A CLOSER LOOK:
Undergraduate Biology Program
With this issue of the BioHawk, we once again bring you news of major achievements in the Biological Sciences at the University of Kansas. On pages 2-11, the Director of the Undergraduate Biology Program (UBP), the Chair of Ecology and Evolutionary Biology (EEB), and the Chair of Molecular Biosciences (MB), each highlight recent events and achievements by their respective academic units. Pages 16-17 provide snapshots of the diverse and exciting research projects being undertaken by four of our very best graduate students in EEB and MB.

Since our last BioHawk we have also seen important new changes: on page 20 we thank Jan Elder for her many marvelous years of administrative service to undergraduate education in Biology. Jennifer Weghorst has joined us in her new role as Assistant Director of the Undergraduate Biology Program. On page 21 we welcome CLAS Dean Dr. Danny Anderson, who is joined in Strong Hall by the new Associate Dean for the Natural Sciences, Dr. Robert Goldstein.

Undergraduates are the very core of our academic teaching mission in the Biological Sciences at KU, and beginning on page 12 we present an overview of KU's immensely successful Undergraduate Biology Program. The UBP currently serves 1,400 declared and undeclared majors, and is the second-largest undergraduate teaching unit on campus. Staff member Tim West has had a thirty-year career in Biology at KU, and his story is outlined on pages 14-15. Two outstanding undergraduates, Wen Yih Aw and Meg Razak, are highlighted on page 18.

The Biological Sciences Advisory Board (BSAB) was created by Dr. Jim Orr almost 20 years ago, and we are grateful for their advice and service to the University of Kansas. We are also deeply indebted to each of the generous contributors whom we have listed on page 23. Your thoughtful support of our educational mission at KU is deeply appreciated by all of us, and we urge you to send us news, and also to come to visit us if possible to see the Biological Sciences in action!
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We would like to thank everyone who contributed to making this issue of BioHawk a success. Without your support it would not be possible. A special thanks to all of those who contributed material and images.

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Welcome to BioHawk 2010–11. This year we thought we would take the opportunity to highlight the Undergraduate Biology Program and offer you some insights into what goes on behind the scenes that helps to make KU biology tick. Our dedicated faculty are the face of KU biology, those who are seen at the front of the classroom and mentoring their labs, but there is much that needs coordinating behind the scenes to enable the successful operation of a program that includes more than 1,400 undergraduate majors and countless more KU students who complete biology courses for preparation toward their chosen career interests (pharmacy, nursing, sports medicine, etc.) or just to satisfy one of their general education lab science requirements. At least 4,500 students enroll in our biology labs each year.

Just to orient you a little, the Undergraduate Biology staff includes two lecturer and laboratory directors for Human Anatomy—Dr. David McLeod—and Human Physiology—Dr. Kelly Johnson, a lecturer and laboratory director who oversees our biology degree program at the Edwards Campus—Dr. David Pendergrass—and four directors of laboratories who oversee the preparation for almost all of the core biology laboratories including intro, micro, cell, genetics, and biochemistry lab courses. Our Lab Directors, Dr. Julie Campbell, Debbie Faurot, Dr. Jennifer Hueston, and Dr. Tim West, are assisted by five hard working laboratory technicians, Trudy Foster, Rena Rouse, Dr. Jamel Sandidge, Susan Transue, and Martha West, who manage the preparation for the large enrollment or labor intensive labs such as intro, micro, and physiology. None of this would operate as seamlessly as it does without our four dedicated staff, Sharon Green, Dennis Kemberling, Pam McElroy, and Kandi White, who manage the office environment, and our graphics specialist, Gil Ortiz, and audiovisual technician, Patty Krueger. The African proverb “It takes a village to raise a child” can be loosely applied to the cohesive activities of the Undergraduate Biology staff as they work behind the scenes to support our faculty’s efforts in the classroom and our students’ experience in the lab. We are also excited about having Dr. Jen Weghorst join our staff as Assistant Director (she started January 2011). Jen will be involved in all aspects of Undergraduate Biology including academic advising, class scheduling and enrollment issues, and special projects.

In this issue of BioHawk, we will highlight two Undergraduate Biology staff members—Jan Elder and Dr. Tim West. It seems like Dr. West has been at KU since the humans tamed fire and his efforts burn as brightly today as when he first set foot on Mt. Oread. Jan Elder retired from KU after 33 years of excellent service to the University where she wore many hats including the last 15 years as Administrative Assistant in Undergraduate Biology. I hope you enjoy our profiles of these highly dedicated and uniquely talented individuals.

There are always changes, large and small, on Mt. Oread and none are bigger than welcoming new students in the fall and celebrating the achievements of those who graduate in the spring. In 2010, KU’s Undergraduate Biology Program welcomed one new BioScholar into the class of 2014, Kate Ruoff, who is from Topeka, KS and is interested in biology and geology. Two BioScholars completed their KU biology requirements in May 2010—Allison Ho (B.S. Biochemistry), who is pursuing medicine,
and Nicole Niemann (B.S. Biochemistry), who is attending the KU School of Medicine. In May 2011, BioScholar Clarissa Wedemeier graduated with a B.S. Biology, Genetics degree, and she also delivered the “Favorite Professor” speech at the Biology Graduation Recognition Ceremony. In 2011, we welcomed four new BioScholars: Nora Elbayoumy from Lawrence, KS who is pursuing a Genetics major, Kayla Sale from Olathe, KS who is pursuing majors in both Ecology & Evolutionary Biology and Mathematics, Shelby Webb from Ottawa, KS who is pursuing a Genetics major, and Julia Yang from Manhattan, KS who is pursuing majors in both Ecology & Evolutionary Biology and Environmental Studies.

The achievements of our undergraduates were once again made evident by those who were recognized during the Undergraduate Biology Graduation Recognition Ceremony for receiving departmental honors. In 2010, Biology Honors graduates were Bryn De Kosky (advisor: Uri Alon, UMKC School of Medicine), Stephen Sai Folmsbee (advisor: Mizuki Azuma), Bethany Lucas (advisor: Robert Ward), Patrick McGurk (advisor: Erik Lundquist), Amanda Pierce (advisor: Jennifer Gleason), and Robert Wiggin (advisor: Audrey Lamb). The activities of these young researchers included the effect of child’s weight on the sedation process, mitotic defects caused by Ewing’s sarcoma protein EWS/FLI1, cloning and characterization of the macroglobulin complement-related gene involved in tracheal morphogenesis, RACK-1-based axon guidance by protein kinase C in C. elegans, multimodal signaling in courtship behavior and mating success in Drosophila willistoni, and crystallization and structural analysis of salicylate-adenylate PchD from Pseudomonas aeruginosa. In 2011, Biology Honors graduates were Wen Yih Aw (advisor: Lisa Timmons), Alexander Bittel (advisor: Bryan Foster), Avijeet Chopra (advisor: William Dentler), Jeffrey Hills (advisor: Scott Hefty), Kalin Holthaus (advisor: Stephen Benedict), Adam Johnson (advisors: Paulyn Cartwright and Jennifer Gleason), Yvonne Kamau (advisor: Liang Tang), Alison King (advisor: Sharon Billings), Tiffany Lau (advisor: John Karanicolis), Kayla Nelson (advisor: Mizuki Azuma), Megan Razak (advisor: Erik Lundquist), Derek Setter (advisor: Matthew Buechner), Chantz Thomas (advisor: Stephen Benedict), and Mahlet Yeshitla (advisor: Kristi Neufeld). These budding investigators’ projects included mapping an RNAi-defective mutant, primary production in early plant community assembly, ciliary growth and length maintenance in the ciliate Tetrahymena, development and validation of an automated image-based method for quantifying chlamydial infection, contribution of a growth factor receptor in human naïve T cell differentiation, insights from the cnidarian Nematostella on the evolution of taste, phosphorylation and the oligomerization state of the two-component system response regulator YycF in Bacillus subtilis, biochar and fungal associations’ roles in nutrient losses in agriculture, testing for structure-based chemical rescue in a Bcl-2 protein, Ewing sarcoma EWS/FLI1 fusion protein’s role in mitotic defects, use of a mutant screen to identify novel genes regulating neuronal migration in Caenorhabditis elegans, recycling of the apical membrane by the EXC-9 protein in single-celled tubes, induction of directed differentiation of CD4+ T cells by chemokine stimulation, and genetic modifiers’ effect on intestinal tumor number in APC mutant mice.

The classroom and research success of several students was recognized in Spring 2010 with various scholarships and awards including Alessandra Ainsworth (Robert Tweed Hersh Memorial Scholarship Award in Human Biology), Chantz Thomas (Lance S. Foster Outstanding Junior in Biology), Grey Gustafson and Surya Lakhpal (The Sally K. Frost Mason and Kenneth A. Mason Outstanding Senior Award), Elijah J. Burton and Kalya Nelson (The J. O. & V. H. Edson Scholarship), Amanda Pierce (Pauline Kimball Prize for an Outstanding Woman Senior in Biology), Marc Roth (Paul A. Kitos Award for Excellence in Undergraduate Biochemical Research), Nicole McClure (Jenna Robinson Memorial Scholarship), and Kalin Holthaus and Chantz Thomas (Del & Carol Shankel Biomedical Scholarship). Scholarship and award recipients who were recognized for their achievements in Spring 2011 were Claire Hinrichsen (Robert Tweed Hersh Memorial Scholarship Award in Human Biology), Joel Finney (Lance S. Foster Outstanding Junior in Biology), James Allen and Arash Sattarin (The Sally K. Frost Mason and Kenneth A. Mason Outstanding Senior Award), Kayla Nelson (Pauline Kimball Prize for an Outstanding Woman Senior in Biology; Kitsos Award for Excellence in Undergraduate Biochemical Research), Elijah Burton, Peter Ebeling, and Kayla Nelson (Del & Carol Shankel Biomedical Scholarship), Helen J. and Keri Kenning (Ida H. Hyde Scholarship for Women in Science), and Jeffrey Hills (Erma Reed Peterson Scholarship).
Due to the generous support of Dr. John Howieson (c’50, d’55), we are able to help defray travel expenses for undergraduates to off-campus research sites or conferences. Amanda Pierce used her funds to attend and present a poster at the Evolution 2010 conference of her research with Dr. Jennifer Gleason on the courtship behavior of Drosophila willistoni. Jeff Hills utilized the support from the Howieson award to attend and present a poster of his research with Dr. P. Scott Hefty on a new high-throughput screening method for compounds inhibitory for Chlamydia trachomatis at the 2010 International Microbicides conference. Thomas Radocy used his Howieson award to attend and present a paper on his research with Dr. Caroline Chaboo on mosquito diversity of Amazonian Peru at the 2011 annual meeting of the Entomological Society of America.

Our biology students receive awards from not only the Undergraduate Biology Program but also other units on campus and national organizations. Congratulations go to Erin Atwood (Genetics and Spanish major), Yvonne Kamau (Microbiology and International Studies major), Anne Nzuki (Human Biology major), and Tonia Salas (Human Biology major) who were recognized by the Emily Taylor Women’s Resource Center as KU Women of Distinction for 2010, and to Sarafina Kankam (Human Biology major) who was a KU Woman of Distinction for 2011. Tonia Salas was selected as the 2010 female ExCEL (Excellence in Community, Education and Leadership) winner, and Erin Atwood was a 2011 female ExCEL finalist. Only one female and one male KU student are selected each year for the ExCEL award, which includes a scholarship.

Ali Nabavizadeh (Ecology & Evolutionary Biology graduate, 2009) conducted undergraduate research under the direction of Dr. Larry Martin that led to a $30,000 National Science Foundation Graduate Research Fellowship in 2010. Ali is currently a PhD candidate at John Hopkins University Medical School where his research will be a continuation of what he started at KU.

Dan Simon (Microbiology major, BioScholar) was awarded an American Society of Microbiology fellowship in 2011 and was one of 39 students nationwide to be given this competitive fellowship. Dan has been working in the lab of Dr. Scott Hefty on prevention of chlamydial infection.

Each Spring semester, we ask graduating biology majors to nominate their favorite professor, and we are always pleased with the enthusiastic and thoughtful responses we receive. In 2010, 32 biology professors received nominations, and the Class of 2010’s most favorite professors were Dr. Matthew Buechner, Department of Molecular Biosciences, and Dr. Deborah Smith, Department of Ecology & Evolutionary Biology. The Class of 2011 nominated 33 professors, and Dr. Helen Alexander, Department of Ecology & Evolutionary Biology, and Dr. Paul Kelly, Department of Molecular Biosciences, were selected as the most favorite professors. The comments that accompanied their nominations reflected the passion for teaching that these professors bring to the classroom each and every day. The following quotes from several biology seniors nominating their favorite professor epitomize the teaching excellence of KU’s biology faculty:

For Dr. Matthew Buechner from the Class of 2010:

“His class was the most difficult thing I’ve ever done but it was so much fun and I learned more in that class than in any other.”

“He truly loves his job of teaching and would do everything he could do to help a student excel. He treats every student like an individual he can teach, rather than a number.”

“He brought his course to life with exuberant lectures and friendly demeanor. I really enjoyed his class and he is just one of my favorite professors at KU. His real-life situations and stories that he presented were valuable to the class and made it fun.”

For Dr. Deborah Smith from the Class of 2010:

“She was easily the best professor I had in the department, as well as one of the best at the university. She inspired the students to work quite diligently on a difficult subject, having the effect of making the subject much easier to understand. Her classroom and grading policies were quite fair, and I always got the impression that she genuinely cared about her students. While a demanding class, I feel like I learned more in her class than in many of my other classes combined.”
For Dr. Helen Alexander from the Class of 2011:

“Dr. Helen Alexander has been one of the greatest professors I have taken a course from here at KU. Along with being a great lecturer, she has been very friendly and helpful….”

“She is very eager to help with concerns outside of the classroom as well, such as job contacts. She really made an effort to get to know her students outside of class, which not many professors are willing to do!”

For Dr. Paul Kelly from the Class of 2011:

“Dr. Paul Kelly was an excellent advisor…. He really helped me get on the right track to be able to graduate on time and advise me about the correct courses to take. He always keeps extremely up-to-date with his topics and shares important current research information as part of his coursework.”

“Dr. Paul Kelly is my favorite Neurobiology professor for his willingness to work with students and extend his office hours to ensure every student learns the subject.”

It is clear from these comments that KU biology professors are doing an outstanding job in the classroom. Congratulations to the 2010 and 2011 Biology favorite professors!

As always, we value our alumni and we celebrate your successes. Please keep in touch. Visit us on Facebook (KU Biological Sciences Alumni) and join our growing list of members.
Every year, I have the pleasure of reading the comments from students about the learning that has taken place in classes taught by faculty members in the Department of Ecology and Evolutionary Biology (EEB). The sincere delight in learning and respect for my EEB colleagues that students have is evident from the outpouring of praise that they express. For most of the professors in EEB, teaching-related activities account for 40% of their time, and each time I read student reviews of teaching, I am inspired by the obvious devotion that my EEB colleagues contribute to that component of their profession.

Facility members in EEB have also been recognized by their University colleagues for the teaching excellence that they have achieved. Among other achievements in teaching, EEB faculty members have captured 10 of the Kemper Fellowships in Teaching Excellence that have been awarded; individuals in EEB have won the HOPE award (Craig Martin has won that award twice!), are named Chancellor’s Club Teaching Professors, have received Mortar Board awards, regularly garner “favorite faculty” nominations from graduating seniors, Excellence in Teaching Awards from the Center for Teaching Excellence, and have been rewarded for their contributions to high quality advising of undergraduates.

Featuring the KU Undergraduate Biology Program (UBP) in this year’s BioHawk focuses attention on this critical element of what we strive to accomplish as scholar educators at KU. Not only are we discovering new knowledge about the world around us, we are sharing this knowledge with the next generation of scholars. It is our wish that the undergraduates we inspire in our classrooms see the passion that we bring to the research that we accomplish. We also take great joy in helping students understand both what we know and how we know it. If our students can grasp and appreciate the process by which scientists explore the remarkable complexity of the natural world, they are more likely to want to learn more, and will be motivated to become the new generation of biological scholars.

EEB faculty members also take pride in mentoring undergraduate and graduate students to conduct independent research. And apparently that pride and high quality is recognized. In the National Research Council Data-Based Assessment of Research Doctorate Programs in the United States, EEB at KU ranked within the top 5 public institutions out of 94 EEB programs that were compared. We are thrilled that we have been recognized for the excellent work that we have accomplished with our graduate students. Such a ranking has already resulted in a significant up tick in the number of applicants to our graduate program.

Taking a look at the accomplishments of EEB faculty members and students in 2010 and 2011, we have continued to be productive and active. EEB faculty members presented talks in 20 international countries (including Indonesia, the Philippines, China, New Zealand, Thailand, Korea, and Poland),
published 178 refereed papers in 2010 and another 195 in 2011, and authored 8 books in 2010 and 3 more in 2011. Faculty research was supported by external grants totaling nearly $40 million in both 2010 and 2011. Some highlights from the past 2 years include Dr. Lena Hileman and Dr. Joy Ward invited as two of the only 50 young American scientists chosen to travel to Japan to discuss international collaborative research. Both Lena and Joy were invited by the National Academy of Sciences to help spur cross-disciplinary interactions among colleagues from different continents. The Hileman lab also published their work in Proceedings of the National Academy of Sciences, showing remarkable new details of an evolutionary transition from large, showy, bilaterally symmetrical, bee pollinated flowers to diminutive, non-descript, radially symmetrical, wind pollinated flowers. Hileman and her co-workers showed that this transformation is associated with gene duplication, evolutionary shifts in gene expression and gene loss. Joy Ward was recently featured in The Scientist for her diverse research interests ranging from the genetic control of plant responses to changes in CO2 levels to the analysis of ancient environments using collections she inherited from former KU professor, Philip Wells. Using modern molecular methods, Ward’s work with Dr. Wells’ pack-rat midden collections are now providing a new eye on the past physiologies of plants that lived over 10,000 years ago. Who knew that a resource that maintained by Dr. Wells since he collected them over 50 years ago would still be a source of such new knowledge!

Other KU-EEB faculty members have followed in the footsteps of their KU predecessors. Working in the Philippines, Dr. Rafe Brown retraced the fieldwork of former KU professor Edward Taylor. Dr. Brown recently collected more than 400 new amphibian and reptile specimens, some of which were those report ed by Dr. Taylor, whose collections from the early 1900s were destroyed by bombing during World War II. The new collections can document how deforestation, habitat fragmentation, and changing climates may have influenced species distributions since Dr. Taylor visited the Philippines nearly 100 years ago.

Also travelling the globe in search of new discoveries was Dr. Andrew Short, who found 20 new species of water beetles in the pristine rainforest of Suriname. Meanwhile, Dr. James Thorp and his colleague Christopher Rogers were funded by the U.S. National Park Service to visit the Pacific island of Guam to collect freshwater and estuarine crustaceans.

Other EEB work has been featured in The New York Times. Professor Michael Engel co-authored a paper in Proceedings of the National Academy of Sciences on fossil evidence of early flying insects. This new evidence provides the earliest and perhaps best look at the body of a flying insect, and provides a much-improved perspective on the origin of flight in insects.

Also working with flying insects, professor Orley (Chip) Taylor was featured on a National Geographic channel feature, along with Dr. Martin Wikelski of the Max Planck Institute. The feature presented a segment on The Great Migrations of Monarch Butterflies. Butterflies were tagged at the Lawrence, KS airport and one of the monarchs (that the group named “Big Boy”) recorded a flight of 11.4 miles. This was the first time a radio-tagged monarch had been tracked, and it represented an impressive single flight, especially as the butterfly was carrying a payload that was about 40% of its own weight!

Other KU-EEB faculty who have been honored include Dr. Town Peterson, who was appointed by the Directive Council as a Corresponding Member to The Academica Mexicana de Ciencias (AMC) in Mexico. The AMC is a non-profit non-government association of distinguished members of the scientific community. Also showing the wide reach of our faculty members, Dr. Val Smith was appointed to serve on the 2011-2012 National Research Council Committee on Sustainable Development of Algal Biofuels. The committee is sponsored by the U.S. National Academies of Sciences Board on Agriculture and Natural Resources and charged with exploring the potential of this alternative energy source.
In 2011, Dr. Caroline Chaboo and Dr. Andrew Short, Assistant Professors in EEB, were awarded two out of four National Science Foundation Digitization Grants aimed at bringing “dark data” to the light. Dr. Chaboo’s award involved “Plants, Herbivores and Parasitoids: A Model System for the Study of Tri-Trophic Associations.” Dr. Short’s award involved “InvertNet—An Integrative Platform for Research on Environmental Change, Species Discovery, and Identification.”

In 2012, Professor John Kelly received support from the National Institutes of Health for his research exploring how flower evolution can contribute to understanding variation in human genetic features. While John was tying flowers to human health, Professor Edith Taylor’s research on developing a more accurate picture of the total flora latitudes across the Permian-Triassic boundary rock formations was featured on the SEE Innovation (Social, Environmental, and Economic Innovation) web site.

Long an interactive colleague from the Department of Geology, Professor Bruce Lieberman made his association with those in EEB more formal and switched his appointment from Geology to EEB in 2012. Bruce works primarily with extinct trilobites and recently received funding to digitize thousands of fossils that are housed in the KU Natural History Museum.

Our graduate students have also been active and have achieved significant honors. Nipping at the heels of their mentors, in 2010-2011, EEB graduate students published more than 150 refereed papers and made 170 presentations at meetings and conferences. Some of these were delivered internationally in such countries as Italy, Greece, Germany, Israel, Mexico, Australia, the Philippines, Malaysia, and Spain.

Our students have also been tenacious in seeking funding for their research. For example, each year, the National Science Foundation provides Doctoral Dissertation Improvement grants to help propel the work of the most competitive students. These are highly selective grants and we are pleased to report that in 2010-2011 no fewer than 10 of our amazing EEB doctoral candidates became members of this exclusive pool. Bastian Bentlage and Analise Nawrocki both mentored by Dr. Paulyn Cartwright, Joanna Cielocha, mentored by Dr. Kirsten Jensen, Sarah Bodbyl Roels mentored by Dr. Bryan Foster, Steve Davis, mentored by Dr. Michael Engel, Laci Gerhart mentored by Dr. Joy Ward, Charles Linkem mentored by Dr. Rafe Brown, Kathryn Mickel co-mentored by Dr. Ed Wiley and Hans Peter Schulze, Hannah Owens mentored by Dr. Ed Wiley, and Pete Hosner, mentored by Dr. Rob Moyle all received notification that their NSF Doctoral Dissertation Improvement Grant proposals were recommended for funding.

Other graduate student awards included Terra Lubin who received a NSF Graduate Research Fellowship to conduct research on crop-wild sunflower hybrids with Dr. Helen Alexander; Kathryn Mickel, who was co-advised by Ed Wiley and Hans-Peter Schulze, selected to receive the Agersinger Award for her outstanding doctoral dissertation.

Also bringing luster to our graduate education program was Cameron Siler, mentored by Rafe Brown, who was selected as one of 15 Encyclopedia of Life (EOL) Rubenstein Fellows for 2011. The EOL Rubenstein Fellows program provides partial stipend or salary support for early career-scientists to develop information about the organisms they study. This year's recipients are from Egypt, Russia, Belgium, England, and the US.

And demonstrating great outreach from the EEB graduate student program was Lisa Tiemann who was selected by KU’s Office of Graduate Studies for the 2011 Graduate Student Distinguished Service Award. The award was established in 1983 to recognize a graduate student who demonstrates a genuine commitment to serving the University of Kansas while maintaining a high level of academic achievement.

Thus, from the broad perspective of the contributions that EEB faculty members make to undergraduate and graduate education, to the individual achievements of faculty and students, EEB has had a great pair of years, full of accomplishment. We look forward to building on this strong foundation and anticipate that the coming year will bring even more achievement and contribution from our faculty and students. If you have an interest in knowing more about any of the goings on in KU-EEB, please contact me or anyone else in the department. We are always delighted to hear from our many alumni!
I am delighted to have the opportunity to contribute to the BioHawk. This is especially true in a year in which the BioHawk highlights the undergraduate program offered in the biological sciences. As well as doing an outstanding, award-winning job in the classroom, faculty from MB provide opportunities for training in research to dozens of undergraduate students on an annual basis. I believe that this opportunity stresses the importance of active research faculty to undergraduate education and is an incredibly important factor in guiding students to future careers in science – one of our great successes.

Several things have happened in Molecular Biosciences since the last edition of the BioHawk. The department conducted an internal search for a chairperson resulting in my election. I would like to personally thank Dr. Bob Cohen for two years of exceptional service as Acting Chair of the department. Bob has returned to focus on his research program. Dr. Susan Egan has continued as Associate Chair of the department, and Dr. Steve Benedict and Dr. Matthew Buechner have continued as Graduate Director and Undergraduate Program Coordinator respectively.

Molecular Biosciences also welcomed two new faculty members into the department. Dr. Eric Deeds is an Assistant Professor and holds a fifty percent appointment in MB and fifty percent in the Bioinformatics Program. Eric received his PhD from Harvard and conducted postdoctoral studies with Walter Fontana at Harvard Medical School before coming to KU. Eric’s research is focused on protein folding, protein evolution and identifying intracellular protein-protein interactions, especially in large macromolecular assemblies. Eric has already proven himself as an excellent educator and mentor. We are very lucky to have him on board.

Our other new faculty member is Professor Liang Xu. Liang received an MD and PhD from The Fourth Military Medical University in Xi’an, China. After postdoctoral appointments at Stanford and Georgetown Universities he joined the University of Michigan. We were fortunate to convince him to come to KU and assume an appointment as an Associate Professor with tenure. He has been honored with a “Rising Star Scholar Award” by the Kansas Bioscience Authority. Liang’s research is centered around molecular therapy targeting cancer and stem cells. Liang brought with him significant funding from the National Cancer Institute at NIH and has contributed significantly to KU’s effort this year to obtain designation as a National Cancer Center.

MB has a new web page. Thanks to the efforts of Dr. Audrey Lamb, Dr. Kristi Neufeld, and Dr. Chris Gamblin, MB posts a monthly news update on its website (http://www.molecularbiosciences.ku.edu/) highlighting the achievements of students, faculty and alumni. Recent seminars, publications, grants and awards are featured as well as regular alumni biographies. An archive of past achievements is included. It’s well worth a look!

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A hallmark of KU is that students are provided with access to state-of-the-art research projects and facilities. Each semester, dozens of undergraduate students participate in laboratory research projects that are usually funded by the National Institutes of Health or the National Science Foundation. Many students participate in the honors program in which they must complete a paper describing their independent research project and defend their results in a formal presentation. Undergraduates are commonly included as authors, sometimes first authors, on major publications.

This past year, several undergraduates received prestigious KU Undergraduate Research Awards. Jason Thomas Stevens (undergraduate, Karanicolas lab) received his award for: "Switchable Genetic Regulators Using Indole Complementation", investigating a project with implications for synthetic biology that investigate the development of regulatory molecules that can ultimately modify the genetic circuitry underlying cellular behavior. This work has potential pharmacological applications. Jennifer Marilyn Logue (undergraduate, Lundquist lab) received her award for: "A genetic analysis of neural development in Caenorhabditis elegans," in which she investigated neural development in nematode worms as a model system for human neurological disorders. Marc T. Roth (undergraduate, Neufeld lab) received the award for: "Characterization of Interactions between Topoisomerase IIA and Nuclear Adenomatous Polyposis Coli," a study of a tumor suppressor molecule found to be mutated in most colon cancers. Danielle Dee Stuhlsatz (undergraduate, Im lab) received the award for her work on: "Properties of Lipid A Bilayers Analyzed by Molecular Dynamics Stimulation." This study involved analyzing how the molecule Lipid A works, and has potential applications in defining protein-membrane interactions in the development of drugs for bacterial diseases.

Several other undergraduates received awards including Dan Simon (American Society for Microbiology Undergraduate Fellowship), Megan Razak (second place in the Sigma Xi research symposium) and Sonia Hall (second place for her poster at the annual Drosophila Research Conference in San Diego).

MB graduate students were also very successful in receiving awards locally and nationally. In addition, this past year and a half have seen MB faculty members receive a record number of research grants and awards. To mention just a couple, Dr. Rob Ward (Associate Professor) received a Kemper Fellowship for Teaching Excellence and Dr. John Karanicolas (Assistant Professor) participated in a team that is the recipient of a 2011 Human Frontier Science Program Award for their proposal entitled "Photo-controlled transcription factors for probing how mice form memories." So check out the web site!

Our new Provost, Jeff Vitter, has initiated an across-campus Strategic Planning process that holds some exciting possibilities for new investment in programs at KU – even though budgets remain very tight. Over one hundred plans were submitted and MB has been involved in many of them with faculty from EEB and other departments across the KU Lawrence and Medical Center campuses. A task force appointed by the Provost was responsible for consolidating the proposals into several large cross-campus initiatives that have been included on the Provost’s web site. An overarching theme that is being stressed by the Chancellor and the Provost is strengthening the link between basic research and entrepreneurship at the university. In studying basic properties of biological processes, MB faculty are nicely poised to play a critical role in this process by identifying new biological targets and target assays for drug intervention and therapy. Strategic Initiative topics involving MB faculty include Bioengineering, Cancer, Drug Discovery, Genomics, Infectious Diseases and Renewable Energy. As these themes develop they will pave the way for wonderful opportunities for undergraduate and graduate students to explore new career avenues.

On a sad note, Professor Emeritus Laurence R. Draper, 81, died Sunday September 18, 2011. Professor Draper (Larry) joined the faculty at the University of Kansas in 1968 teaching and doing research first in the Microbiology Department then in MB. After retiring in 2008, he continued advising and teaching undergraduate honors classes at KU. He earned many prestigious teaching awards including the Mortar
Board Outstanding Educator Award (three times), the Ned N. Fleming Trust Award for Teaching Excellence and the J. Michael Young Academic Advising Award. I expect many of you will remember Larry as a gifted teacher and a caring mentor.

Another milestone in our history was reached when Professor Robert Weaver (Rob) retired last year after forty years as a faculty member in the Departments of Biochemistry and Molecular Biosciences. Rob served the department(s) and the university in several capacities including Chair of the Biochemistry Department from 1984 to 1995 and as Associate Dean for the Natural Sciences in the College of Liberal Arts and Sciences from 1995 onwards. Rob is a well-known author of the textbook Molecular Biology and has been one of our most outstanding and dedicated educators and mentors. He continued to teach an upper level genetics course throughout his tenure, in spite of his considerable administrative responsibilities as Associate Dean. Rob has been appointed as Professor Emeritus, and it is our sincere hope that he will continue to be closely associated with the department and its activities in the coming years.

Two exceptionally generous donations from our alumni went to establish two special awards in Rob’s honor. A gift from Ben Hall established the “Robert F. Weaver Graduate Fellowship in Molecular Biosciences.” This allows us to bring an outstanding foreign graduate student to KU on a one-year scholarship. We also established a joint Graduate Mentoring award between MB and EEB thanks to a gift from Bob and Kathryn Herman. The two winners this year were Dr. Scott Hefty in MB and Dr. Linda Trueb in EEB.

I look forward to this coming year with great excitement. Although we face some significant budget challenges I believe that the strategic planning initiative will greatly and positively impact both the quality and breadth of the educational experience at KU.

MB has a new web page, check it out! http://www.molecularbiosciences.ku.edu/
This eponymous line from the Robert Frost poem is not directly speaking to the educational pursuits of young men and women in America. However, with more than 22,000 undergraduates enrolled annually at the University of Kansas, approximately 1,400 of these students declare an undergraduate degree in biology.

So, before they head off to medical schools, research labs, teaching in primary and secondary classrooms, post-graduate research, or countless other career trajectories, our biology majors must first have made a decision to pursue the less-traveled path.

**Times, they are changing**

“What biology looks like now is not your father’s or grandfather’s biology,” said Undergraduate Biology Director Greg Burg, and his Undergraduate Biology Program (UBP) is the engine that keeps the entire training mission humming along with a diverse team that covers the many essential facets of undergraduate education:

- Oversight of the entire undergraduate curriculum in biology
- Coordinating teaching laboratories
- Computer laboratories and access to other learning tools and materials (through the BTRC)
- In-house graphics (Bio-Graphics)
- Student mentoring and advising
- Class scheduling
- Supporting/assisting Graduate Teaching Assistants (GTAs) and Undergraduate Teaching Assistants (UTAs)
- Lectureships
- Honors, scholarships, and fellowships
- Coordination of biology graduation recognition ceremonies

KU’s Undergraduate Biology Program also provides resources for other academic units, both on and off campus. For example, the UBP teaches human anatomy classes for the Allied Health Sciences curricula (pre-nursing, pre-pharmacy, and pre-sports medicine). UBP also teaches non-majors who need entry-level biology credits as part of their overall curriculum. KU’s Undergraduate Biology Program partners with two of the University’s largest departments: Molecular Biosciences, and Ecology and Evolutionary Biology.
Curtain rises on well-rehearsed play

The Undergraduate Biology Program requires teamwork, planning, and execution according to Assistant Director Jen Weghorst.

“Our team consists of people who work ‘on stage’ and ‘behind the scenes,’” Weghorst said, referencing the lecturers and directors of labs, technicians, and office staff. “Whether on stage or behind the scenes, our instructional staff strives to engage students while providing them with the foundation not only for more specialized, upper-level biology courses, but also for integrating biology into their daily lives.”

A key service provided by Undergraduate Biology is advising biological sciences majors. UBP advisors help students to navigate their major requirements, and also to understand the importance of making the most of their undergraduate experience through connecting with faculty and seeking out research experiences.

“In today’s economic climate, with comparatively fewer job prospects awaiting students after graduation, more students want to know what they can do with their biology degrees,” Weghorst added. “Although the role of the Undergraduate Biology Program has always been, and will always be, to prepare students for successful futures, we arguably have this obligation more now than ever before.”

Encouraging engaged learning is another key goal of the Undergraduate Biology Program. For example, students are urged to undertake undergraduate research with the mentor of their choice and to become Undergraduate Teaching Assistants (UTAs). Dr. Tim West, a director of biology laboratories, sees the work he and the other UBP staff do as preparing students for the next phase of a biology career.

World class for a reason

UBP Director Greg Burg tells of medical school professors who regularly recount how well-prepared KU biology graduates are to handle their many lab classes.

“They leave here with a foundation of knowledge, and [they] are critical thinkers and communicators.” This success cannot occur without the thoughtful, hard work of a diverse group of professors, lab directors, support staff, and others, Burg noted.

“We have an extremely dedicated staff who do put the students first,” Burg said.

Having been on the biological sciences’ administrative team for more than two decades, Business Manager Kandi White sees firsthand what it takes to run what amounts to a small city as diverse as any world population.

“Undergraduate biology works as one cohesive unit,” White said, “even as it serves needs as varied as the 1,400 students we have.”

White stresses the fact that the work accomplished by almost two dozen UBP staff members serves to pave the path for undergraduates to choose a future career in biology.

“They [the UBP staff] are the reason it’s such a smooth transition for our undergraduates to move on to careers as doctors, scientists, researchers, or teachers.”

KU’s biology majors learn invaluable, current laboratory techniques.

KU’s non-biology majors benefit from learning introductory or pre-professional biology laboratory skills.
Some call it fate. Others call it happenstance. Destiny or even good fortune shines upon others. For Tim West, director of laboratories for the Undergraduate Biology Program at the University of Kansas, it is more about finding himself in the right place at the right time.
“He has always just seemed lucky,” said Martha West, Tim’s wife and also a staff member of the biology program at KU.

West grew up not far from Lawrence, KS, graduating high school from Turner High in Kansas City, KS, in the early 1960s. He wasn’t particularly driven to go into the biosciences. Then he attended Ottawa University (also not far from Lawrence) where he took a biology course from Professor John Bacon. “He was a legend among students,” West said.

It was that first post-high school serendipitous moment that led him to what has amounted to more than a 30-year career in the biology department at KU.

■ Duty calls

After graduating from Ottawa with his career path in biology determined, West started his masters in the mid-1960s. This was the height of the Vietnam War. Like so many other college-aged – and younger – men, West was drafted into the Army. Fate smiled upon him again as West served his two-year stint in Hawaii as a radio technician.

In 1971, West returned to campus to complete his studies. After obtaining his master’s degree, he pursued his doctorate degree where his past once again determined his future. West completed his post-doctorate research at the University of Kansas Medical Center thanks to Dr. Bill Hudson, a colleague West knew from serving with him through the Army Reserve.

Finally, the 1980s dawned and West “got done and realized I needed a job,” he said.

■ A career is born

As a graduate student at KU, West worked as a teaching assistant – again, giving him a glimpse into his future career.

“I knew I really enjoyed working with students,” West said. “There’s a dirty little secret, doing research is very laborious. That’s why they call it a laboratory,” West joked.

It’s the lab as classroom where West combines all elements of his past into forming the future for new generations of biologists. He is now the “Professor Bacon” to undergraduates. However, all of these years, through the interruption for Vietnam and the work at the Med Center, West never thought he would spend all but a few years living and working within a 45 minute radius of Lawrence.

“I wasn’t thinking I’d lodge there for 30 to 40 years, ” West said. “But I enjoyed every minute.”

As for retirement, he has no immediate plans. After almost four decades on the Hill, West likes to sum up his retirement odds this way, “I certainly am eligible.”

West has been able to build a long career at Kansas precisely because he has been able to adapt to whatever was put in his path. What can be seen as good fortune along the way can also be chalked up to the fact that West has the amazing ability to roll with the punches, said Martha.

“He has the attitude that whatever comes he’ll make the best of it,” she said. “He really hasn’t changed much over the years because he’s always been adaptable.”

■ The more things change ...

“It is a different campus now, that’s for sure,” West said. And he’s not just talking physical buildings and grounds.

He’s also talking about the “vibe” that was present across the country’s college campuses in the late 1960s. “Those were somewhat turbulent times. But they were kind of fun, too. There were a number of students pursuing an agenda other than education. There was kind of an excitement in the air then that you don’t see today.”

West remembers where he was when we saw the “boom” of Lawrence from a tiny college town to a city. He was driving down a residential street before stopping at the four-way stop sign. Usually, he would make a legal stop, see there was no other traffic then keep on going. Then one day in the 1980s he pulled up to the intersection and actually had to stop behind another vehicle.

“In my head, I’m thinking, ‘We’ve got rush hour traffic.’” Now years later, the main road into and out of Lawrence, 23rd Street, is a “solid wall of tail lights and head lights.”

Despite these changes in and around the University, West still sees that sleepy college town at times.

“There is a sense of timelessness here,” he said. “KU still has a timeless quality. That’s very comforting. That’s partly what kept me at the University.” Seems very serendipitous.
My name is John Hickey and I am a fifth year graduate student in the Department of Molecular Biosciences in Dr. Scott Hefty’s lab. A native Midwesterner, I spent most of my childhood in St. Louis until my family moved to Kansas City. There I graduated from high school and made the decision to pursue an education in science at the University of Kansas. In 2005, I received a Bachelor of Science in Biochemistry. Post graduation, I had the opportunity to work as a research assistant in the laboratory of Dr. Yoshiki Azuma, where I studied chromosomal segregation. During this time I struggled with the decision between pursuing veterinary medicine or a Ph.D. in biochemistry. However, my time working in the lab with Dr. Azuma confirmed that the Ph.D. program was where I wanted to be, and I entered the program in the fall of 2006.

I joined Dr. Hefty’s lab in January of 2007. In his lab, I have been able to develop my skills as a research scientist and interact with the scientific community. My doctoral research primarily consists of determining the structure and function of a novel OmpR/PhoB subfamily response regulator, ChxR, from Chlamydia trachomatis. Chlamydia infections have an immense impact on public health and are associated with diverse disease manifestations including atherosclerosis, blindness, and sterility. The mechanisms that regulate chlamydial growth are poorly understood; however, transcription appears to play a governing role. ChxR exhibits expression patterns that indicate an important role during an important stage of growth, and prior experiments have demonstrated that unmodified ChxR is transcriptionally active. Usually as a result of phosphorylation, OmpR/PhoB response regulators form homodimers, through a receiver domain, as an integral step in transcriptional activation. Dimer formation facilitates an effector domain to interact with DNA and transcriptional machinery to regulate transcription.

I hypothesize that the intra- and intermolecular interactions involved in forming a transcriptionally competent ChxR are distinct from the canonical phosphorylation (activation) paradigm in the OmpR/PhoB response regulator subfamily. To test this hypothesis, I am performing structural and functional studies of the ChxR receiver and effector domains. Under the guidance of Dr. Audrey Lamb and Dr. Scott Lovell, I have solved the structures of both domains. The structure of the ChxR receiver domain revealed many unique characteristics including the absence of two alpha helices present in all other OmpR/PhoB response regulators. Functional studies on various dimer interface residues substitutions demonstrated that the dimer interface forms a very stable hydrophobic interface. The effector domain structure was also solved showing a unique sub-domain swap conformation. This structure, combined with NMR chemical shift analysis, has indicated the residues that are likely critical for DNA binding and interacting with the RNA polymerase machinery.

Upon completing my degree, I would ultimately like to find a way to use my skills as a biochemist to develop new treatment options for diseases in animals. I feel fortunate to have found a career doing something that is so meaningful to me.

Alexis Reed
Mentor: Dr. Sharon Billings

My research focuses upon forest ecosystem response to disturbances such as droughts and insect infestations. I utilize stable carbon, oxygen and nitrogen isotopes along with growth evidence from tree-rings and foliage to determine physiological responses of trees to various disturbance events in an attempt to understand the future of forest carbon, nutrient cycling and ecosystem functioning under predictions of increased frequency of disturbance events in the future. I focus upon oak species due to their prevalence in Midwest U.S. ecosystems and their importance to ecosystem function, services, and habitats. By analyzing data back through time across a tree’s life, we may establish the best proxy possible for understanding potential impacts and responses to climate change, drought, insect infestations, changes to nitrogen cycling and other disturbance events that can influence forest communities. Understanding the response of forest communities and the role of disturbance in forest decline events can assist in ecosystem management along with providing insight into changes in forest carbon and nutrient cycling in the future.

As a native Kansan raised in Great Bend and being familiar with the importance of climate conditions to ecosystem productivity, I initially entertained studying crop pathogen responses to increasing [CO2], but after working with my advisor Dr. Sharon Billings on several projects and exploring ecosystem ecology to a greater degree, forest ecology and global change research became my main interest. Forests had fascinated me since my childhood travels across the U.S. from the great redwoods in California to the hemlock stands in the Great Smoky Mountains. While new colleagues often joke about the feasibility of studying forests in Kansas, I assure them that the eastern part of the state has a fair population of oaks which I incorporate into my tree physiological response studies.

My time at KU has been enriched by my National Science Foundation IGERT Climate Change, Humans and Nature in the Global Environment Fellowship, which has provided interdisciplinary research experience, policy education, and internship and collaboration opportunities. The IGERT Fellowship has also funded my travels to Greenland, Mexico City and, most recently, Juneau, Alaska all in order to perform and learn about climate change research. The Fellowship in general aims to produce a new generation of interdisciplinary scientists who are well-versed in policy issues and social and natural science approaches to climate change research and who are able to inform and converse with policy makers and
the public about climate change issues. I think my experiences, including my semester-long internship this past fall in Washington, D.C. working on forest management advocacy and policy issue steps from Capitol Hill, have definitely provided me an interdisciplinary view point that is beyond what most natural scientists would experi-

Rafael Demarco
Mentor: Dr. Erik Lundquist

I am a fifth year Ph.D. candidate from Rio de Janeiro, Brazil. I started my undergraduate studies in 2002 at the Federal University of Rio de Janeiro (UFRJ) in Brazil. In 2003 I received a scholarship to pursue the rest of my studies at the University of Kansas. As an undergrad at UFRJ, I did biochemical research with Dr. Debora Foguel on how amyloidogetic proteins (like those involved in Alzheimer’s and Creutzfeldt-Jakob diseases) aggregate or “go bad”. As a graduate student, I joined Dr. Erik Lundquist’s group in 2006 and started working in the genetic characterization of molecules involved in the mechanisms of neuronal development. Once born, a neuron (a type of brain cell) extends a process called axon, which is a cellular extension that promotes electrical and chemical communications between other neuronal cells. In order for axons to grow, the actin cytoskeleton needs to reshape so the cell can create protrusions called filopodia (“finger-like feet”) and lamellipodia (“sheet-like feet”). These structures are able to sense the surrounding environment for positive and negative cues on where the axon needs to go.

Proteins that can control the shape of the actin cytoskeleton are of vital importance for the control of axon pathfinding. A class of molecules that does so is the Rac GTPases. Racs are proteins that can be turned “on” and “off” when bound to the energy molecules GTP and GDP, respectively. When they are “on” (or active), Racs can then control the activity of actin-remodeling proteins, which in turn promote the reassembly of the actin cytoskeleton.

My most current work has focused in the mechanisms that lead to Rac GTPase activation. A class of proteins called GTPase-activating proteins (GAPs) aid Racs in the exchange of GTP for GDP, activating them. I am currently studying the role of the Tumor Invasive and Metastasis factor 1 (TIM-1) in this process. In order to do so, we use the nematode Caenorhabditis elegans as a model organism. C. elegans is a great system to study neuronal development because it is a transparent organism with a simple and very well studied nervous system. Although it has only 302 neurons, C. elegans contains virtually the same types of neurons humans do. In addition, molecules involved in neuronal development are very similar between humans and this nematode. Therefore, we can learn a lot from studying in vivo what happens to the process of axon extension. Because these animals are transparent and are small enough to fit in a microscope slide, we can add fluorescent proteins to specific neurons and analyze what happens to these neurons once you disturb the function of a gene.

After learning so much about neuronal development, my future goals include working with regenerative medicine and its possible applications in the nervous system. After graduating this spring, I plan on joining a stem-cell based lab in which I could learn the different mechanisms used by the cell in order to maintain its fate.

Julius Mojica
Mentor: Dr. John K. Kelly

My name is Julius Mojica and I am a PhD candidate in the Department of Ecology and Evolutionary Biology. I am a native of Indang, Cavite, Philippines. My research experience began as an undergraduate at the University of the Philippines where I worked at the International Rice Research Institute. This research identified genes responsible for rice palatability (aroma, grain length, kernel consistency, etc.) and is part of a large effort at the institute to produce the ‘golden’ rice variety.

For graduate school, I chose to work with professor John K. Kelly here at the University of Kansas. Dr. Kelly shares my interests in population and quantitative genetics. The central goal of my dissertation research is to understand the genetics and evolution of complex traits. A major focus of evolutionary biology is to understand the forces that maintain phenotypic (morphological, behavioral, or physiological) variation within and between populations and species. Although this has been a research focus since Darwin, the evolutionary mechanisms that generate and maintain variation in natural populations remain poorly understood, especially for quantitative traits. Understanding the genetic basis of these complex traits is particularly important since most of the variation within and between species is continuous rather than discrete.

My research is based on a multi-faceted approach, combining classical and modern genomic methods with field and greenhouse studies. Our experiments investigate the causes and consequences of phenotypic and genotypic variation in flower size using the wildflower Mimulus guttatus (yellow monkeyflower) as the model system. I performed a multi-year field transplant and phenotypic manipulation experiment to estimate the fitness consequences (survivorship and fecundity) of the phenotypic and genetic variation in flower size. Greenhouse pollinator array experiments allowed me to measure preference and differential siring success on flower size variants. The combined data from field and greenhouse study will provide a holistic view of natural selection on this complex trait.

A separate but complementary research area of my dissertation explored the cytogenetic basis of an inversion, a chromosomal mutation that can maintain adapted genetic variants in a population. I was awarded a National Science Foundation doctoral dissertation improvement grant to develop cytogenetic tools for genome evolution research in Mimulus guttatus and to investigate this mutation. While this research may appear to be remote from my dissertation theme, this specific mutation is relevant because of a putative gene for flower size within the inverted chromosomal region.

In the future, I plan to join the academe as a faculty member at a university where I can both perform research and continue to educate the future generations of scientists through teaching.
Wen Yih Aw

I am a senior from Malaysia working on my Bachelor’s degree in Biochemistry and Genetics. My interest in science dates back to my anatomy class in my junior high years, when I was amazed by the seemingly simple yet perfect model of blood circulation in the human heart. From the simple function of the human heart to the cloning of Dolly, from the discovery of the RNAi machinery to my large wall poster depicting the signaling pathways in cancer, science never fails to captivate me. I came to the University of Kansas in 2007 to pursue greater than those in my home country.

As I sought out research opportunities here at KU, I became interested in the work in Dr. Lisa Timmons lab which studies the cellular mechanisms that allow organisms to mount an RNAi response to dsRNA. During my sophomore year, I participated in and conducted my independent projects in the Timmons lab. My first project involved cloning, identifying and analyzing an RNAi-defective mutation in *Caenorhabditis elegans*. Under the guidance of Dr. Timmons and her graduate students, I have learned to use standard genetic techniques to identify and analyze the mutation. Dr. Timmons has not only provided me with the experimental and mental skill sets that are required to complete the project, she also guided me for my future career. Moreover, she also showed me the dedication, curiosity, passion and some other main qualities required to be a scientist. I am thankful to be in the Timmons lab where I have learned to follow my passion for science from past and present graduate and undergraduate students.

In short, my undergraduate research experience is a journey of self-improvement and self-discovery. I started as an inexperienced sophomore who burnt my hair while performing sterile techniques using a Bunsen burner; now, I am able to manage my project independently and now I enjoy making discoveries (with luxurious hair). I feel very fortunate to have had the opportunity to study and perform undergraduate research at KU. In my 4 years at KU, I have received invaluable advice and encouragement from the professors in this department. With their help, I affirmed my love for science and found the place where I belong. My experience here has paved the way for even more exciting opportunities. I will participate in a RISE internship program in Germany this summer where I will be part of a research collaboration between the Timmons lab and labs in the Medical School of Hannover. And I was recently accepted into the PhD Program in Molecular Biology at Princeton University where I will start my graduate study this fall. I will miss *C. elegans*, I will miss Dr. Timmons lab, and I will miss all the great friends and professors that have come into my life at KU.

Meg Razak

My time at KU will come to a close in May 2011 when I graduate with a B.S. in Biology, emphasis in Genetics. Although I will graduate in the traditional four years, I managed to fit a good deal of variation into my time here. I changed majors once, from microbiology to genetics, and earned a minor in German. I also enrolled in numerous honors courses and took part in various scholars programs. Through these and other requirements, I am set to graduate with Highest Distinction and university and departmental honors. The true worth of these activities, however, is the confidence I have that I am graduating with a solid foundation of experience and knowledge as I go on to pursue a PhD in molecular biosciences.

Since August 2009 I have been conducting research in the lab of Dr. Erik Lundquist. In that time I’ve carried out the work that will become my honors thesis, entitled: Mutant screen to identify novel genes regulating neuronal migration in *Caenorhabditis elegans*. In a brief description, after inducing mutations in the nematode *C. elegans*, I monitor two labeled neurons for migration defects, or instances in which the neurons don’t make it where they normally go. Such defects suggest a gene required for normal neuronal migration is mutated. Mapping and sequencing allows us to identify the exact gene, and, mutant by mutant, we identify genes not previously known to be involved in neuronal migration. Although my work is in *C. elegans*, many of the genes and mechanisms found to be controlling neuronal migration in this species will further our knowledge of all animal nervous systems, including that of humans, due to similarity and homology between genes and cell types. I screened more than 8000 genomes to find over 50 alleles, including genes previously unknown to be involved in neuronal migration. One of those genes has already become a research project for a graduate student in my lab and she is currently working to elucidate its function and mechanism – a fate that will hopefully follow for many of my alleles. The degree to which my work in the lab has developed my technical, practical and intellectual command of science and research cannot be overstated and I have thoroughly appreciated and enjoyed the opportunity to grow from naive lab gofer to maturing young scientist.

Additionally, over the past 5 semesters I have been a teaching assistant to over a dozen labs, a mix of introductory biology and microbiology, and have found it to be challenging, rewarding, and just plain fun. Now, with my undergraduate years behind and a life in science before me, I look forward to graduate studies, a career in research, and continued exploration deeper into the world of science.
Elder retires

The story started out innocent enough. This was years before the popular movies based on the J.R.R. Tolkien novels. In a group of moms and daughters at area horse shows, it seems Jan Elder’s daughter started to use the name of one of her favorite characters in her favorite novel to get her mother’s attention in a crowd.

“I guess I also kind of looked like a hobbit,” Elder, short in stature with mop-top hair, says now.

But since that day her daughter stuck the moniker, Bilbo, on her, it just seems appropriate on many other fronts. As a young woman growing up in England, she longed to travel. First her fancy turned to a program that enabled Brits to travel to Australia rather cheaply. But love found her first and that meant a trip to the United States with her new U.S. serviceman husband in the late 1960s.

Combine this passion for travel with an unwavering thirst for all things genealogical and one can start to see how this moniker truly defines the veteran of the University of Kansas Undergraduate Biology Program administrative team.

Everything in its place

The young married couple settled in the sleepy Midwest college town after Elder found work with a city judge. She transferred those skills working in the court offices into a position at the University’s computer center. After a break from the working world to be a mom she returned where she was the word processing supervisor for almost 15 years. This was in a time before professors had computers let alone students carrying around phones that doubled as computers.

In the mid-1990s, Elder “moved across the hall” in Haworth to take on the not-so-small-task of handling all things administrative for the University’s then Division of Biological Sciences.

To this day, even now in retirement, Elder has her lists. Her list one day this past winter included close to a dozen activities she needed to do during her once-a-week trip into Lawrence from her country home.

This type of organization is what set her apart in the department. “Jan’s capacities and competence are extraordinary,” he said. “She has the ability to work creatively within the system.”

The list of duties Elder performed during her tenure in the biology department may be as long as the family tree she has uncovered in her genealogical research. Elder managed the entire personnel budget for the department, developed the schedule for undergraduate courses, managed the teaching assistants’ compliance, hired the undergraduate teaching assistants, the end-of-year graduation awards ceremonies, lecture series on both the Lawrence and Edwards campuses, and more.

“She has superb organizational skills,” Smith said. “Only matched by her interpersonal skills.”

Some call me ‘Mom’

But Elder’s true measure of worth came with her interactions with the thousands of undergraduate students on a daily basis.

“KU is a very large place and the biology department is a big place,” Elder explained. “I wanted to give kids the impression that even if I may not have an answer, I wanted to let them know I would listen and try to help.”

Elder kept in constant contact with the undergraduate students with her regular email communications letting them know of happenings on The Hill, updates about the department, job or intern opportunities. She even manned the booth at the regular career day events the department would hold throughout the year.

Because Elder also knew her numbers and kept her finger on the department’s enrollment, it’s not a stretch to say she knew every student’s name.

Just ask Jan

“Just ask Jan” became a regular refrain heard among the Haworth halls during her time in the department. Need to know the enrollment of Biology 101 in 2001? Just ask Jan. Need to know how many sections of a course will be needed for next semester’s students? Just ask Jan.

“Jan wore a lot of different hats,” said Greg Burg, current Undergraduate Biology Program director. “She has the ability to make sure everything is going in the direction it needs to go.”

The two Gs – Gardening and Genealogy

Elder now has a little more time to pursue her other passions. She has recently completed classes to become a Master Gardener. She found a great, great grandfather served as a doctor for the metro police force and surgeon for a London-area prison.

She always heard growing up in England that she came from a more peasant class. Her research actually showed the opposite. She found a great, great grandfather served as a doctor for the metro police force and surgeon for a London-area prison.

A few other interesting discoveries have been more recent and led to new friendships. Ironically, she says in her Midwestern-tinged British accent, “One is in Australia now.” A place she longed to live as a teen.

No matter what she pursues in the future, she knows she’ll do it with vigor and organization, just as she did her job in the department of biology.

“I couldn’t live without being organized,” she said.

Then again, she also has the fancy-free adventurous side like someone else we may remember – Bilbo Baggins.
Dean Danny J. Anderson began leading the College of Liberal Arts & Sciences at the University of Kansas on July 1, 2010. Anderson is a longtime Jayhawk faculty member and administrator (serving since 1988 in successively responsible roles). He also is a KU alumnus who earned his doctorate in Spanish in 1985.

Anderson, whose previous position was interim provost, was chosen after a national search to succeed Joseph Steinmetz.

As interim provost and executive vice chancellor, Anderson led during a time of change. He collaborated with former Chancellor Robert Hemenway, Interim Chancellor Barbara Atkinson and Chancellor Bernadette Gray-Little to ensure continuity. He has also provided leadership during a challenging fiscal environment through strategic oversight for the Lawrence campus budgetary decisions.

Before his interim appointment, Anderson was vice provost for academic affairs. During that time, he was instrumental in development of the Jayhawk Generations Scholarship. He also played a key role in establishing the Latino Vision Council, which has led to initiatives including the first Hispanic chapter of the KU Alumni Association and KU's Spanish-language Web site, ku.edu/espanol.

Anderson is a prize-winning teacher whose integration of service learning into the classroom frequently serves as a model for KU’s Center for Teaching Excellence. He has received a number of awards and fellowships, including a National Endowment for the Humanities Fellowship for University Teachers in 1995; a W.T. Kemper Fellowship for Teaching Excellence in 2004; and the ING Award for Teaching Excellence in 2008. He is the editor of two books and has published more than 20 articles, essays and chapters in books. He is a specialist in Latin American literary and cultural studies; his research examines the history of literary publishing houses and the social history of literary reading in Mexico.

Anderson began his academic career in 1985 at the University of Texas-Austin, after earning his doctorate in Spanish from KU. He joined KU in 1988 as an assistant professor in Spanish and was named a full professor in 2003. He served as chair of the Department of Spanish and Portuguese, associate dean in the College for interdisciplinary programs and area studies centers, and vice provost for academic affairs.
Dr. Andrew Short found 20 new species of water beetles in the pristine rainforest of Suriname.

Dr. Brown recently collected more than 400 new amphibian and reptile specimens.

Dr. Chaboo’s NSF award was for “Plants, Herbivores and Parasitoids: A Model System for the Study of Tri-Trophic Associations.”

Dr. James Thorp and his colleague Christopher Rogers were funded by the U.S. National Park Service to visit the Pacific island of Guam to collect freshwater and estuarine crustaceans.

Dr. Brown recently collected more than 400 new amphibian and reptile specimens.

Dear KU Biological Sciences Alumni and Friends,

BioHawk has “gone green,” and we hope that you will enjoy reading our issues in digital format. We have seen many alumni magazines move from print to digital in the past several years, and, as we are KU Biological Sciences, we thought it was fitting that we also take this step towards increased sustainability.

You can read the 2010-2011 BioHawk at the following web address: http://www.kuub.ku.edu/alumni/publications.shtml

We realize that reading the BioHawk in digital form might not suit everyone, so please contact Kandi White (kmwhite@ku.edu) if you would like us to mail you a printed copy of the BioHawk.

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