



Dear Alumni and Friends,

In 2018, the Department of Biology experienced unprecedented growth and change. We now boast over 1000 undergraduate students majoring in Biology, Biomedical Sciences, and Neuroscience. Renovations to expand our teaching labs completed just in time for the fall semester and our culture of innovation has fostered one-of-a kind courses in monoclonal antibody technologies and synthetic biology.

Our accomplishments would not be possible without faculty and staff commitment to excellence, several of whom have received awards detailed in this newsletter. We are pleased to announce the promotions of Lori Adams and Brenda Grewe (Leicht) to Associate Professor of Instruction, Veena Prahlaad to Associate Professor, and Chi-Lien Cheng to Professor. A hearty congrats on their accomplishments! In addition, we are delighted to welcome Daniel Summers, a new Assistant Professor whose research focuses on the molecular mechanisms of neurodegeneration. Dr. Summers will arrive in January 2019. We also said goodbye to two faculty members. Bridget Lear has moved to another institution, and we wish her the best of luck. Linda Maxson, formerly Dean of the College of Liberal Arts and Sciences and Professor of Biology, retired. Dr. Maxson was a remarkable scientist, administrator, and mentor. Read more about Dr. Maxson's career on page 10.

One of my goals is to grow the research excellence of our graduate program. With decreased external funding opportunities, we look for creative ways to support the recruitment and research of our faculty and graduate students, as this is central to the success of our department. We are particularly grateful for generous support by the Roy J. Carver Charitable Trust that brought state-of-the-art equipment to our imaging facility and for private donors who provided crucial support for graduate student research.

Biology will continue to provide a rigorous education in the natural sciences with key exposure to research and outreach as essential components of our curriculum. We are dedicated to inspiring the next generation of scientists, medical professionals, teachers, and policymakers. We are proud of our history, excited for our future, and grateful that you are part of it all!


Sincerely,

Diane C. Slusarski, Ph.D., Professor and Chair, Department of Biology






Unique Course On Monoclonal Antibody Technologies

The Developmental Studies Hybridoma Bank (DSHB), a National Resource directed by Professor **David Soll** and housed in the Department of Biology, ran a two-credit course on monoclonal antibody (mAb) technologies in January 2018. As far as we know, this represents the first comprehensive course of its kind on this subject taught in the U.S. or Europe. Nine undergraduate and graduate students were supervised by ten DSHB scientists in an intense laboratory setting and received instruction on all aspects of the generation and application of mAbs. MABs represent one third of all cancer drugs and are used as a major reagent in all aspects of biomedical research. This course provided biology students a distinct advantage for their future endeavors, whether they are in academia or in industry.



As a National Resource, the DSHB provides mAbs at cost (\$40/ml) to researchers throughout the world. The DSHB filled 65,000 orders last year. For more information, contact the DSHB via phone or email (319-335-3826, dshb@uiowa.edu), or visit dshb.biology.uiowa.edu. 

To learn how gifts can make a difference for faculty, staff, and students in the Department of Biology, please visit www.givetoioowa.org/biology or contact Sara Ring at the UI Center for Advancement (sara.ring@foriowa.org, 319-467-3639).

 biology.uiowa.edu
 biology@uiowa.edu
 319-335-1050
 facebook.com/uiowabiology
 twitter.com/uiowabiology

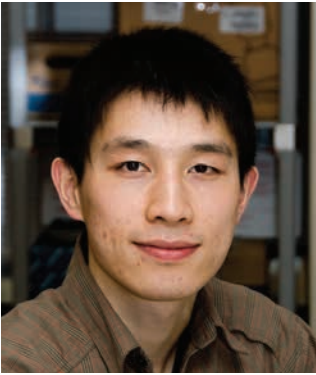
Editors
 Steve Kehoe
 Erin Foster Hartley
 Jaeda Harmon
Designer
 Elly Kikos



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New Faculty

Bin He



Why are some species good at one thing and their close relatives at another? How did they evolve from a common ancestor and yet acquire the unique attributes that make them successful in their respective environments? These are the questions being researched in the Gene Regulatory Evolution (GRE) Lab, led by principal investigator, **Bin He**.

Dr. He earned his Ph.D. in Evolutionary Genetics at the University of Chicago, where he studied the evolutionary gains and losses of short DNA motifs, which govern how key developmental genes are expressed in different species of fruit fly. Moving from theory to experiments, he joined the lab of Dr. Erin O'Shea at the Harvard University FAS Center for Systems Biology, where he used functional genomics to dissect how stress responses are regulated differently in two related yeast species.

Baker's yeast is the hero behind our bread, beer, and wine. The second yeast, *Candida glabrata*, a human commensal, has successfully colonized our gut and is increasingly showing up among hospital associated infections. The yeasts look nearly identical under the microscope. Fitting for their respective environments are their unique abilities: the baker's yeast is able to utilize a variety of sugars present in plants; the commensal yeast is able to withstand a high dose of oxidative agent, which is used by our immune cells to kill invading microbes. The question being asked in the GRE Lab is: How did two species that share 90% of their genes (think of them as parts in two cars of different make) manage to adapt to dramatically different environments? The key might lie in how these genes are utilized. It's similar to using the same LEGO blocks to build amazingly different objects.

The GRE Lab combines wet lab approaches, such as genomics and biochemistry, with evolutionary and computational tools to dissect the genetic basis for stress response divergence. Besides elucidating the fundamental principles behind gene regulatory evolution, the lab is also hoping to reveal the adaptive strategies used by commensals and opportunistic fungal pathogens. The latter could transform the way commensal-associated infections are understood and treated.

As a member of the campus-wide Informatics Initiative (UI3), Dr. He plans to develop a new course titled, Introduction to Scientific Computing for Biologists, aimed at introducing a series of useful tools to prepare students for the increasingly data-intense approaches in modern biological and biomedical research.

David Rehard

David Rehard, Lecturer for the Human Biology and Introductory Animal Biology courses in the Department of Biology, was born and raised in a small, northern town in rural Missouri. He received his Bachelor of Science in Biology degree and a Ph.D. in Genetics from the University of Missouri. Prior to starting his position at the University of Iowa in July 2017, he was an adjunct professor at both the University of Missouri and Columbia College.

Dr. Rehard became interested in lecturing during his time as a teaching assistant in graduate school. Having never taught before, he became enamored with the challenge of motivating and guiding a classroom of students through difficult course concepts. As his graduate program concluded, Dr. Rehard made the decision to focus full-time on teaching and thus began lecturing a variety of biology courses across two different campuses in Columbia, MO.

During his informal training as a lecturer-for-hire, Dr. Rehard began to focus more intently on his teaching pedagogy: What did he want students to understand? How could he motivate them to learn? What new educational techniques could be leveraged for the students' benefit? All the while he kept his eyes and ears open for new opportunities and challenges. And thus, when an incredible teaching opportunity opened up at the University of Iowa, an institution renowned for its educational prowess, it was an easy decision for him to make.



State-of-the-Art Teaching Laboratories

In the summer of 2017, a \$1.7 million renovation project was started to enhance teaching lab spaces and core research facilities in the Biology Building. This renovation project, funded by the University of Iowa College of Liberal Arts and Sciences, was initiated in response to the enrollment increase in the Biology and Biomedical Sciences majors and the new Neuroscience major that was launched in the Fall 2017 semester. Total enrollment for all undergraduate majors in the Department of Biology for the Fall 2018 semester was over 1,000 students.

The renovated space consists of a new state-of-the-art teaching laboratory for two upper-level investigative lab courses – Neurobiology Laboratory (taught in the spring semesters) and Cell Biology Laboratory (fall semesters). The main lab accommodates up to 24 students at a time and creates a unique interactive learning experience that combines the TILE (Transform – Interact – Learn – Engage) classroom technology with ample space for wet bench activities. The laboratory also features attached tissue culture and microscopy suites and includes several replaced aging light microscopes with new semi-automated digital fluorescence microscopes. The lab space was completed in time for the beginning of the Spring 2018 semester.

This renovation project also involved relocating the Roy J. Carver Center for Genomics (CCG), a research and service center, from the first floor in the Biology Building to its new home on the second floor. In its previous space are two new teaching labs that will be utilized for the Evolution Lab (fall semesters) and Developmental Biology Lab (spring semesters).



Funding Highlights: July 1, 2017 to June 30, 2018

Major Research Grants

Steven Green, Professor of Biology, together with Co-Principal Investigators Mark Warchol (Washington University School of Medicine in St. Louis) and Edwin Rubel (University of Washington, Seattle): \$2,999,607 for 5 years from the National Institutes of Health for “Role of the Innate Immune System in the Survival of Auditory Neurons.”

Anna Malkova, Associate Professor of Biology: Awarded the prestigious Maximizing Investigators’ Research Award (R35) for \$1,889,110 over 5 years from the National Institutes of Health (NIH) for “Double Strand Break Repair Maelstrom: Causes, Mechanisms and Genome Destabilizing Consequences.” Dr. Malkova also received \$152,500 for 2 years from NIH for “Suppressors and Drivers of Long-Tract Repair DNA Synthesis.”

Diane Slusarski, Professor of Biology and Departmental Executive Officer, with Co-Investigator **Michael Dailey**, Associate Professor of Biology: \$490,000 from the Roy J. Carver Charitable Trust for “Multiuser Facility to Provide State-Of-The-Art Live Confocal and Multiphoton Imaging” (see article on the back cover). Dr. Slusarski was also awarded \$154,000 for 2 years from the American Heart Association for “Elucidating the Mechanisms of the McKusick-Kaufman Syndrome Gene MKKS/BBS6 in Congenital Heart Disease.”

Other Major Grants

Lori Adams, Associate Professor of Instruction, Biology Honors Program Advisor, and Program Director of the Iowa Biosciences Academy, UI LSAMP Program, and the Latham Science Engagement Initiative, is a Co-Investigator and a Master Facilitator of Research Mentor Training on the “University of Iowa Clinical and Translational Science Award” led by Principal Investigators M. Sue O’Dorisio and Patricia Winokur. The grant is funded by the National Institutes of Health and provides \$3,372,760 over 5 years.

Maurine Neiman and **Andrew Forbes**, both Associate Professors of Biology: \$271,349 for 3 years from the Roy J. Carver Charitable Trust for “Science Booster Club Expansion” (see article on page 4).

*Covers new awards starting in Fiscal Year 2018 with at least ~\$150,000 in total costs and a Biology faculty or staff member as the Principal Investigator or Co-Investigator.

Science Outreach Activities

Expansion of Science Booster Club

The Science Booster Club is an initiative supported by the National Center for Science Education (NCSE) to enrich community-level science education and improve regional science literacy by providing communities with access to free, inclusive science education opportunities. The Science Booster Club brings hands-on activities to public spaces and events to engage the local community about topics surrounding evolution and climate change. By founding Science Booster Clubs within communities, volunteers are able to select or create educational content that is relevant to their region's needs or interests and support local science education through NCSE's teacher microgrants. As the first Science Booster Club in the nation, the Iowa City Science Booster Club was founded in 2015 by **Maurine Neiman**, Associate Professor of Biology at the University of Iowa, and Emily Schoerning, NCSE's Director of Community Organizing and Research, to provide science education content to Iowa City, Cedar Rapids, and surrounding communities. Since 2015, the Science Booster Club has expanded significantly and new clubs have formed in ten other states. Currently, the Iowa City Science Booster Club, led by Department of Biology graduate students **Joe Jalinsky** and **Kyle McElroy**, interacts with thousands of participants from the region each year. Many other graduate students, undergraduates, and community members are involved in Science Booster Club events.



In 2018, Drs. Neiman and **Andrew Forbes**, also an Associate Professor in the Department of Biology, along with Dr. Schoerning, received a grant from the Roy J. Carver Charitable Trust to expand the current reach of the Science Booster Club to other regions in Eastern Iowa. The expansion has focused on establishing active Science Booster Clubs in the Quad Cities and Muscatine, bringing informal science education opportunities to both areas and their surrounding rural communities. With generous support from the Carver Trust, Department of Biology graduate students **Anna Ward** and **Alaine Hippee** have been collaborating with the NCSE and community members in the Quad Cities and Muscatine to found two new Science Booster Clubs. Over the next year, it is anticipated that these new Science Booster Clubs will provide low-cost, high-impact science education to thousands of additional people in Eastern Iowa.

Mobile Lab Established in Department of Biology

In 2017, **Olga Miakotina**, Instructional Services Specialist for the Department of Biology, and her team of undergraduate students held a workshop at Willowwind School in Iowa City. The workshop, which was designed for students ranging in age from 10 to 12, was based on simplified versions of exercises that are taught in the Human Biology introductory course for non-science majors at the University of Iowa. Dr. Miakotina and her team received positive feedback from this experience and decided to expand it to other schools under the name "Mobile Lab." Since then, they've attended several area elementary science night fairs, the 2018 Linn County STEM Festival, and participated in Project HOPE (Healthcare Occupations Preparation and Exploration).

The Mobile Lab introduces students to a variety of experiments involving living creatures, including fruit flies prone to seizures and hissing cockroaches. They can also work with gel electrophoresis and test food samples for sugar, protein, and starch. In 2018, the Mobile Lab received the Iowa Science Foundation grant from the Iowa Academy of Science to deliver hands-on science to K-12 students across Iowa.

Dr. Miakotina and Department of Biology Engineering Coordinator **Jeremy Richardson**, hosted a Forensics Summer Camp in August 2018 for kids from ages 5 to 12 to perform a variety of forensic activities such as fingerprint identification, and soil and blood analysis. This camp was held in coordination with the Iowa City Parks and Recreation Department. Dr. Miakotina and Richardson plan to continue and expand the camp in the summer of 2019.



Science Outreach Activities

Summer Workshop on Plant Reproduction

From June 11-15, 2018, Professor of Biology, **Chi-Lien Cheng**, and Associate Professor of Biology, **Erin Irish**, taught a summer workshop on plant reproduction, aided by Biology graduate student Chris Youngstrom. Six students from City High School in Iowa City participated in the workshop with the goal of giving them hands-on experience to help them better understand plant reproduction. The students learned about the life cycle of flowering plants and the fern, *Ceratopteris richardii*. The students dissected flowers to study pollen, fertilization, and seed production. They also learned about ecology and took a tour of the campus to practice plant species recognition. The students ended by forming into groups and presenting on what they learned in the workshop.



Graduate Student Awards

Department of Biology Summer 2018 Graduate Fellowships

This award is eligible to Biology Ph.D. students in good standing with the Department of Biology and the Graduate College and must have a permanent laboratory affiliation. The following Integrated Biology (iBio) Graduate Program Ph.D. students were the recipients of this competitive award for summer 2018:



Sepand Bafti
(Green Lab)



Kailey Harrell
(Smolikove Lab)



Xinguo Lu
(Lear Lab)



Krishna Madhav Nukala
(Manak Lab)



Krista Osadchuk
(Irish Lab)



Beth Osia
(Malkova Lab)



David Steffen
(Weiner Lab)



Josh Thompson
(Phillips Lab)

Personal Genome Learning Center Summer 2018 Graduate Fellowships

Biology or Genetics graduate students (Ph.D. or Master's) in good standing with the Department of Biology and the Graduate College working in any laboratory are eligible for this competitive award. Recipients were required to develop and present a program for the DNA Interest Group – Iowa City either in the summer or fall of 2018. Established in 2016 through a grant from the Roy J. Carver Charitable Trust, the mission of the Personal Genome Learning Center is to bring together researchers, educators, and the public in a forum using scientific principles to explore heredity and humanity through personal genome analysis. The following iBio Graduate Program Ph.D. students received this award for summer 2018:



Tirthasree Das
(Slusarski Lab)



Anthony Lilienthal
(Manak Lab)



Eric Tvedte
(Forbes and
Logsdon Labs)

Ballard and Seashore Dissertation Fellowship

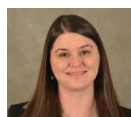
This fellowship program provides an opportunity for Ph.D. students to benefit from a final semester of protected and supported time to focus on completing their scholarly research activities and the writing of their dissertations. A one-time amount of \$10,000 will be given to all recipients of this award. The following iBio Graduate Program Ph.D. students in the Department of Biology received this award:



Ben Alleva
(Smolikove Lab,
Spring 2018)



Kar Men Mah
(Weiner Lab,
Fall 2017)



Melissa Marchal
(Stipp Lab,
Spring 2018)



Felicia Ooi
(Prahlad Lab,
Spring 2018)



Eric Tvedte
(Forbes and Logsdon Labs,
Spring 2018)

Undergraduate Scholarships & Awards

The Department of Biology announced the following undergraduate students as recipients of the Biology scholarships and awards for 2017–18.

For more information on the scholarships, please visit biology.uiowa.edu/undergraduate-program/scholarships-and-awards.

Clifford W. Hesseltine Award in Biology



Pooja Patel
Bachelor of Science
in Biomedical Sciences

Robbie Prize



Anya Kim
Bachelor of Science
in Biology
(Neurobiology track)

Avis Cone Undergraduate Research Fellowship



Tianyu Gan
Bachelor of Science
in Biology (Genetics and
Biotechnology track)

Evelyn Hart Watson Undergraduate Research Fellowship



Tyler Atagozli
Bachelor of Science
in Biomedical Sciences



Tyler Jackson
Bachelor of Science
in Biology (Genetics and
Biotechnology track)



Arthur J. and Flora D. Levin Excellence in Undergraduate Teaching Award



Cassie Conley
Bachelor of Science
in Biology (Cell and
Developmental track)



Timothy Nguyen
Bachelor of Science
in Biology (Genetics and
Biotechnology track)

Lowden Prize in Biology



Marc Beer
Bachelor of Science
in Biology
(Comprehensive track)



Anya Kim
(Outstanding Award)
Bachelor of Science
in Biology
(Neurobiology track)



Charles Marcucci IV
(Distinguished Award)
Bachelor of Science
in Biology
(Neurobiology track)



Jorge Moreno
(Commendable Award)
Bachelor of Science
in Biology
(Evolution track)



Callie Ginapp
Bachelor of Science
in Biology
(Neurobiology track)

Arthur J. and Flora D. Levin Awards for Outstanding Honors Presentations

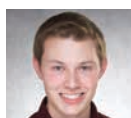
Biology Outreach and Engagement Award

Other Undergraduate Awards

The UI Office of Research and Economic Development held its annual Discovery & Innovation Awards Ceremony on April 17, 2018. Among those recognized for the **Excellence in Undergraduate Research Award** were students affiliated with the Department of Biology.



Jesse Cochran
Bachelor of Science
in Biology
(Neurobiology track)



Evan Lamb
Iowa Biosciences Academy student
and 2016-17 Latham Fellow



Mikaela Mallin
Bachelor of Science in
Biomedical Sciences



Anya Kim received a **Fulbright Study/Research Award in Medical Sciences for 2018-19**. Anya graduated in Spring 2018 with a Bachelor of Science degree in Biology (Neurobiology track) and was a 2015-16 Latham Fellow. She worked as an undergraduate researcher in Dr. Michael Dailey's lab in the Department of Biology. Anya is currently in Spain studying how the activity of the brain's immune cells affects Huntington's disease. She plans to pursue an M.D./Ph.D. degree at Johns Hopkins University starting in the fall of 2019.



Jorge Moreno received a **2018 Graduate Research Fellowship** from the National Science Foundation (NSF). The NSF Graduate Research Fellowship Program provides up to three years of financial support to outstanding graduate students who are pursuing research-based master's and doctoral degrees in fields within NSF's mission. Jorge was an undergraduate student in the Iowa Biosciences Academy program and a 2016-17 Latham Fellow. He graduated in Spring 2018 with a Bachelor of Science degree in Biology (Evolutionary Biology track) and worked in Dr. Maurine Neiman's lab in the Department of Biology. He is currently attending Princeton University studying Molecular Biology.

Faculty & Staff Awards

Distinguished Associate Professor of Instruction



The College of Liberal Arts and Sciences named **Lori Adams** from the Department of Biology to the honor of **Distinguished Associate Professor of Instruction** for 2018-20. This award recognizes candidates for advancement from Lecturer to Associate Professor of Instruction who excel in teaching, institutional and professional service, and their record of publications. Dr. Adams is the Director of the Latham Science Engagement Initiative, the Iowa Biosciences Academy, and the UI Louis Stokes Alliance for Minority Participation Program. She also serves as the Biology Honors Program Advisor.

Outreach Awards

The UI College of Liberal Arts and Sciences (CLAS) has announced **Maurine Neiman**, Associate Professor of Biology, as a recipient of the **2018 CLAS Outstanding Outreach and Public Engagement Award**. This award honors CLAS faculty members who have engaged in activities that bring the university to broader communities in significant and sustained ways. Dr. Neiman's outreach and engagement work has included the Science Booster Club project (see article on page 4), a partnership between the UI and the National Center for Science Education (NCSE). Dr. Neiman has also served as chair of Iowa City Darwin Day, an annual event that brings together hundreds of people to celebrate science and its many contributions to humanity. Members of the Neiman Lab also received the **2017 Thomas Henry Huxley Award** from the Society for the Study of Evolution (SSE). The award, named in honor of Charles Darwin's very public supporter, T.H. Huxley, was established in 2013 to recognize outreach and education achievement for early and mid-career scientists. The Neiman Lab won the award for the NCSE's Science Booster Club initiative.



Outstanding Faculty Mentor Award



Joshua Weiner, Professor of Biology, received the **2017-18 Outstanding Faculty Mentor Award in Biological and Life Sciences** from the Graduate College at the University of Iowa for his extraordinary contributions to graduate education through mentoring graduate students. For Dr. Weiner, mentoring is all about helping graduate students succeed at the university and embark on successful careers. Dr. Weiner was nominated for the award by his students and colleagues.

Lane Davis Award for Honors Team-Teaching

Andrew Forbes, Associate Professor of Biology, received the **2017 Lane Davis Award for Honors Team-Teaching**. Former UI Professor Edward Lane Davis excelled at team teaching and this award, named in his honor, recognizes and encourages faculty to team teach honors students. In Academic Year 2013-14, Dr. Forbes participated in the development and implementation of two active learning courses titled Origins of Life in the Universe I and II. These courses became the first of several Big Ideas courses on campus.



Mary Louise Kelley Awards

The **Mary Louise Kelley Staff Excellence Awards** are given annually to recognize staff members of the College of Liberal Arts and Sciences (CLAS) who performed exceptional service or contributed ideas that improved the work of the department or CLAS. Among the recipients of this award in 2018 from the Department of Biology were **Bruce Ritchie**, Facility Coordinator (see article about Bruce on page 8); and **Anna Gaw**, Senior Academic Advisor, as a member of the CLAS Academic Programs and Student Development – Professional Advisors team, who received the team award.

Hanh Kratz and **Jeremy Richardson** from the Engineering Shop in the Department of Biology (see article on page 11), received the **Mary Louise Kelley Professional Development Award** in 2017. This award supports the commitment of CLAS staff to job-related continuing education, training, and professional activity.

Featured Publications



Andrew Forbes, Associate Professor of Biology, and other members of the Forbes Lab, had their work on insect diversity featured in *The Atlantic* and other media outlets. The Forbes group authored a paper arguing that parasitic wasps boast a greater array of species than any other order of animals.



Bernd Fritsch, Professor of Biology and Director of the Center on Aging & Aging Mind and Brain Initiative at the University of Iowa, is editor of the book, *The Wiley Handbook on the Aging Mind and Brain*, published in May 2018.



David Soll, the Roy J. and Lucille Carver/Emil Witschi Professor of Biology and Director of the Developmental Studies Hybridoma Bank (DSHB), was featured in the May 2018 issue of *Discover* for the Soll Lab's research on studying the formation of tumors in real time and the path toward finding a cure for cancer.

A Dedicated Employee



Marcus Garvey once said that a people without knowledge of their past history and culture is like a tree without roots. To find the living roots of the University of Iowa Department of Biology, one needs to look no further than Facility Coordinator **Bruce Ritchie**.

Bruce has been affiliated with the department for over 30 years. He began as a part-time student worker in Animal Care in the spring of 1983. After receiving his B.A. in General Studies in 1987—a major that reflects his charmingly eclectic personality—he took a full-time position as a storekeeper in the department. In 1991, he migrated to his current position of receiving and delivering packages to all research labs in the department, coordinating construction and renovation projects, and being a resource for answering any facilities-related question among the many other countless duties and responsibilities that would be too long to list here. Bruce has worked under a total of six different administrators and seven department chairs.

According to Bruce, the culture of the department has changed significantly during his time here. He cites the merging of the Botany and Zoology departments under the umbrella of Biological Sciences as one major shift, and he laments the drastic decrease in funding grants available to faculty over the years. His biggest accomplishment was the approximately ten-month project of replacing the windows in the Biology Building in 2009, stating, “It went off better than any of us expected.”

Department administrators have long appreciated and nurtured the intellectual capacity of Bruce's role as Facility Coordinator. He has received the Mary Louise Kelley Staff Excellence Award twice, most recently in April 2018. He speaks particularly fondly of his bond with former administrator Tom Koepfel. “When Tom started [in 2005], I told him I'd been here five years too long. His administration of the department in the years to come made that no longer true.”

David Soll, Professor and Director of the Developmental Studies Hybridoma Bank (DSHB), recalled the 2006 tornado, during which Bruce risked life and limb to keep the DSHB generators on the roof full of gasoline. “In my 46 years as a professor, I have never known anyone as dedicated to the Department of Biology as Bruce. He was always there and still is when you need him.”

Professor Joshua Weiner says of Bruce, “I shudder at the thought of the day when he retires, not only because we'll lose the excellent service he provides to all of us on a daily basis, but because in a very real sense a whole era of the department's growth and development will come to an end. I hope that day is far into the future!” As for Bruce's future goals, he hopes to stay healthy enough to work a few more years.

Graduates

Summer 2017 - Summer 2018

Doctor of Philosophy (Ph.D.) in Biology

Benjamin Alleva, Spring 2018 (Smolikove Lab)
Rajula Elango, Fall 2017 (Malkova Lab)
Xinguo Lu, Summer 2018 (Lear Lab)
Kar Men Mah, Fall 2017 (Weiner Lab)
Denise Oh, Fall 2017 (Houston Lab)
Felicia Ooi, Spring 2018 (Prahlad Lab)
Rachel Reichman, Fall 2017 (Smolikove Lab)
Eric Tvedte, Summer 2018 (Forbes/Logsdon Labs)

Master of Science (M.S.) in Biology

Sepand Bafti, Fall 2017 (Green Lab)
Richard Bowman, Fall 2017 (Smolikove Lab)
Clayton Gordy, Fall 2017 (Fritzscht Lab)
Heather Widmayer, Spring 2018 (Forbes Lab)
Scott Woods, Fall 2017 (Wu Lab)

Bachelor of Arts in Biology with Honors

Emma Greimann, Fall 2017 (Neiman Lab)

Bachelor of Science in Biology with Honors

Thomas Cassier, Fall 2017 (Prahlad Lab)
Danielle Chaney, Spring 2018 (Lear Lab)
Callie Ginapp, Spring 2018 (Buchanan/Prahlad Labs)
Jessica Halyko, Spring 2018 (Fritzscht Lab)
Kieran Hartley, Spring 2018 (Stipp Lab)
Brooke Jennings, Spring 2018 (Stipp Lab)
Any Kim, Spring 2018 (Dailey Lab)
Richard Magnuson, Spring 2018 (Neiman Lab)
Charles Marcucci IV, Spring 2018 (Weiner Lab)
Jorge Moreno, Spring 2018 (Neiman Lab)
Samantha Swartz, Spring 2018 (Neiman Lab)*
Brittany Todd, Summer 2017 (Bassuk/Manak Labs)

*Bachelor of Science in Biomedical Sciences

Biology Alumna Speaks at Networking Event

A record number of students, employers, and program representatives attended the “Exploring Careers in Biosciences” networking event, which was held on September 13, 2018. The annual event is organized by the UI Department of Biology and Pomerantz Career Center and is designed to provide networking opportunities to students interested in internships, research and volunteer work, and full-time positions with bioscience companies and organizations.

Sue MacIntosh, the event keynote speaker, is the founder and president of MacIntosh & Associates, Inc., a biosafety compliance consultation company based in Saint Paul, Minnesota. Since 2005, her company has worked with clients worldwide developing biologically-based products for the agricultural market, including product development and technical advice for pesticides and biotech crops.

MacIntosh’s love of science began at age 13, when she received a microscope for Christmas from her parents. After her cousin convinced her to enroll at the University of Iowa, she went on to receive a B.A. in Zoology with a minor in Chemistry in 1974. She has held research positions at SIGMA, Monsanto, Novo Nordisk, and Bayer CropScience, among other companies.

Returning to the University of Iowa campus prompts special memories for MacIntosh, who has been a Hawkeye football fan and season ticketholder for more than thirty years. She encourages students to seek a diverse, well-rounded liberal arts education before specializing in one area of study and to take as many classes as possible and “never stop learning.” She also spoke of being open to new opportunities and places, a philosophy that led her to move to Denmark for a year in 1993 to establish an Insect Cell Project for Novo Nordisk. While extensive travel can be exhausting, her favorite aspect in her current role at MacIntosh & Associates, Inc. is working with a variety of international companies—particularly in Asia—and experiencing new cultures.

As for the future of career opportunities in the biosciences, MacIntosh is most excited by the field of DNA research, which has seen an explosion in the last thirty years. “I wish even more people would get involved in this area and that funding science education and technology could become a bigger priority. The effects it could have on health care and agriculture would be tremendous.”



Retirement

Former Dean Maxson Retires



When Professor **Linda Maxson** officially retired at the end of June 2018, she left behind a legacy as an outstanding researcher, teacher, and administrator. She served as Dean of the University of Iowa College of Liberal Arts and Sciences (CLAS) for 15 years, stepping down from her position on June 30, 2012, when she joined the Department of Biology faculty.

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

Dr. 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 CLAS at the University of Iowa, Dr. Maxson was a teacher, researcher, and administrator at several universities including the University of Illinois at Urbana-Champaign, Penn State University, and the University of Tennessee, Knoxville.

Her teaching focused on evolutionary biology and human genetics for non-science majors, which was a new field when she began teaching it in 1963. She enjoyed collaborating with students and colleagues in her laboratory – first at the University of Illinois at Urbana-Champaign (UIUC) and later at Penn State University. Former students include seven Ph.D. and six master's students, over two dozen undergraduates, and three postdoctoral fellows. Her research accomplishments in molecular evolutionary biology resulted in the publication of over 115 papers in premier journals and the authorship of three editions of a genetics textbook.

She is proud of her contributions to undergraduate learning, best exemplified by her creation of the UIUC Campus Honors Program - her first major foray into administration. At Iowa, she worked with her associate deans to expand undergraduate course offerings and develop programs to aid in undergraduate retention and success. To recognize her administrative achievements, Iowa City Mayor, Matt Hayek, declared April 23 "Dean Linda Maxson Day" at a farewell celebration held on April 23, 2012.

Well-Liked Biological Sciences Instructor's Battle with Cancer



Ken Jensen has a collection of correspondence from former students, staff, faculty, and acquaintances, and it seems everyone has a favorite memory of the former Department of Botany adjunct assistant professor and greenhouse supervisor. One note from former student Jody Hepperly summarizes how many feel about Dr. Jensen, "You were the friendliest, most knowledgeable, and most philosophical – in a word, the 'Best' – professor I met at Iowa."

Dr. Jensen, 82, earned a B.A. from the University of Northern Iowa in 1958. After attending graduate school at the University of Iowa on the GI Bill, he received an M.S. in Botany in 1970 and a Ph.D. in Botany in 1974. He worked as a research assistant in the department for thirteen years before taking over supervision of the department greenhouse in 1990. He was also involved in planning and maintaining the University of Iowa's Hillside Arboretum and served as Chairman and Staff Representative to the University's Campus Planning Committee.

In addition to teaching Plants and Human Affairs and Spring Flora for the UI Biological Sciences Department, Dr. Jensen also taught Plant Propagation and the lab portion of an electron microscopy course. He retired from his research position in 2000, but he continued to teach evening courses through 2007.

In 1993, Dr. Jensen was one of six UI staff members to receive the first State Board of Regents Staff Achievement Award. He was nominated by three past department chairs, and recipients were chosen from among the previous six years' university Staff Excellence Award winners.

After surviving two bouts of non-Hodgkin lymphoma, Dr. Jensen's positive attitude helped him battle Hodgkin lymphoma – his third round of cancer – diagnosed in 2008. Dr. Jensen has been in remission for ten years and currently lives in Cedar Rapids with his wife, Norma.

Biology Engineering Shop

From Circuit Boards to Costume Fabric

There is no such thing as a typical day for **Jeremy Richardson** and **Hanh Kratz**, who run the Department of Biology's Engineering Shop. They assist Biology students with projects like assembling a buffalo skeleton or encasing a partially dissected eel in resin. They use their precision laser for tasks as diverse as cutting costume fabric for the UI Department of Theatre Arts to creating a scale model of Petersen Residence Hall. They produce high-quality customized products like CO₂ etherizers, plate warmers, and circuit boards with their computer numerical control (CNC) machine. Then there are less glamorous, but critical services for the Department of Biology: fixing broken autoclaves, conducting safety audits, and salvaging useable parts from surplus equipment.

When department labs need to purchase equipment, the Engineering Shop helps with procurement, installation, and repairs. If required, they custom-build equipment from the ground up. The Engineering Shop also tackles challenges of complex systems, such as managing the temperature sensitive equipment housed in over 25 research labs. Research can be dramatically set back if an ultracold freezer stops working and the samples it contains overheat. When the temperature monitoring system in Biology Building East failed, the commercially available replacement cost \$24,000 per room. The Engineering Shop built a system for \$1000 per room that allows faculty to set the specifications for when the alarm is triggered.

In addition to supporting research, teaching is central to the mission of the Engineering Shop. If a faculty member approaches them about a project, Richardson's first question is, "Do you want us to build it? Or, do you want to assign the project to a student?" Most often, it is students who work closely with Richardson and Kratz to design and build instructional materials such as rat mazes with moveable walls for animal behavior courses and special round jellyfish tanks for developmental biology courses.

While the Engineering Shop's laser cutter and CNC machine are critical assets, the overwhelming demand for the shop's services, from departments across campus as well as groups outside the UI, stems from Richardson and Kratz's approach. They are constantly seeking new knowledge, and in 2017 they received specialized CNC machine training with the support of a Mary Louise Kelley Professional Development Award. They are also creative and hands-on, getting deeply involved in each project to troubleshoot any challenges that arise. As Kratz explains, "There are other laser cutters on campus, but people come to us because we keep working with them until we get product they are happy with, one that matches their original vision and design." Richardson goes on to add, "We're willing to work with whoever comes through the door to ask for our help. We never say, 'We don't do that.' We jump in with both feet, and we find solutions that work."



Petersen Residence Hall

In Remembrance

Diana Horton (1949 – 2018) died suddenly at her home in Vancouver, Washington, on June 24, 2018. Born in Edmonton, Alberta, Canada, Dr. Horton's parents, James Henry "Harry" and Betty Horton, instilled in her a lifelong love of nature and the outdoors. Dr. Horton obtained a B.Ed. at the University of Alberta in 1972, followed by a Ph.D. in Botany in 1981. In 1983, Dr. Horton joined the Department of Botany at the University of Iowa. As an Assistant Professor, she became the Director and Curator of the Biology Herbarium at the University of Iowa, following in the footsteps of those responsible for the university's acquisition of specimens from around the world since the 1870s.

Dr. Horton's specialty was the taxonomy and ecology of bryophytes (mosses); her knowledge and expertise were well-respected within the bryological community. She was active in many areas relating to the environment and was dedicated to the preservation of Iowa's native habitats through hands-on and collection-based research.

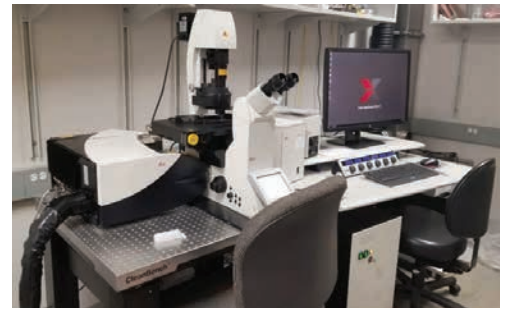
Dr. Horton's tireless energy, on-going work in her fields of expertise, and her unflinching belief in the importance of fighting for environmental causes will be greatly missed.

Diana Horton's full obituary is available online by the *Edmonton Journal*.

New Grant Enables Upgrade of Confocal/Multiphoton Imaging Systems in the Carver Center for Imaging

Thanks to a \$490,000 grant from the Roy J. Carver Charitable Trust and matching institutional funds from the Department of Biology, Office of the Vice President for Research (OVPR), and the College of Liberal Arts and Sciences (CLAS), the Department of Biology recently upgraded its imaging capabilities in the Carver Center for Imaging (CCI) located in the basement of Biology Building East. The CCI was established in 1995 with a grant from the Carver Trust and has served as a critical resource for advanced light microscopic imaging in support of our teaching and research missions in the areas of cell biology, developmental biology, genetics, physiology, and neuroscience. A proposal to equip the CCI with the latest advances in high-resolution imaging was written by Departmental Executive Officer/Chair, **Diane Slusarski**, and Director of the CCI, **Michael Dailey**. Dr. Dailey notes that, “With these funds, we were able to retire a 15-year-old microscope and replace it with a new, state-of-the-art Leica SP8 confocal imaging system that has many new features with superior capabilities for high-resolution imaging of fluorescent samples, including super-resolution deconvolution software and fast volume reconstruction and 3D visualization. Moreover, with a fast resonant scanner, higher sensitivity detectors, autofocus mechanisms, and a live cell stage-top incubation chamber that controls temperature, CO₂, and O₂ levels, the system is ideally suited to support an array of live cell imaging experiments.”

The funds also enabled the upgrade of an existing Leica SP5 multiphoton imaging system to improve sensitivity and increase depth of imaging and rate of image collection in thick tissue samples. The department’s SP5 system is currently the only multiphoton imaging system readily available to all users on campus. The department is pleased to provide these advanced imaging resources to support the research of investigators from within the Department of Biology and across campus, and to provide training of undergraduate and graduate students with the latest imaging technology.



New Leica SP8 Confocal Imaging System in the CCI

