UMW BIOLOGICAL SCIENCES NEWSLETTER

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HIGHLIGHTS FOR Fall 2014

- Biology students awarded $11,880 in fall research funding from the College of Arts and Sciences Dean's Office.
- Biology students **Kevin Speray** and **Amy Jayas** won Summer Science Institute Symposium presentation awards in July. Both were advised by **Dr. Alan Griffith**.
- Planning for Jepson Science Center's addition/renovation is underway! The project will break ground summer 2015.

Inside this issue:

University of Mary Washington
where great minds get to work

PROFESSOR LYNN LEWIS WINS 2014 MARY W. PINSCHMIDT AWARD

Rarely is the phrase "infectious disease" tied to anything complimentary unless, of course, you are talking about **Dr. Lynn Lewis**! Since 1987, Lewis has been infecting her students with enthusiasm for microbes, of both the infectious and non-infectious variety. In May, she was awarded the Mary Pinschmidt Award by the UMW graduating class of 2014! As she has for many years, she teaches microbiology and virology, and now maintains full control of Phage Hunters, the department's University Honors introductory biology course sequence. In addition to her exceptional classroom teaching, Lewis has mentored dozens of independent research students and has long served as the department's Pre-Veterinary Medicine advisor. The recipient of the Pinschmidt Award, selected by the Student Government Association, is chosen based on who "[students] are most likely to remember as the one who had the greatest impact on [their] lives." According to Alexis Pennings, Class of 2014 and current Virginia-Maryland Regional College of Veterinary Medicine student, "Dr. Lewis is one of the real gems of UMW. She is both incredibly intelligent and incredibly kind. She cares for each and every student and is an excellent teacher. I learned not only important biology lessons from her, but also important real-world applications of those lessons."

Peyton Kremer, Class of 2014, presents Dr. Lewis with the Pinschmidt Award during the 2014 graduation ceremony.

Junior Sarah Murphy, one of Lewis's current advisees and research students, praised her patient and supportive approach to mentorship. In addition to her work with students, Dr. Lewis is active in the American Society of Microbiology and has an accomplished professional record.

SARAH MARZEC WINS 2014 WILLIAM A. CASTLE OUTSTANDING SENIOR AWARD

The department's faculty recognized **Sarah Marzec, Class of 2014**, with the William A. Castle Outstanding Senior Award in May. While maintaining excellent performance in her classes, Sarah engaged in research, was an active member of several academic honor societies, and frequently volunteered for department admissions and public outreach events. Her research, supervised by **Dr. Theresa Grana**, involved phylogenetic classification and population dynamics of free-living nematodes. She presented her work at two Virginia Academy of Science Undergraduate Research Meetings, and along with student co-author Dan Browne, won a best presentation award at the 2012 Undergraduate Research Symposium in the Chemical and Biological Sciences at the University of Maryland, Baltimore County. Sarah is currently a Ph.D. student in Michigan State University's Ecology, Evolutionary Biology, and Behavior program. Using *Drosophila melanogaster* as her model, she is studying cryptic genetic variation in populations. She won't be sticking around East Lansing for long, however. Her advisor is transferring to McMaster University in Ontario. So, she promises to be a rare UMW alum with a Canadian Ph.D.! Congratulations, Sarah, and best of luck with your graduate program and beyond!

Sarah Marzec prepares a delicious dinner for *D. melanogaster* in her Michigan State University genetics laboratory.

2014-15 DEPARTMENT SCHOLARSHIP WINNERS:

Isabelle Malouf (top) and Trinity Smyth (bottom), recipients of the 2014-15 Biology Scholarships.

Each year the department awards one **Rebecca Culbertson Stuart Scholarship** and two **Biology Scholarships**. Each is worth about $4,000, and the recipients are chosen by the faculty based on their grade point averages, extracurricular activities, and educational and career aspirations

Anna Kania (not pictured) was this year's winner of the Stuart Scholarship. While maintaining an impeccable academic record, she has been heavily engaged in research. She has been working in the lab of Dr. Theresa Grana studying the effects of RNAi on gene expression in nematodes. Summer 2013, she completed an internship at the prestigious J. Craig Venter Institute. Additionally, Kania has been volunteering in the Moss Free Clinic's pharmacy and has served as an RA in Ball Hall. She plans to earn a Ph.D. and pursue a career in infectious disease research.

Isabelle Malouf and **Trinity Smyth** (left) were awarded the Biology Scholarships. Malouf has been studying the effects of the herbicide atrazine on zebrafish sexual development in the lab or Dr. Dianne Baker. While participating in the Summer Science Institute, she worked with high school students in UMW's Summer Enrichment Program and Summer Science Outreach Initiative. Isabelle also has her sights on a Ph.D. which will pave the way to a research career in developmental biology and lead to further opportunities to engage science students. Phage Hunters was Smyth's initial source of inspiration at UMW. Her phage's genome was selected for full annotation and was published in Genomic Announcements. Beyond UMW, she served as a teacher in Mombasa, Kenya. Her goal is to earn an M.S. in Global Health and someday serve as a health manager in refugee camps around the world.

Sarah Cantarella (right) won the **Thyra V. Valade Conservation Leadership Scholarship**. Administered by the Center for International Education, this scholarship was established by the Larry Valade family to encourage students to establish research and conservation ties with Latin American countries. Cantarella spent three weeks in Ecuador's cloud forests contributing to an ongoing bird conservation project operated by a nonprofit called LifeNet Nature. The study is tracking responses of bird populations to cloud forest habitat degradation.

Sarah Cantarella holding a Golden Tanager in the cloud forest in Las Tangaras Reserve near Mindo, Ecuador.

THE DEPARTMENT WELCOMES TWO NEW FACULTY MEMBERS

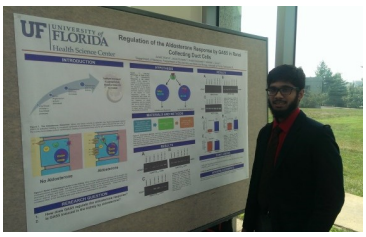
The department is pleased to welcome our new full-time Lecturer, **Michael Stebar**. He will serve as coordinator for our introductory biology program and teach courses such as Biology Concepts and Organismal Function and Diversity. He holds a Masters of Teaching in Secondary Science Education from the University of Virginia, and for 16 years, taught biology for the Spotsylvania County public school system. Most recently, he served as Science Department Chair at Riverbend High School and was once named Teacher of the Year. Last academic year, he also served as an adjunct instructor for our department, teaching courses and labs in the evenings, while somehow managing to eat and get in at least some sleep! Welcome, Michael, we look forward to your expertise and exceptional teaching skills.

We are also happy to introduce **Dr. Parrish Waters**, our Visiting Assistant Professor for the 2014-15 academic year. Dr. Waters holds a Ph.D. from the University of South Dakota. His major area of expertise is neuroscience, but his physiology interests are broad. Most recently, he held a 2-year Postdoctoral Fellowship in the NeuroCore Cluster of Excellence at Charity Medical University in Berlin, Germany. Before that, he was a Postdoctoral Fellow at both the College of Charleston and the Medical University of South Carolina. He also served as lecturer for a variety of biology courses at the University of North Carolina, Asheville. He will teach human anatomy, human physiology, and introductory biology for us this academic year. We are glad to have Dr. Waters with us.

JUNAID SHAHID, CLASS OF 2015, COMPLETES NIH SUMMER RESEARCH PROGRAM

Senior **Junaid Shahid** had a productive summer at the University of Florida! He completed a 10-week research program sponsored by the National Institutes of Health STEP-UP Program in UF's Division of Nephrology, Hypertension, & Renal Transplantation. Under the guidance of Dr. Michelle Gumz, Shahid studied the relationship between aldosterone and a transcription factor known as Growth Arrest-specific 5 (GAS5). Aldosterone is a hormone which helps the kidneys regulate the reabsorption of sodium. The overall goal of the Gumz lab is to better understand the kidneys' role in the regulation of blood pressure, especially the body's circadian blood pressure cycles. Shahid presented his research at the NIH facility in Bethesda, MD (right) at the end of the summer. "This experience has added a new dimension to my undergraduate education," said Shahid. "I learned about the research process and many underlying scientific principles and gained experience with lab techniques such as cell culture, RNA isolation, PCR, and reverse transcriptase reactions to make cDNA."

Shahid learned about the program from Dr. Debbie Zies, who completed a Post-Doc at the Mayo Clinic with Dr. Gumz and with whom she still maintains research ties. "My acceptance into the STEP-UP program was an achievement that would not have happened without the guidance and support from my research mentor, Dr. Zies," continued Shahid. "She introduced me to this opportunity and invested her time, efforts, and resources to help me maximize my success as an undergraduate research student."



Junaid Shahid presents the results of his 10-week summer research project stemming from his participation in the NIH's STEP-UP Program. He completed his project at the University of Florida.

"This experience has added a new dimension to my undergraduate education."

-Junaid Shahid

DR. DEBORAH ZIES WINS PRESTIGIOUS WAPLE PROFESSORSHIP

Late last spring, **Dr. Deborah Zies** was named a University Waple Professor. The purpose of the Waple Professorship program is to encourage and provide resources for faculty to develop research and creative projects. Each professorship carries a $15,000 stipend, part of which can be used to purchase research supplies and to fund course releases so that faculty can spend more time on their scholarly work. For Dr. Zies, further development of her research means more opportunities for research students to work with her in the future. The goal of her Waple-supported project is to better understand the role of the gene RAI1 in Smith-Magenis Syndrome (SMS) and in the regulation of the human body's circadian rhythm. Disruption of the circadian (or 24-hr) rhythm is known to cause significant health problems, including high blood pressure and obesity. People who have SMS, which is caused by a mutation in RAI1, suffer from sleep disturbances and obesity. Zies' project specifically aims to determine how RAI1 regulates CLOCK, a key gene in the maintenance of circadian rhythm and to determine if SMS patients suffer from other circadian disorders such as nighttime high blood pressure. Additionally, Zies plans to strengthen her collaborative relationships with colleagues at Virginia Commonwealth University and the University of Florida.

While the professorship will allow Zies to increase the impact of her research on the scientific community, supporting UMW students remains at the top of her priorities. "I will be able to mentor undergraduate students in a more meaningful way. They will have the opportunity to learn and master molecular techniques, work with and experience research at larger, research intensive universities, and make contributions to a project that has a significant impact on human health." Zies further anticipates that students will be able to present their work at both local and national meetings.

Dr. Zies.

In 2013, UMW received an endowment from the estate of Shirley Van Eppes Waple, Class of 1952, to establish eight professorships per year. Recipients are chosen based their records of scholarly or creative success and on the quality of their proposed projects.

Faculty Notes

- **Dianne Baker** co-authored a presentation with several other UMW faculty,"STEM talent expansion through research, engagement, preparation, and scholarships" at the 2014 National Science Foundation Division of Education STEP Grantees Meeting in Washington, DC.
- **Alan Griffith** had a paper titled "Secondary dispersal in *Aeschynomene virginica*: do floating seeds really find a new home?" accepted by *Natural Areas Journal*.
- **Dr. Deborah O'Dell's** talk on magnetic orientation in bees was rebroadcast on the radio show *With Good Reason* on September 5.
- **Dr. Werner Wieland** published a paper titled "First record of pond sliders (*Trachemys scripta scripta* and *T. s. elegans*) at Fredericksburg, Virginia with observations on population size, age, and growth" in the *Virginia Journal of Science*. His co-author was **Yoshi Takeda**, Class of 2104.

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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

SPECIAL THANKS TO OUR RECENT UMW FOUNDATION DONORS:

- Friends of UMW Athletics
- American Express Foundation
- Larry G. Valade Family

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Questions about this newsletter? Contact the content creator and editor: Andrew Dolby at adolby@umw.edu

LIGHT ME UP!

The department has acquired a shiny new high-tech tool to study plant ecology and physiology in the field: a portable photosynthesis analyzer! The LiCor 6400 – XT is a portable, state-of-the-art photosynthesis system that can measure photosynthesis of individual plant leaves wherever they grow. According to Dr. Alan Griffith, the department's plant ecologist, "this photosynthesis system can measure carbon gain and water loss, as it happens in the field. Using the LiCor 6400-XT, my students and I will better understand how photosynthesis changes in different environments (Ex. sunny or shady) and for different types of plants (Ex. rare plants or invasive plants)." The analyzer was purchased with funding from the State of Virginia's Equipment Trust Fund and a LiCor-Environmental Education Fund matching grant awarded to Griffith. Griffith's grant made the purchase possible by reducing the instrument's price by approximately 45%.

Students enrolled in plant ecology, plant physiology, and biological concepts will be able to collect photosynthesis data as part of their laboratory activities. Additionally, the 6400-XT will significantly expand independent research opportunities for students with interests in a variety of plant field work. Facilitating student research has gained renewed importance for the department with its implementation of a new research requirement for the biology major.