate Research Fellowship*

The Avis Cone Undergraduate Summer Research Fellowship (\$1000) is intended to support an undergraduate Honors student undertaking research in a laboratory that focuses on organisms exhibiting chlorophyll-based metabolic processes (e.g. plants, photosynthetic bacteria), or a laboratory that studies aspects of zoology (the structure, embryology, evolution, classification, habits and distribution of animals, both living and extinct), or research within the field of conservation biology.

2012 Recipient: **Daniel Alex Alder** (Hendrix Lab)

### *Clifford W. Hesseltine Awards in Biology*

The Clifford W. Hesseltine Awards in Biology (\$1000 each) are given annually to two Biology sophomores or juniors in recognition of their excellence in formal coursework and research undertaken within the Department of Biology.

2012 Recipients: **Rachael Payne** (Manak Lab) and **Michelle Sullivan** (Neiman Lab)

### *Richard G. Kessel Scholarship in Biology*

The Richard G. Kessel Scholarship in Biology (\$750) is generously donated by Professor Emeritus Richard Kessel (M.S., Ph.D., The University of Iowa) to an outstanding graduating senior majoring in Biology who has performed noteworthy research and/or is intending to pursue graduate work in cell and/or developmental biology.

2012 Recipient: **Amanda Adams** (Phillips Lab)

### *Arthur J. and Flora D. Levin Research Scholarship in Biology*

See page 11 for more information.

## BIOLOGY HONORS STUDENTS RECEIVE AWARDS

**Daniel Alex Alder** (Hendrix Lab), a senior majoring in Biology and Environmental Sciences and a Biology Honors Program student, was a recipient of the *Stanley Undergraduate Award for International Research*. Daniel travelled to the island of Roatan, Honduras, for six weeks over the summer to research the impact of hunting on invasive Lionfish populations.

**Senuri Jayatilleka** (Dailey Lab), a Biology Honors Program May 2012 graduate, received an *Iowa Center for Research by Undergraduates (ICRU) Fellowship* for the Fall 2011 and Spring 2012 semesters. As a requirement for the program, students must present at the Fall or Spring Undergraduate Research Festival. Senuri received an award for *Outstanding Poster Presentation* at the 2012 Spring Undergraduate Research Festival in the Natural Sciences category.

**Senuri Jayatilleka** (Dailey Lab) and **Nathan Balukoff** (Smolikove Lab) received *Poster Awards* at the 13<sup>th</sup> Annual Student Interdisciplinary Health Research Poster Session.

**Maxwell Turner** (Kay Lab), a Biology Honors Program May 2011 graduate, was the first author of an article that was published in the May 15, 2012 issue of *The Journal of Physiology* (Volume 590, Issue No. 10). Max is a graduate student in the Neuroscience program at the University of Washington in Seattle.

**Patric Vaelli** (Logsdon Lab), a Biology Honors Program May 2012 graduate, was the recipient of the *Sanxay Prize*. Patric is currently pursuing a doctoral degree in Zoology with a specialization in Evolutionary Biology at Michigan State University.

For more information about these scholarships and awards, please visit [www.biology.uiowa.edu/undergraduate\\_honors.php](http://www.biology.uiowa.edu/undergraduate_honors.php)

## BIOLOGY HONORS GRADUATES

December 2011

**Jason Heard** (Murray Lab)

May 2012

**Amanda Adams** (Phillips Lab)

**Erika Clark** (Malone Lab)

**Nicole Goodale** (Slusarski Lab)

**Amelia Hurst** (Cheng Lab)

**Senuri Jayatilleka** (Dailey Lab)

**Andrew Jesson** (Stipp Lab)

**Lauren Jones** (Dailey Lab)

**Joseph Kruempel** (Houston Lab)

**Catherine Neff** (Weiner Lab)

**Jeremy Sandgren** (Slusarski Lab)

**Carolyn Sleeth** (Weiner Lab)

**Patric Vaelli** (Logsdon Lab)

**Xue Xiao** (Manak Lab))

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# UNDERGRADUATE STUDENTS

## BIOLOGY UNDERGRADUATE SCHOLARSHIPS

### *Arthur J. and Flora D. Levin*

#### *Teaching and Research Scholarships in Biology*

The Arthur J. and Flora D. Levin Teaching and Research Scholarships (\$500 each) are awarded annually to Biology undergraduates who have demonstrated excellent academic performance and have submitted a plan to begin Biology Honors research or a Biology Teaching internship within 6 months of receiving the award. 2012 Levin Teaching Award Recipient: **Nathan Balukoff** (Smolikove Lab); 2012 Levin Research Award Recipient: **Jonathan Birdsall** (Manak Lab)

### *Lowden Prize in Biology*

The Lowden Prize in Biology (\$500) is given each May to the undergraduate student who achieves the highest standing in the Ecology course (002: 134) from the previous fall semester. 2012 Recipient: **Isaac Werner**

### *Evelyn Hart Watson*

#### *Undergraduate Research Fellowship*

The Evelyn Hart Watson Undergraduate Summer Research Fellowship (\$1000) is intended to support the future research efforts of an undergraduate student who has been pursuing research in the Department of Biology for at least one semester. 2012 Recipient: **Angela Knutson** (Manak Lab)

For more information about these scholarships, please visit [www.biology.uiowa.edu/undergraduate\\_honors.php](http://www.biology.uiowa.edu/undergraduate_honors.php)

## 2012 – 2013 COLLEGE OF LIBERAL ARTS & SCIENCES SCHOLARSHIPS

### *Mary Goodykoontz Barnes Scholarship*

Recipient: **Michelle Sullivan** (Neiman Lab), a senior majoring in Biology and Environmental Sciences

### *Faith M. Knowler Scholarship*

Recipient: **Simone Renault**, a senior majoring in Biology and International Studies with a minor in Philosophy

For information about these scholarships, please visit [clas.uiowa.edu/students/scholarships](http://clas.uiowa.edu/students/scholarships)

## BIOLOGY STUDENT ORGANIZATION PROVIDES OPPORTUNITIES FOR STUDENTS

The University of Iowa Biological Interests Organization (UI BIO) is a student-run organization that was founded in Fall 2011. UI BIO was created to provide development opportunities for students interested in pursuing a career in the biological fields. Members of the organization receive beneficial opportunities such as becoming involved with research, career networking, and pre-professional experiences that aim to increase interest in biology and the surrounding community. UI BIO also works to create an environment of fellowship among students and faculty.

UI BIO president, senior Stephanie De Vito, said the organization hopes to go in a direction that will increase student involvement this year. “We want to try more volunteer work, and we’ve made the organization take on a more social aspect with movie nights and study nights. We want students in the Department of Biology to get to know each other. Everyone can benefit from someone else’s knowledge and experience, so we want to create something that will benefit the students and the department as a whole,” De Vito said.

For more information about the organization, email [biology-at-iowa@googlegroups.com](mailto:biology-at-iowa@googlegroups.com), “like” UI BIO on Facebook, or follow @UI BIO on Twitter.

**Distinguished Student Leadership Certificates** recognize students who have exhibited qualities in leadership, learning, and loyalty. **Simone Renault**, a senior majoring in Biology and International Studies with a minor in Philosophy, held an internship with the World Food Prize, founded the Global Alliance for Vaccinations and Immunizations campus campaign, served as director of community service for Saturdays in Service, and is an active volunteer.

# GRADUATE STUDENTS

## GRADUATE STUDENT ACHIEVEMENTS

### *Avis Cone Fellowship*

To be eligible for the Avis Cone Fellowship, Biology Ph.D. students must be in good standing with the Department of Biology and the Graduate College, have a permanent laboratory affiliation, and work in a laboratory using organisms that have chlorophyll-based metabolic processes (i.e. plants, photosynthetic bacteria).

Summer 2012 Recipients: **Benjamin Beydler** (Irish Lab) and **Linh Bui** (Cheng Lab)

### *Evelyn Hart Watson Fellowship*

The Evelyn Hart Watson Fellowship is eligible to all Biology Ph.D. students. These students must be in good standing with the Department of Biology and the Graduate College and have a permanent laboratory affiliation.

Summer 2012 Recipients: **Andrew Adrian** (Comeron Lab), **Austin Baldwin** (Phillips Lab), **Ukpong Eyo** (Dailey Lab), **Xiaojing Hong** (Manak Lab), **Elizabeth Savelkoul** (Logsdon Lab), **Setu Vora** (Phillips Lab), **Xiaomin Xing** (Wu Lab), **Yizhi Yin** (Smolikove Lab)

### **Andrew Adrian** (Comeron Lab)

*First Author Publication:* April 2012 issue of the *Southeastern Naturalist* (Volume 11, Issue 1).

### **Katelin Ahlers** (Dailey Lab)

*Award:* Graduate College Summer Fellowship (2012). For more information about this fellowship, please visit [www.grad.uiowa.edu/aid-you-can-apply-for/summer-fellowships](http://www.grad.uiowa.edu/aid-you-can-apply-for/summer-fellowships)

### **Linh Bui** (Cheng Lab)

*First Author Publication:* *American Journal of Plant Sciences* (2012, Volume 3, Issue 7).

### **Jeremy Duncan** (Fritzscht Lab)

*First Author Publications:* November 2012 issue of *The Anatomical Record* (Volume 295, Issue 11); *The International Journal of Developmental Biology* (2011, Volume 55, Issue 3); March 17, 2011 *Journal of Visualized Experiments (JoVE)*.

### **Ukpong Eyo** (Dailey Lab)

*First Author Publication:* \*November 2012 issue of *GLIA* (Volume 60, Issue 11).

\*Image from this article was selected for the front cover of this issue.

### **Xiaojing Hong** (Manak Lab)

*First Author Publication:* August 2012 issue of *G3: Genes, Genomes, Genetics* (Volume 2, Issue 8).

### **Karry Jannie** (Weiner Lab)

*Award:* Outstanding Teaching Assistant Award for her work teaching Fundamental Genetics. For more information about the Outstanding Teaching Assistant Award, please visit [www.uiowa.edu/~cot/TA%20Award/otamenu.htm](http://www.uiowa.edu/~cot/TA%20Award/otamenu.htm)

### **Benjamin Kopecky** (Fritzscht Lab)

*First Author Publications:* November 2012 issue in *Brain Research* (Volume 1484); April 2012 issue of *Behavioral Neuroscience* (Volume 126, Issue 2); \*March 2012 issue of *Developmental Dynamics* (Volume 241, Issue 3).

\*Image from this article was selected for the May 2012 front cover of *Developmental Dynamics* (Volume 241, Issue 5).

*Book Chapters:* Non-syndromic hearing loss. *Hereditary Human Loss and Its Syndromes* (2013); Embryology of the Mammalian Ear. *Hereditary Human Loss and Its Syndromes* (2013); Neurosensory Specification and Development. *Encyclopedia of Genetics* (2012).

### **Mark Lobas** (Weiner Lab)

*First Author Publication:* March 2012 issue of the *Journal of Neurochemistry* (Volume 120, Issue 6).

*Award:* Recipient of the Neuroscience Graduate Program's Publication Award for the article listed above.

### **Amanda Nelson** (Forbes Lab)

*First Author Publication:* *International Journal of Evolutionary Biology* (Volume 2011).

### **Qinchuan Wang** (Lin Lab)

*First Author Publication:* June 1, 2012 issue of *Frontiers in Bioscience* Landmark Edition (Volume 17, Issue 7).

### **Tian Yang** (Fritzscht Lab)

*First Author Publication:* August 2011 issue of *Hearing Research* (Volume 278, Issues 1-2).

**For a more detailed list of articles published by Biology graduate students, please visit [www.biology.uiowa.edu/graduate\\_publications.php](http://www.biology.uiowa.edu/graduate_publications.php)**

**Other awards and achievements can be viewed at [www.biology.uiowa.edu/graduate\\_achievements.php](http://www.biology.uiowa.edu/graduate_achievements.php)**

# CELEBRATING RETIREMENT

## GRADUATES OF BIOLOGY

### Doctor of Philosophy (Ph.D.) in Biology

#### December 2011

**Ramesh Ratnappan** (Cameron Lab)  
Thesis Title: "Analyses of Adaptive Evolution and Recombination Rate Variation in *Drosophila*"

#### May 2012

**Angela Cordle** (Cheng Lab)  
Thesis Title: "Genes Involved in Asexual Sporophyte Development in *Ceratopteris richardii* and *Arabidopsis thaliana*"

**Jeremy Duncan** (Fritzsche Lab)  
Thesis Title: "Cochlear Neurosensory Specification and Competence: You Gata Have Gata"

**Karry Jannie** (Weiner Lab)  
Thesis Title: "Activated Leukocyte Cell Adhesion Molecule (ALCAM) Regulation of Tumor Cell Behavior and Neuronal Targeting"

**Madhuparna Roy** (Eberl Lab)  
Thesis Title: "Role of the Sodium Pump in Auditory Function of *Drosophila melanogaster*"

**Qinchuan Wang** (Lin Lab)  
Thesis Title: "The Intercalated Disc-associated Xin Family of Proteins in Cardiac Development and Function"

### Master of Science (M.S.) in Biology

#### December 2011

**Derek Peters** (Cameron Lab)  
Thesis Title: "Population Genetic Analysis of Weak Selection in the *Drosophila subobscura* Species Complex"

#### May 2012

**Jonah Cullen** (Cameron Lab)  
**Jordan Haas** (Green Lab)

#### Summer 2012

**Emily Koury** (McAllister Lab)



**JEFF KLAHN** began his career at the University of Iowa 38 years ago as a graduate student under Professor Steve Hubbell and retired in 2012. Working largely independently, Jeff analyzed the effects of kinship on behavior of colony-forming wasps at the Macbride Field Campus. Jeff's results were published in *Science* and other leading journals. After obtaining his Ph.D. degree, Jeff spent time conducting tree censuses in Costa Rica and Malaysia under Professor Hubbell. In addition, he taught

courses in the Department of Biology such as Ecology, Evolution, and Animal Behavior while also teaching Introductory Biology and Ornithology at Cornell College. During the past 18 years, Jeff continued to teach some of the advanced courses in the Department of Biology and played a major role in the Principles of Biology II course, in which he taught the section on Ecology and Evolution with skill, humor, and sagacity. He maintained high academic standards while teaching this course and won the respect and even affection of most students in the course. Also during his career, Jeff served as a consultant for the UI Museum of Natural History, where he helped design the Hageboeck Hall of Birds. Jeff's valuable contributions to the Department of Biology will be greatly missed.

By Dr. Joe Frankel, Professor



**PAUL RUDOLPH** began working in the Department of Biology 25 years ago as a postdoctoral scholar and retired in 2012. Prior to coming to my lab, Paul became interested in molluscs while at the University of Michigan's Museum of Zoology and later received his Ph.D. there. He then went to Egypt for a year where he worked on snails and parasite infections. He returned to the University of Michigan to do research that was supported by his own grant from the National Institutes of Health (NIH). Paul then spent

some time in the pharmaceutical industry working on applied molluscan science. It was during this time that Paul became known as an international authority on molluscan reproduction. However, his passion was academia, so he came to the University of Iowa to my lab, bringing useful techniques including immunocytochemistry and other new biochemical methods. He published papers on various topics ranging from cytochemistry of the crustacean central nervous system to biosynthetic paths that convert cholesterol to ecdysone, a steroid molting hormone. In addition to his research, he taught classes at the University of Iowa and Cornell College. These included Invertebrate Zoology, Genetics, Evolution, General Biology, Human Biology, and Endocrinology. We congratulate Paul on a successful career and wish him a happy retirement.

By Dr. Eugene Spaziani, Professor Emeritus

## Iowa Lakeside Laboratory Offers A Unique Experience

By Dr. Steve Hendrix, Professor

Iowa Lakeside Laboratory, a 147-acre campus on the shores of Lake Okoboji in northwest Iowa, is an important facility for students and researchers in all the natural sciences. Although Lakeside is over 100 years old, it has entered a new era as a Regents Resource Center. In addition to providing its traditional facilities and programming as a field station, it now also serves as a community resource to support scientific education, research, and outreach programs. Academic courses at Lakeside are unique because they offer students an immersion experience of taking only one course at a time. These courses integrate research and education in a natural setting with an emphasis on “boots-on-the-ground” activities.

Laboratory research facilities and housing are available for visitors and the wide variety of habitats and organisms in the region provide many research opportunities. The Lab also hosts many education outreach programs across all grades, giving school children of all ages a unique experience of the study of “nature in nature.”

I am the University of Iowa’s Campus Coordinator for Iowa Lakeside Laboratory and have recently chaired a strategic planning committee for Lakeside. This committee, consisting of a member of all Regents institutions as well as local supporters, has envisioned numerous ways to attain excellence in all facets of the Lab’s mission and some of these ideas have already been put in place. For example, to encourage student research in the Okoboji region, Lakeside has initiated a new Honors Undergraduate Research Fellowship Program starting in the Summer 2013. Also, as part of the expanded outreach mission of Lakeside, new initiatives are underway to bring scientists and artists together to increase environmental awareness through the arts.

Learn more about Lakeside and a book recently published by UI Press, titled *The Iowa Lakeside Laboratory: A Century of Discovering the Nature of Nature*, at [www.continuetolearn.uiowa.edu/lakesidelab](http://www.continuetolearn.uiowa.edu/lakesidelab)

## IOWA BIOSCIENCES ADVANTAGE PROGRAM VALUABLE OPPORTUNITIES FOR MINORITY STUDENTS

By Dr. Lori Adams, Co-Director

**“Diversity fosters creativity, creates competition among people and ideas, brings new perspectives to problems, and fosters linkages among sectors.”<sup>1</sup>** The mission of the Iowa Biosciences Advantage (IBA) program is to identify academically talented undergraduate students of underrepresented minorities in STEM (Science, Technology, Engineering and Math) fields with aspirations for a research career and provide them with first-rate training that will facilitate their entry into doctoral programs in the biomedical, behavioral, and biophysical sciences. It is imperative that programs in academic research create a more inclusive community of scholars and faculty, and the IBA program contributes to that paradigm shift. When IBA Scholars graduate, they are strong candidates for top graduate programs in the sciences. Those admitted to the IBA Scholar Program receive one-on-one mentoring from UI research faculty and prepare for a Ph.D. education through hands-on research experience, seminars, and conferences. Several Department of Biology faculty members serve as mentors for the program and a portion of the students served by the program are Biology majors. Funding for the IBA program comes from the National Institutes of Health (NIH) and the University of Iowa. The Department of Biology is the new administrative home of the IBA program and is located in the Biology Building. Dr. Vincent Rodgers, Professor of Physics and Astronomy, and I serve as co-directors of the program. More information about the IBA program can be found at [oegi.grad.uiowa.edu/iba/](http://oegi.grad.uiowa.edu/iba/)



Nicole Richardson, an IBA program student, works with her mentor, Daniel Lusche, to culture soil amoebae used for behavioral 2D and 3D-studies in Dr. David Soll’s lab in the Department of Biology.

<sup>1</sup>National Academies Press (2007). *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*. Retrieved from <http://www.nap.edu/catalog/11463.html>

# IN REMEMBRANCE

## OBITUARIES

- Boyle, Dr. John S., M.S. Botany, '42.  
June 12, 2010
- Brown, Roger M., B.S. Zoology, '77.  
March 29, 2010
- Bulat, Dr. Thomas J., M.S. Botany, '50; Ph.D. Botany, '53.  
October 29, 2011
- Cole II, Dr. Theodore C., M.S. Zoology, '48.  
October 4, 2011
- Collister, Laverne A., B.A. Botany, '52.  
November 1, 2011
- Farrow, Dr. Wendall M., B.A. Botany, '49; M.S. Botany, '51;  
Ph.D. Botany, '53.  
November 25, 2011
- Ferguson, Dr. Max B., Ph.D. Zoology, '50.  
January 3, 2011
- Goos, Dr. Roger D., M.S. Botany, '55; Ph.D. Botany, '58.  
March 7, 2011
- Gram, Dr. Peter B., B.A. Zoology, '47.  
December 25, 2011
- Gustafson, Robert E., B.A. Zoology, '42.  
November 16, 2011
- Howard, Eleanor R., M.S. Zoology, '39.  
January 11, 2012
- Jacobson, Coleman G., B.A. Zoology, '43.  
April 10, 2012
- Johnston, John L., M.S. Zoology, '48.  
December 22, 2011
- Mather, Marilyn Fontaine, B.A. Zoology, '46.  
May 7, 2010
- Meggers, Barbara Bonar, B.A. Zoology, '46.  
April 26, 2012
- Rix, Richard A., B.A. Zoology, '58.  
May 11, 2012
- Roberts, Larry C., B.A. Botany, '60.  
December 19, 2010
- Schmidt, Eugene M., M.S. Zoology, '54.  
November 23, 2010
- Vollmer, Dr. Virginia A., Ph.D. Zoology, '53.  
October 20, 2011
- Welshman, Ian R., M.S. Zoology, '72.  
June 3, 2012
- Whitson, Dr. Gary L., M.S. Zoology, '60; Ph.D. Zoology, '63.  
May 31, 2010
- Winston, Keith E., B.A. Botany, '55; M.S. Botany, '61.  
May 18, 2012
- Wolff, Judith J., B.A. Zoology, '48.  
June 21, 2012

Source: UI Division of Alumni Records

## WE REMEMBER

**JOSEPH PAUL HEGMANN** (1940-2011), a professor in the Department of Biology from 1968 to 1985, died on November 30, 2011, in Iowa City. He was 71.

Before coming to the University of Iowa (UI), Hegmann earned his Bachelor's degree in Psychology in 1962, a Master's degree in Dairy Science in 1966, and a Ph.D. in Genetics in 1968, all from the University of Illinois at Urbana. He also served in the United States Army with the 5th Infantry Division at Camp Carson, Colorado, until 1967 when he was honorably discharged.

During his time at the UI, Hegmann taught Behavioral Genetics, Experimental Design and Analysis, and Quantitative Genetics at the graduate level, in addition to Evolution and Biology at the undergraduate level. He directed the Neural and Behavioral Sciences program at the UI for ten years, served in an advisory capacity to the National Institute of Mental Health for eight years, and was also Secretary of the International Behavioral Genetics Association.

Hegmann published over 100 scientific papers during his illustrious career and also held the role of editor for a 12-volume series of books about behavioral biology and for the *Journal of Behavioral Biology*. His passion for science and teaching was evident in the fact that he considered his doctoral students to be his greatest academic legacy.

A man with an obvious passion for life, Hegmann continually explored new challenges and opportunities including cello lessons, fly fishing, advances in computer technology, astronomy, boating, skiing, forestry, progressive politics, knot tying, and many more. He also started his own computer business, called Impressions Custom Computers, after his academic career at the UI.

Joseph Hegmann will be remembered as a great man who impacted many lives in a positive way. He is survived by his wife, Julie; adoptive sister, Kathye; daughters Theresa, Cynthia, and Rebecca; and four grandchildren.

Reference: Gay & Ciha Funeral and Cremation Service website.  
Retrieved from [www.gayandciha.com](http://www.gayandciha.com)

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Phone: 319-335-1050

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To learn how gifts can make a difference for faculty and students in the Department of Biology, please visit [www.biology.uiowa.edu/alumni\\_giving.php](http://www.biology.uiowa.edu/alumni_giving.php) or contact Chris Wilson, Associate Director of Development, at the UI Foundation ([chris-wilson@uiowa.edu](mailto:chris-wilson@uiowa.edu), 319-467-3814).



Students in the Department of Biology Greenhouse located on the 4th Floor of Biology Building East (BBE).