



Spring 2014 Volume 2, Issue 2



HIGHLIGHTS FOR SPRING 2014

- Kathy Loesser-Casey and Michael Killian to retire at the end of the spring 2014 semester.
- Revisions to the biology major program clear the University Curriculum Committee.
- Biology students awarded \$28,500 in research funding in 2013-14.

TWO FACULTY MEMBERS TO RETIRE THIS SPRING

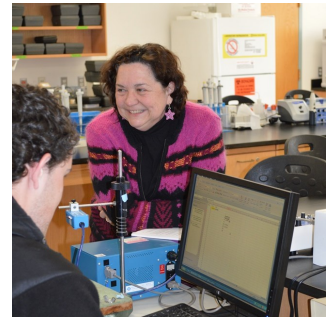
Kathy Loesser-Casey and **Michael (Mike) Killian** will retire at the end of the 2014 academic year. Both leave legacies of outstanding accomplishment and service to the department.

Loesser-Casey joined the department in 1994 and earned the rank of Professor in 2007. During her 20-year career she has above all brought teaching excellence and creativity to the biology program. She has been central to the delivery of the department's human anatomy and physiology curriculum, mentored dozens of independent research and honors students, and introduced innovative new courses. "It is really nice to have a professor who is so knowledgeable and enthused about what she is teaching", commented current student, Molly Banfield.

In 2008, Loesser-Casey initiated a Howard Hughes Medical Institute grant to bring *Phage*

Hunters to UMW. *Phage Hunters* is a ground-breaking research based introductory biology course sequence which allows students to learn biology through scientific practice and discovery. According to close collaborator, Lynn Lewis, "She convinced me that I needed to help her institute this course at UMW. I believe it has been a very beneficial change for our students, and I know it has been a beneficial change for me."

In 2010, Loesser-Casey established a new course on experimental design and data analysis with statistician Deborah Hydorn. The course was originally intended to help prepare Summer Science Institute students with their research. It became BIOL 260-The Research Process, and it is now a required course in the newly revised biology major curriculum.



Kathy Loesser-Casey doing what she does best: working with students.

In addition to her teaching accomplishments, Loesser-Casey built an outstanding professional record. She has authored or co-authored nearly 30 peer-reviewed scientific papers and reviews, some stemming from a productive collaboration with colleagues at Virginia Commonwealth Univ. Additionally, she was Co-PI on an NSF grant that delivered a Scanning Electron Microscope to Jepson Science Center.

Kathy has left an indelible mark on the department. Both students and staff will miss her greatly, but wish her best of luck in her future endeavors.

Inside this issue:

Students visit Galapagos Islands	2
Good news for graduates	2
Biology major revised	3
Dianne Baker awarded Fulbright	3
Heather Decot, update from distinguished alumna	4

Mike Killian began his time at Mary Washington as a student seeking licensure to teach biology in Virginia's public high school system. After more than a decade of teaching, he was hired as a laboratory specialist for the Jepson Science Center and taught *Biological Concepts* as an adjunct instructor. In 2003, he became the department's general biology lab coordinator and began teaching *Biological Concepts I & II* on a full time basis. He was promoted to Senior Lecturer in 2010. Under his watch, the courses' labs have been significantly revamped and become more interactive and inquiry based. His close collaboration with other faculty has pro-

duced an extensively revised lab manual with a focus on the scientific method and reasoning skills.

Furthermore, Mike has trained many adjunct instructors and mentored dozens of lab aids. "Working as a lab aid for Mr. Killian the past couple of years has been amazing. He constantly kept things interesting, always asked how I was doing and how my classes were going," said Briana Wilson, a multi-year lab aid. Mike also developed the first systematic and fully sanctioned laboratory safety training program for both lab aids and research students.

In addition to his teaching contributions, Mike has been an active member of the Association of



Mike Killian brought innovation to the department's general biology program.

Biology Laboratory Educators and recently co-authored with a visiting faculty member two scientific papers on salamander diversity at Phelps Wildlife Management Area.

Mike will be greatly missed by all, and the department wishes him a happy and fulfilling retirement.

BIOLOGY STUDENTS VISIT GALAPAGOS ISLANDS NATIONAL PARK!



Sea Lion by Nikki Maticic, Class of 2014.



Blue-footed Booby by Charlie Reed, Class of 2014.



Sally Hurt on a 2011 UMW alumni trip to the Galapagos Islands.

Over spring break, 16 biology and 12 environmental science students traveled to Galapagos National Park, Ecuador! The trip was part of a special topics course co-taught by **Andrew Dolby** and Melanie Szulczewski, Dept. of Earth and Environmental Sciences. The course took a holistic approach to this biologically significant Pacific archipelago, covering its natural history, past and current value to biological research, cultural history, and today's environmental sustainability challenges.

During the trip, students visited four different main islands: San Cristobal, Floreana, Isabela, and Santa Cruz. On San Cristobal, they spent a morning clearing invasive guava trees and replacing them with native *Scalesia* trees on Galapagos National Park property. Snorkeling excursions brought stunning closeup encounters with

Galapagos green sea turtles, sea lions, Galapagos Penguins, and tropical fish. On Isabela, the group hiked along the edge of the Sierra Negra caldera, the world's second largest volcanic crater. Additionally, they visited three different giant tortoise reserves on Floreana and Santa Cruz.

Before the trip, students read two books: *The Beak of the Finch*, by Jonathan Weiner, and *Galapagos at the Crossroads*, by Carol Anne Bassett, to prepare them for their experiences but local guides filled in detail about the islands' natural and cultural history.

In addition to observing the flora and fauna, students noted sustainability efforts by the Ecuadorian government and local communities including abundant recycling bins, solar panels, and educational signage.

The course will be offered again in 2016.

"In my opinion, every biologist has to go there at least once".
—Charlie Reed, Class of 2014

Ms. Sally Hurt, UMW Environment Science class of 1993 and current Midlothian, VA resident, provided scholarships for several students to defray their travel expenses. Additional financial support for students was furnished by **Mr. Larry G. Valade**. Both have donated generously to the Department of Biological Sciences. Thank you Sally and Larry!



Students visit Charles Darwin Research Station on Santa Cruz



Katie Wilson tries on a Giant Tortoise shell at a reserve on Santa Cruz.



Green Sea Turtles by Nikki Maticic, Class of 2014.

GOOD NEWS FOR 2014 GRADUATES AND RECENT ALUMNI

- **Ryan Green**, Class of 2013, has been accepted into the Medical College of Virginia's (VCU) M.D. program.
- **Sarah Marzec** has been accepted to Ph.D. programs in the biology sciences at Indiana and Michigan State Universities.
- **Alexis Pennings** has been accepted to four different Colleges of Veterinary Medicine: Virginia-Maryland Regional (Virginia Tech), University of Tennessee, Ohio State University, and Saint George's.
- **Courtney Valerio** landed an internship at the Federal Bureau of Investigation (FBI) laboratory.

REVISIONS TO THE BIOLOGY MAJOR TAKE EFFECT NEXT FALL

Students declaring a major in biology starting in the fall of 2014 will complete a revised set of requirements. The department has replaced the existing plant and field requirements with BIOL 260-*The Research Process* and one course designated "Research Intensive."

These new requirements shift the program's emphasis toward development of general scientific skills and reasoning applicable to any career in the

biological sciences.

While BIOL 260 will teach the fundamentals of experimental design and data analysis, Research Intensive courses will provide opportunities for students to put their developing scientific skills into practice. Research intensive courses will include existing courses such as Molecular Biology of the Gene, Virology, Plant Ecology, and Ornithology. Their laboratories will be modified to include a research component. Addition-

ally, independent research supervised by individual faculty will also satisfy the requirement.

"I really like how the new major focuses more on research because it can be applied to a broad number of areas within biology," commented junior Parvian Soleymani.

The changes were inspired by calls from such organizations as the National Science Foundation, the American Association for the Advancement of Science, and

The new biology major program places greater emphasis on research skills and data analysis.

Howard Hughes Medical Institute to increase scientific research training and awareness in science education programs.

"This major will not only improve students' preparedness, but will make our program stand out" said department chair, Andrew Dolby.

DIANNE BAKER WINS FULBRIGHT SCHOLARSHIP AWARD

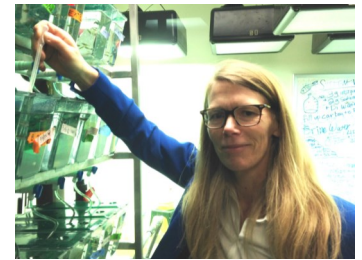
Dianne Baker will spend the spring 2015 semester in Oslo, Norway as a Fulbright Scholar! The Fulbright Program is a prestigious international exchange program overseen by the U.S. Department of State. Its mission is to "increase mutual understanding between the people of the United States and the people of other countries" and to

"promote international cooperation for education and cultural advancement."

Baker will join the research lab of Dr. Finn-Arne Weltzien of the Norwegian School of Life Sciences to help advance his efforts to determine the developmental function of kisspeptin signaling system. Kisspeptin is considered an essential regulator of sexual maturation and reproduction. Recently, Weltzien's lab reported evidence that kisspeptin is also essential in embryonic survival, morphogenesis, and brain development in fish (medaka). Baker will use *in situ* hybridization to map expression of kisspeptin

system genes throughout early development. Her work follows a 6-week long visit to Weltzien's lab last summer during which she assisted them in working out their *in situ* hybridization protocol.

Baker is one of only a handful of UMW faculty to be awarded a Fulbright. "I am thrilled with this opportunity to again immerse myself in Norwegian culture while contributing to some high level science. I am also looking forward to bringing back what I learn to advance my own research program here at UMW" said Baker.



Dianne Baker tends her zebrafish colony in the Jepson Science Center.

The Fulbright Program also awards scholarships to students, and UMW has been recognized as a top producer of student awardees.



Larval medaka: National Institute for Basic Biology, Tokyo, Japan.

Faculty Notes

- **Steve Fuller** published a paper titled "A preliminary checklist of the freshwater planktonic microalgae of the north lagoon at Crooked Tree, Belize" in the *Virginia Journal of Science*.
- **Theresa Grana**, along with Dept. of Computer Science colleague David Toth, earned a spot in the Genome Consortium for Active Teaching Sequencing summer 2014 workshop to develop their project "Nematode genome sequencing in a research-intensive upper level biology course."
- **Lynn Lewis** co-authored a paper titled "A broadly implementable research course in phage discovery and genomics for first-year undergraduate students" in the online journal *mBio*.
- **Werner Wieland** published two papers in the *Virginia Journal of Science*: "First record of pond sliders (*Trachemys scripta scripta* and *T.s. elegans*) at Fredericksburg, Virginia with observations on population size, age, and growth." and "Turtles of the Fredericksburg canal: introduced species and estimates of populations sizes." Both papers were co-authored by research student, Yoshi Takeda.

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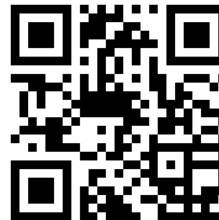
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SPECIAL THANKS TO OUR RECENT PROGRAM DONORS:

- Ms. Gina D'Eramo, Worcester, MA
- Ms. Sally Brannan Hurt, Midlothian, VA
- Dr. Nicola Hutton Locascio, Huntington, WV
- Mr. Bruce and Kathy Valade, Newington, CT
- Mr. Don Valade, Allen, TX
- Mr. Larry G. Valade, Fredericksburg, VA

The mission of the biology program at the University of Mary Washington is to provide a strong undergraduate education in the fundamental principles of biology and train students in the basic research methods and techniques used by biologists. The program is designed to prepare undergraduates for future careers in life sciences research, biotechnology, teaching and related professions, conservation, medicine, dentistry, and other allied health fields.

For further information about the biology program, please contact Andrew Dolby, Chair, Department of Biological Sciences, at adolby@umw.edu or 540-654-1420



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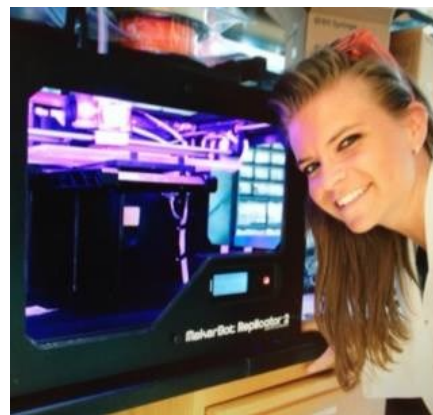
UPDATE FROM HEATHER DECOT, DISTINGUISHED ALUMA, CLASS OF 2008

As an undergraduate at UMW, I was given the opportunity to be a Jepson Summer Science research student under Dr. Diane Baker, exploring the effects of atrazine on mRNA levels of thyroid stimulating hormone (TSH) and thyroid receptor alpha (TR α) in zebrafish and was awarded a research grant to continue this work during my senior year. It was through this fabulous opportunity that I found my passion for research. My research experiences at UMW provided me the opportunity to design and conduct my own research project and instilled in me the work ethic, perseverance, and critical thinking skills that have contributed to my successes in graduate school.

After graduating from UMW in May 2008, I worked as a postbac IRTA fellow in the Clinical Brain Disorders Branch at the NIH in Bethesda, MD working in the lab of the Clinical Director of the Schizophrenia Research Program. Specifically, I worked on pharmacological studies investigating genetic variation in responses to three

medications that may enhance cognitive functioning in patients with schizophrenia and in healthy controls. After my two years at the NIH, I applied and was accepted into the Biological and Biomedical Sciences Program (BBSP) at UNC Chapel Hill and after my first year of rotations joined their neurobiology PhD program.

My current research couples optogenetic stimulation techniques with functional magnetic resonance imaging (fMRI) technology in an *in vivo* rat model to selectively activate dopamine (DA) neuron cell bodies in the ventral midbrain to provide novel mechanistic insight into how DA neuromodulation promotes or suppresses functional connectivity in the intact brain. I was recently notified that my research abstract was selected for an oral presentation and poster at an interational imaging conference to held in Milan, Italy in May. It is undoubtedly an exiting time to be in research! I am eager to continue to build upon the solid foundation that the biology curriculum at UMW provided me.



Heather Decot in 2013.

"I am eager to continue to build upon the solid foundation that the biology curriculum at UMW provided me."

-Heather Decot