BioNews

DEPARTMENT OF BIOLOGY NEWSLETTER

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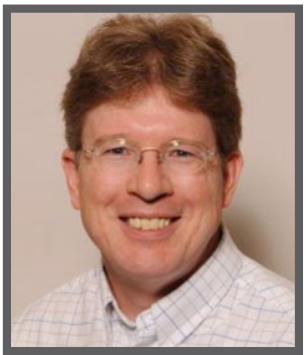
CHAIR'S CORNER



Dr. Mark Bolyard

Welcome to Winter at Union! We have a number of exciting things going on that we would like to share with you. First, we admitted 8 students into our inaugural non-thesis Master of Science in Biology class! After two years of our Graduate Certificate program, we have successfully transitioned to our Masters program, and we are off and running! We are also working on the finishing touches for our two-year Masters of Science in Conservation Biology, which will begin Fall of 2018. Two students will be admitted each year, and will be awarded Research Assistantships, which provide a tuition waiver. We look forward to starting this new program; if you know of anyone who might be interested in either of these graduate programs, please suggest that they apply! More information is provided in this issue.

Research is continuing to forge ahead this Fall. Biology students and faculty received a number of graduate and undergraduate research grants, and publications are continuing to be developed. I have a paper that was recently published on regeneration of Southern Wormwood from leaf cultures, in which I was assisted by a number of Union students. I'll tell you more about it in an article in this issue. Other faculty have papers in the publication pipeline as well.

In this issue we update you on what is happening with Drs. James Huggins and Jim Mahan, our "bi-campus" faculty member. While everyone knows Dr. Huggins, Dr. Mahan teaches on the Jackson and Germantown campuses, and has been a wealth of information for different research projects, drawing on his previous research experience. We also want to introduce you to Juliana Cobb ('14), who is serving as Instructional Staff on our Hendersonville Campus, our first full time person there. She has recently completed her Masters in Biology at East Carolina University. We are excited that she is back as part of the Union family! We also want to welcome back Dr. Tony Wamble to the Biology Department. We are excited about the work that he, Dr. Huggins, and students in our department are doing with the new Plastination facility.

Biology faculty are still developing off-campus experiences for our students. Following on the heels of Drs. Kerfoot and Schiebout taking students to Puerto Rico to study Tropical Ecology, Drs. Kerfoot and Madison once again taught Marine Biology and Ornithology (respectively) in North Georgia and Florida in January, and I will be once again traveling to the UK with Professors Chris and Ashley Blair from Communication Arts, where I will be teaching an upper level course called "Biotechnology in the U.K."

Finally, we are working toward renovating our Raptor Rehabilitation Center on campus. Thanks to donations from two alumni, work is going ahead. We hope to bring you photos from the renovation in our Spring newsletter.

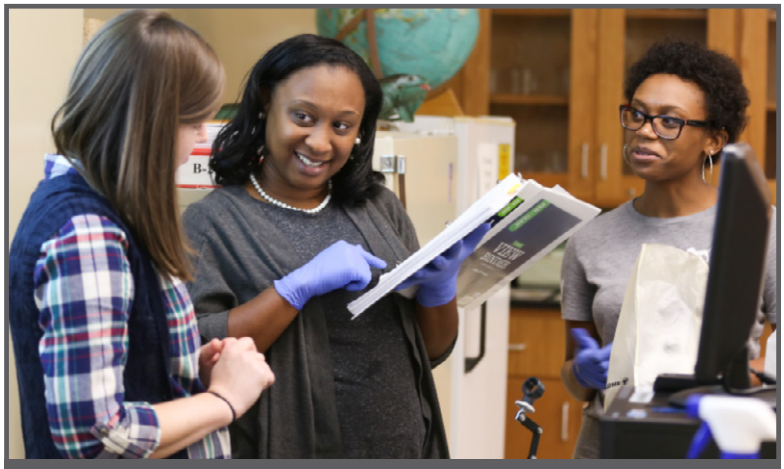
Thanks for reading, and for your support and interest!

INSIDE THIS ISSUE

UNION UNIVERSITY

DEPARTMENT *of* BIOLOGY

GRADUATE PROGRAM UPDATE
By Jacob Lemon



Graduate students Crystal Lyles (center) and Catrina White with Dr. Henson

Union University's biology department is excited to have initiated the Master of Science in Biology which began Fall, 2017. This Master's program is a transition from the previous Graduate Certificate in Biology that was established in 2015. This new Master's program has two tracks, Pre-Professional and General Biology.

The new Master's program is not a traditional two-year thesis program, but instead is a one-year non-thesis program, with five additional hours added to the previous Graduate Certificate in Biology, totaling thirty hours. The overall course schedule includes three courses in the fall term (along with an orientation/ bioethics course), one course during the winter term with lab, and three courses in the spring term. Students also register for Graduate Project hours, and are assigned a mentor to assist them with their non-thesis project.

Another transition that is taking place next Fall, 2018, is the Master of Science in Conservation Biology. This program will be a traditional Master's program that is two years, culminating in a Master's thesis. This program also offers a Research Assistantship that covers tuition costs for the program. This program will be limited to an admission of two students per year, which means that at any time there will be a maximum of four students in the program. Several faculty members have designed exciting projects for students to work on, which should also open up new opportunities for undergraduate research as well!

Dr. Marc Lockett, Professor of Biology at Union University, is a mentor and part of the team who made transitioning from the Graduate Certificate in Biology to the Master of Science in Biology a success. He is happy to see eight students enrolled in the first Master's program, which met the department's goal, and expects many more to apply for next year's Master of Science in Conservation Biology program. These transitions could also not have been possible without the hard work of Mrs. Frances Lancaster. Thanks to everyone who has contributed to the success of these programs!

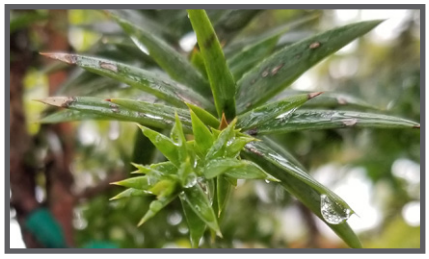
WORMWOOD PUBLICATION
By Dr. Mark Bolyard

Research continues to develop in a number of different ways at Union. We have let you know of a variety of articles that have been published by Biology faculty and students, and another article has been published. Dr. Bolyard has a variety of projects he is working on with students involving plant tissue culture, and some of these have been in progress for quite a while. The most recent manuscript "In vitro regeneration of *Aretmisia abrotanum L.* by means of somatic organogenesis" was published in the February 2018 issue of the journal In Vitro Cellular & Developmental Biology – Plant. Dr. Bolyard actually began working on this plant prior to coming to Union, and so this article marks over 10 years of research. *Artemisia* is the genus for wormwood, which contains plants with a host of interesting secondary metabolites, a number of which have medical applications. In this work, Southern wormwood plants were grown from leaf tissue ("regenerated"). This is typically a first step in plant genetic engineering, or could be used as an alternative means of plant propagation. In fact, one of our undergraduate research students last year, Zach Boatwright (along with Dr. Mike Schiebout) attempted to genetically engineer wormwood. Although no student co-authors are listed on this article, a number of students assisted with the project and are listed in the acknowledgements. Also, this project was used in the Molecular Biology lab, as students worked to determine whether there was a way to improve on the process even beyond what was published. We are excited to learn about what publications come out next!

Wormwood plant regenerated from leaf tissue

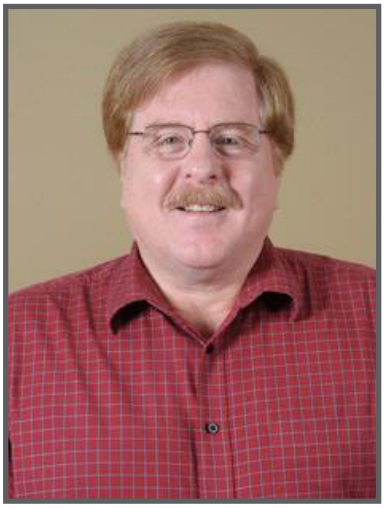
THE UNION ARBORETUM IS GROWING!
By Dr. Mark Bolyard

We wanted to give you an update as to some of the trees that have been added to the Union University Arboretum collection. Our collection currently consists of 53 labeled trees, with others having been planted as a result of the Arboretum efforts that are not part of the collection. Students from BIOME and Tri-Beta, along with students in the Honors Community and others across campus, planted nearly 40 trees as part of Campus and Community Day in November. This included a White Fringetree planted near Barefoot's Joe in honor of the excellent work carried out by Dr. Jennifer Gruenke during her time at Union. This tree was provided as a joint venture between the Department of Biology and BIOME. The Honors Community adopted and helped plant a *Stewartia* tree as part of the Honors Community outdoor seating area on the north side of the PAC, as well as a Katsura tree, which was planted nearby. On the south side of the PAC, we have planted a Paperbark Maple, and between the Chapel and the Hammons Building we planted a Dutch Elm Disease resistant American Elm (the "Princeton" elm). Each of these trees were purchased from a nursery near McMinnville, TN, and were picked up by Dr. Bolyard and his son Chris ('15, '17). We also planted a fig tree near the Photo House that was a cutting of a large tree in the yard of Dr. Mahan's grandmother. In addition to these trees that will be part of our collection, about 30 trees, purchased from Morris Nursery in Jackson, as well as some provided by Mr. Gary Christy and the Facilities Management team, were planted on the west side of the Facilities Management building, at the top of the hill facing Pleasant Plains Extended. It is our hope that these trees will provide a beautiful hedge along that stretch of the road. In addition, Dr. Bolyard recently purchased 5 Monkey Puzzle trees (see images) from a nursery in Malabar, Fl. The mother of the nursery's manager was driving to North Carolina, and was gracious enough to bring the trees to Chattanooga, where Dr. Bolyard met her and picked up the trees. We are planning on planting additional trees, including two of the Monkey Puzzles, as well as posting more signs on April 26th in (early) celebration of Arbor Day. We still have a lot of trees that can be adopted, for a variety of occasions, such as in honor of a class reunion.



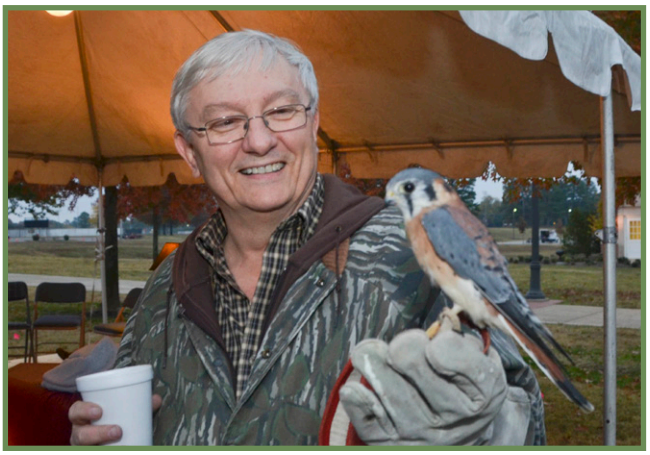
For more information, visit uu.edu/arboretum.

FACULTY UPDATE
By Dr. Mark Bolyard



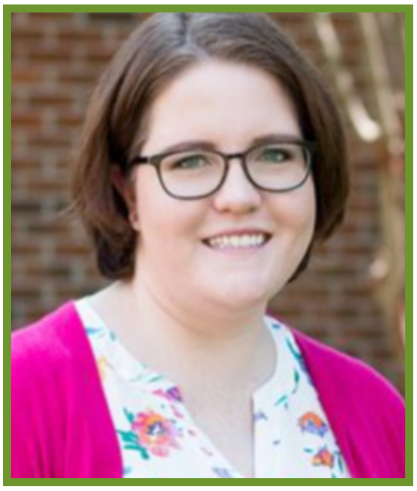
We have two faculty updates to make you aware of for Fall 2018. First, Dr. James Huggins, University Professor of Biology, has decided, after over 30 years of service to the Department, to scale his work back to half-time. Dr. Huggins also serves full-time as the Senior Pastor of Unity Baptist Church in Chester County, TN. This is in addition to his teaching, scholarship, recruiting, and oversight of our Raptor Rehabilitation Center. Dr. Huggins has been one busy man! He is looking forward to shifting some of his workload, and we are excited that he has this opportunity. In addition, Dr. James Mahan, who has been teaching in both Jackson and Germantown, has decide to scale back to half-time as well, which means all of his teaching will be on the Germantown campus. Although we will miss seeing him in Jackson on a regular basis, we know that this will be very helpful for him with the various things he has going on in his life.

With each of these colleagues shifting to half-time, we have the opportunity to hire a new full time faculty member. We are in the process of reviewing applications, and we look forward to the process of selecting the next person that God brings to work alongside the faculty and students in the Department of Biology.



ALUMNI SPOTLIGHT: JULIE COBB

By Haley Hathcock



Ms. Juliana (Julie) Cobb may be a newer face to the Union Biology Staff, but she is not a new face in the Union classroom.

Though originally from Memphis, Tennessee, Ms. Cobb spent most of her life in Kentucky before she moved to Jackson to attend Union as an undergraduate student. After graduating from Union in 2013, she taught for a year at Liberty Tech High School in Jackson before pursuing her Master's degree in molecular biology and biotechnology from East Carolina University in Greenville, North Carolina.

While in graduate school, her specific research looked at the effects of organophosphate pesticide exposure on reproduction in the nematode worm *Caenorhabditis elegans*, and she also taught Anatomy and Physiology lab courses.

As full time Instructional Staff at Union's Hendersonville Campus, Ms. Cobb now teaches Survey of Microbiology, Pathophysiology, Survey of Biological Concepts, and Gross Anatomy clinical experiences for nursing students. In her free time, Ms. Cobb enjoys listening to podcasts, cooking, reading, and spending time with friends and family.

Why did you decide to come to Union as a student?

I have several family members who attended Union (I believe that I made number 9), so I had been familiar with Union for quite a while. I liked the idea of a receiving a Christian education, and that was definitely a deciding factor. I was really sold once I took a campus tour, though. Everyone was so nice and welcoming, and it was very evident that the school takes its commitment to Christian higher education to heart. I sat in on one of Dr. Bolyard's Bio-100 lectures during the tour, and I remember him being very deliberate about tying biblical ideas into the biology lecture. I thought it was interesting and not something I had experienced in other college courses to that point, and that type of integration of faith and learning was something I was after in a college experience.

Was there a particular professor that you had during your time at Union that made you want to pursue biology as a career?

I can't say there was just one, as many of them influenced me in different ways. Dr. Weaver was the one who first put the idea in my head, though. I took Senior Seminar with her, and on a paper I wrote, she commented that I should consider going to graduate school. I had also been working with Dr. Gruenke on my independent research project, so that gave me at least somewhat of an idea of what performing research in graduate school might be like.

Was teaching at the collegiate level your goal after graduating?

Not exactly. I knew that I wanted to go to graduate school and study molecular biology and genetics, but I wasn't sure if I wanted a career in industry or academia at that point.

Why did you decide to return to Union to teach?

I loved my time at Union. A large part of that was thanks to professors who were invested in their students and challenged them to be the best Christian scientists and critical thinkers that they could be. I would like to be a part of that for other students.

What is it like from the other side of the classroom, most specifically at Union as an alumna?

It is definitely a different experience, but it is one that I am enjoying. It is fun to see students taking in information that they will be able to use in their future careers.

New to our collection this month are two juvenile, yet-to-be-named pinktoe tarantulas, *Avicularia avicularia*. Todd Barnes ('21), a student from Dr. Bolyard's Biology 100 class, handled the tarantula without any qualms! Despite their reputation, tarantula venom has very low toxicity to humans.

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