For 29 years, Professor Joella Killian has been serving up a steady diet of insects, cephalopods, and intestinal parasites with tremendous skill and boundless enthusiasm, much to the delight of her students. Her excellence in the classroom was recognized with the university’s highest undergraduate teaching honor, the Grellet C. Simpson Award. She received the award during the May, 2013 graduation ceremony. According to former student and advisee Sarah Hagan, Class of 2011, “Students can’t help getting wrapped up in her lectures, whether they’re about mitosis, cockroaches, or nasty parasitic worms. She is an engaging lecturer, tough tester, and as fair as they come. She has had a positive and lasting impact on my life, and I feel that no one is more deserving of recognition.” Cole Eskridge, Class of 2013 and current University of Arizona Ph.D. student, commented: “She’s been a role model for me since my first semester of college as to what a successful teaching career looks like, and still inspires me in many of my graduate-level endeavors in insect science.” The award is named after a former president of Mary Washington, who was well known for his support for liberal arts education and dedication to the institution’s teaching mission. Dr. Killian covers such courses as invertebrate zoology, entomology, parasitology, and introductory biology. She is also the Biology Club’s faculty advisor. In addition to her fondness for all things spineless, she is an avid and knowledgeable birder who frequently participates in the National Audubon Society’s Christmas Bird Count and leads bird watching field trips for the Friends of the Rappahannock. Congratulations, Dr. Killian!

Michael Carlo won the William A. Castle Outstanding Senior Award for 29 years, Professor Joella Killian has been serving up a steady diet of insects, cephalopods, and intestinal parasites with tremendous skill and boundless enthusiasm, much to the delight of her students. Her excellence in the classroom was recognized with the university’s highest undergraduate teaching honor, the Grellet C. Simpson Award. She received the award during the May, 2013 graduation ceremony. According to former student and advisee Sarah Hagan, Class of 2011, “Students can’t help getting wrapped up in her lectures, whether they’re about mitosis, cockroaches, or nasty parasitic worms. She is an engaging lecturer, tough tester, and as fair as they come. She has had a positive and lasting impact on my life, and I feel that no one is more deserving of recognition.” Cole Eskridge, Class of 2013 and current University of Arizona Ph.D. student, commented: “She’s been a role model for me since my first semester of college as to what a successful teaching career looks like, and still inspires me in many of my graduate-level endeavors in insect science.” The award is named after a former president of Mary Washington, who was well known for his support for liberal arts education and dedication to the institution’s teaching mission. Dr. Killian covers such courses as invertebrate zoology, entomology, parasitology, and introductory biology. She is also the Biology Club’s faculty advisor. In addition to her fondness for all things spineless, she is an avid and knowledgeable birder who frequently participates in the National Audubon Society’s Christmas Bird Count and leads bird watching field trips for the Friends of the Rappahannock. Congratulations, Dr. Killian!

Michael Carlo won the William A. Castle Outstanding Senior Award. The department’s faculty recognized Mike Carlo, Class of 2013, with the William A. Castle Outstanding Senior Award in May. Mr. Carlo came to Mary Washington as a transfer student from the Virginia Community College System. His transition was seamless, earning nearly perfect grades and jumping right into independent research. His research project culminated in a departmental honors thesis, co-advised by Dr. Andrew Dolby and Dr. Deborah O’Dell. His project examined relationships among various physiological stress indicators in birds, such as corticosterone, heat shock proteins, and leucocyte counts. “Mike was one of those rare students who consistently took complete charge of his own research progress. Instead of asking me what he needed to do next, he would come to me with his own ideas. He also volunteered for some painfully early field work sessions,” commented Dr. Dolby, who also served as Mike’s academic advisor. Mike presented his data, which he collected with research partner Abby Kimmitt, at the Wilson Ornithological Society’s Annual Meeting last spring. Mr. Carlo is now enrolled in a Ph.D. program at Clemson University, working in the laboratory of Dr. Michael Sears. He is pursuing his interests in vertebrate thermoregulatory physiology and looking forward to beginning his duties as a graduate teaching assistant for Clemson’s Biology Department. In addition to his academic accomplishments, Mike married his fiancé, Amy, in June, and the happy couple wasted no time starting a family, adopting an energetic new Labrador retriever puppy. Congratulations, Mike, and best of luck with your graduate studies!
2013-14 DEPARTMENT SCHOLARSHIP WINNERS:

Each year the department awards one Rebecca Culbertson Stuart Scholarship and two Biology Scholarships. Each scholarship is worth about $3,500, and recipients are chosen by the faculty based on their grade point averages, extracurricular activities, and educational and career aspirations. 

Yoshinori (Yoshi) Takeda won the Stuart Scholarship. He is double-majoring in biology and physics, with two minors in chemistry and applied mathematics! The neural circuitry of the nervous system inspired his joint interest in both biology and chemistry. His Summer Science Institute experience, however, provided an unexpected twist: turtle population surveys in the Fredericksburg Canal with Dr. Werner Wieland. This project tested both Yoshi’s mathematical and boat-handling skills! He is working toward a career in medicine and aspires to work for a relief organization such as Doctors Without Borders.

Daniel Browne and Alexis Pennings were awarded the two Biology Scholarships. As a UM student, Dan was first inspired by Phage Hunters, which allowed him to learn biology while participating in the discovery process. He has since been working on research in Dr. Grana’s nematode lab, and he participated last summer in an internship at the University of California-San Diego involving the application of bioinformatics in diabetes research. He hopes to earn a Ph.D. and pursue his own career in diabetes research. According to Mr. Browne, “Science is a part of my life now, and I intend for it to stay that way.”

Alexis has always been drawn to animals. As a child, she helped raise farm animals for livestock shows, and as a college student, she cared for snakes, frogs, and turtles at Steele Creek Nature Center in Tennessee, was a veterinary intern at a zoo in Texas, and won a scholarship funded by the Larry G. Valade family to study wildlife medicine in Belize. Alexis aspires to attend veterinary school and earn a Ph.D. studying zoonotic diseases. She is also interested in popular science writing and engaging the public in science.

FALL 2013 UNDERGRADUATE RESEARCH GRANT WINNERS:

The following students were awarded research funding from the College of Arts and Sciences Dean’s Office for their fall semester projects. Research proposals were developed as part of the requirements for BIOL 481, Readings in Biology. These awards are for research supplies and equipment. Students may also apply for funding for travel to scientific conferences to present their data.

- **Dan Browne** - Nematodes as a vehicle for undergraduate education. - $325 (Mentor: Dr. Theresa Grana)
- **Ariel Davati** - Study of age and gender effects on lipoprotein size and concentration. - $920 (Mentor: Dr. Kathy Loesser-Casey)
- **Jessica Dochney** - Species description of Caenorhabditis sp. 8. - $810 (Mentor: Dr. Theresa Grana)
- **Sarah Marzec** - Nematode population diversity at a native pawpaw site. - $700 (Mentor: Dr. Theresa Grana)
- **Lindsay Raulston** - Effects of atrazine on gene expression in Danio rerio. - $4,000 (Mentor: Dr. Dianne Baker)
- **Yoshinori Takeda** - Effects of microwave radiation (10.1 GHz) on NIH/3TS fibroblasts. - $4,000 (Mentor: Dr. Rosemary Barra)
- **Thikiri Yee** - Isolation of potential antimycobacterial chemicals from soil. - $765 (Mentor: Dr. Lynn Lewis)
BIOLOGY WITHOUT BORDERS (GOING GLOBAL)

Sarah Eubanks spent 13 weeks working with a Ph.D. student in Lübeck, Germany at the Universität zu Lübeck Institut für Molekulare Medizin. She conducted assays that included the proteins PACT and TRBP in the RNA-induced Silencing Complex (RISC). These RNA-binding proteins bind directly to Dicer and effect the efficiency of the production and size of short double-stranded RNA fragments. Specifically, she focused on the functional results with the addition of the protein PACT under varying conditions.

Dr. Dianne Baker spent six weeks as a guest researcher in the lab of Dr. Finn-Arne Welzien of the Norwegian School of Veterinary Science in Oslo, Norway. She contributed her expertise to develop an in situ hybridization protocol to map expression of neuropeptide-encoding genes regulating development and reproduction in the model teleost fish, Oryzias latipes (medaka).

Dr. Steve Fuller led yet another spring break field trip to Central America as part of his Tropical Ecology course. The class visited Belize and Guatemala this year. On the itinerary were the Mayan ruins of Tikal and Crooked Tree Wildlife Sanctuary. Dr. Fuller’s trips continue to have lasting impacts on his students. Samantha Luffy, Class of 2011, for example, spun her class’s trip to Costa Rica into an internship at Campanario Biological Reserve after she graduated from UMW. She is now a Master’s degree student in Emory University’s global health program.

The department continues to expand its global reach.

“It [Tropical Ecology trip] was a truly wonderful experience that I believe helped me be accepted into the Global Health Masters Degree program at Emory University!” -Samantha Luffy, Class of 2011

BIOLOGY RESEARCH PROGRAM HAS PRODUCTIVE SUMMER

Between the Virginia Academy of Sciences (VAS) Annual Meeting in May, and the Summer Science Institute, UMW students and faculty had a busy summer! Twelve biology students and seven faculty presented research at the VAS meeting held at Virginia Tech. Dr. Deborah O’Dell was elected President of the VAS, and six other faculty fulfilled various other leadership responsibilities. The relationship between the department and VAS continues to be an important one, with the VAS providing a venue for students to share their research, while our faculty furnish leadership manpower to maintain the VAS’s operations.

The department also fielded two Summer Science Institute research teams. Kathy Belrose-Ramey worked with Dr. Deborah Zies, and her work aims to clarify the interaction between the RAI1 transcription factor and the CLOCK gene and its possible role in producing the effects of Smith-Magenis Syndrome. Belrose-Ramey won second prize for her oral presentation during the end-of-summer SSI Symposium. Yosiki Takeda and Bryan Finch were mentored by Dr. Werner Wieland. Yosikhi continued his turtle survey of the Fredericksburg Canal, while Bryan studied wildlife diversity at Eagle Lake Outpost using remote wildlife cameras set up in a grid. Eagle Lake Outpost is a 200-acre wooded property in southern Stafford County owned by the university and dedicated to scientific field research. In addition to the expected white-tailed deer and gray squirrels, Bryan’s cameras picked up shots of coyotes, black bear, and wild turkey. Dr. Zies is co-director of the SSI program.

Faculty Notes

- Theresa Grana co-authored a paper titled “A genome-wide functional screen identifies MAGI-1 as an L1CAM-dependent stabilizer of apical junctions in C. elegans,” which appeared in the journal Current Biology.

- Alan Griffith had a paper accepted for publication by the Natural Areas Journal titled “Secondary dispersal in Aeschynomene virginica: do floating seeds really find a new home?”

- Mike Killian and Dianne Baker co-authored a paper “Corolling wiggling worms-collecting data for a multi-week laboratory on the effect of various treatments on the pulsation rate of the dorsal vessel of California blackworms (Lumbriculus variegatus) published in the Proceedings of the 34th Conference of the Association for Biology Laboratory Education.

- Deborah O’Dell was elected President of the Virginia Academy of Science (VAS).

- Deborah Zies won a grant from the VAS for her project “Cloning and characterization of the human RAI1 promotor.”
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 basic life sciences research, teaching and related professions, 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

I graduated from the University of Pittsburgh School of Medicine in May, and I am happy to report that my education at UMW has proved invaluable in supporting my success in medical school. The biological principles that I learned in my courses gave me a solid foundation of knowledge from which to grow during the inundation of information that is medical school. In addition, the study skills that I honed at UMW in order to keep up with the demanding course load of a Biology major made the transition to medical school surprisingly smooth.

My research experiences with Drs. Baker and Tomba at UMW allowed me to immerse myself in the scientific method. This helped me learn to critically evaluate scientific literature—an essential skill for a physician. Also, these activities made me a much more competitive medical school applicant. It is unusual for students at larger institutions to be able to design their own research projects, and I am so grateful that I had these opportunities at UMW.

This past March I learned that I matched at my first choice for residency—Psychiatry at the University of California, San Francisco. I am proud to say that the phenomenal teaching, advising, and mentorship that I was so fortunate to have at UMW have contributed hugely to my successes since college.

“\nI am happy to report that my education at UMW has proven invaluable in supporting my successes in medical school.”

Gina D'Eramo, Worcester, MA

Roberta Newton, Greensboro, NC

Elizabeth Smith Storm, Fredericksburg, VA

Dr. Mary Ring Williams, Lansdowne, VA

UMW Elderstudy