

ALUMNI PROFILE: JUSTIN HUTTO

by Jenna Ward

After graduating from Union, Dr. Justin Hutto attended medical school at Southern Illinois University and graduated in 2011. He then completed a Transitional Year Residency at the Baptist Health System in Birmingham Alabama and is currently finishing up his third year of residency in Diagnostic Radiology at the University of Alabama Birmingham.

Justin had a lot of good things to say about Union, his experience that helped him get to where he is now, and the professors that had a huge impact on it.

Which professor had the biggest impact on your experience at Union? How?

Looking back, Dr. Carol Weaver had the biggest impact on me while at Union. I found her classes very challenging, but also very interesting. She always had very high expectations which pushed me to be a better student. Her tests and numerous projects were always detail oriented and very thorough, forcing you to learn the material very well and stay disciplined throughout the semester if you wanted to be successful. I feel like a lot of the successes I had during medical school, including being voted into the national medical honors society Alpha Omega Alpha, were in part because of the many things I learned while taking her classes at Union.

What was the hardest part you had to go through to get to where you are now?

The hardest thing I have had to accomplish thus far in my life is learning how to find a balance between managing a very busy work schedule and being a Godly husband and father. The first 24 years of my life were spent meeting my own needs whether they were spiritual, physical, or emotional; however, when you start a family you assume much greater responsibilities, and your priorities begin to change rapidly. Your life becomes devoted to providing for and meeting the needs



of your family. The Bible holds the man accountable for his family and taking that call seriously is a constant battle.

Did you always think you would be where you are at today?

Not always. The first 18 years of my life were consumed with playing baseball. I was blessed with athletic ability and for much of my early life, I saw myself pursuing

baseball as far as it would take me. An injury toward the end of my high school career really began to shift my goals in life and the Lord really used that situation to show me a different plan. Thankfully, I was also blessed with a great mind and amazing parents who pushed me academically and forced me to maintain excellent grades. I had always enjoyed the biological sciences and been fascinated by God's creation and pursuing a career in medicine seemed like a great fit. Shortly after I had made a decision to pursue medicine over baseball, a family friend introduced me to the field of Radiology and I immediately fell in love with it. The Lord then led me to Union University, SIU, and UAB where my love for biology, medicine, and radiology has continued to grow. I could not be happier with the decisions I have made and have been blessed tremendously throughout my life thus far.

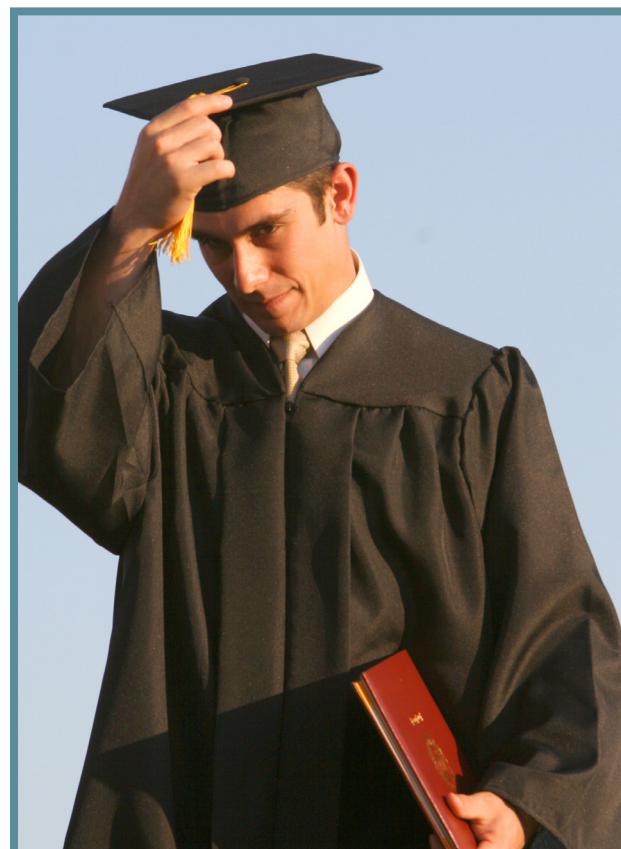
Any advice for students completing their undergraduate degrees at Union now?

I have several pieces of advice for undergrad students now. First, do what you love and not worry about what anyone else thinks or how long it is going to take you to get there. Getting to work in a career field that I love is a

tremendous blessing that I know many people don't get to experience.

Secondly, I would remind students to keep their priorities straight. Yes, undergrad is the greatest four years of your life (it absolutely was for me), but at the same time you have to learn to discipline yourself and to work hard. Making good grades in college is pivotal for being competitive in a very tight job market. The decisions you make now will have a tremendous effect on not only your life but also the lives of your future spouse and children. Being able to provide for your future family should be great motivation to spend that extra hour studying when you really don't want to. Always be mindful of Colossians 3:23 "Whatever, you do, work at it with all your heart, as working for the Lord, not for human masters."

Lastly, I would remind students to enjoy life to the fullest during undergrad. Graduating and moving on into the work force is exciting, but tough. Most people will never again get to live with a large group of their best friends and only have to go to class for a few hours a day. The relationships you build at Union you will treasure for the rest of your life. Take full advantage of your time on campus.



BioNews

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CHAIR'S CORNER



Dr. Mark Bolyard

Greetings from Jackson! Along with a cold start to spring, there are still new and exciting things going on in the Biology Department! The biggest change is the arrival of Dr. William (Bill) Thierfelder, who has moved into Dr. McMahan's position (of course, no one could actually "replace" Dr. McMahan!). Dr. Thierfelder comes to us from St. Jude Children's Research Hospital, and prior to that he was at Crichton (now Victory) College in Memphis. We look forward to introducing you to Dr. Thierfelder in an article in this issue. The other major news is the arrival of Dr. Samuel Oliver as the new President of Union. We will be interested to see what kinds of changes he brings to life at Union.

We are also excited to share plans for a cross-departmental and cross-campus collaborative project. Drs. Mahan and Davis (on our Germantown Campus) and Dr. Thierfelder are working with Dr. Lunawati Bennett in Pharmacy on a project that involves examining the regulation of thyroid hormones. We hope you enjoy reading about this new project.

Other projects are ongoing. The cold weather delayed significant progress on the greenhouse, although we hope to see construction begin shortly. Even though the project has started, additional financial support would still be greatly appreciated! The department has also been involved in the planning and fundraising for an educational building at the Cypress Grove Nature Park, just west of downtown Jackson. This facility will be a great place for us to take classes and continue the research we have going on there, and will be widely used by the local schools as well. The arboretum continues to be developed, with Dr. Schiebout taking the role as Director. We currently have 33 trees in the arboretum, with 15 adopted or in process. If you have an interest in adopting a tree or becoming a friend of the arboretum, please let us know! Tree adopters will be receiving a framed print of an art piece which has recently been completed.

Other exciting changes include the modification of our curricula to now include FIVE majors (General Biology, Zoology, Botany, Conservation, and Cell and Molecular). An article describing these changes is also included in this issue.

As always, we hope that you find time to come back to visit and to experience these changes for yourself!

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EDUCATION BUILDING FOR CYPRESS GROVE NATURE PARK

by Chance Mattox

Cypress Grove Nature Park in Jackson, Tennessee is one of the natural recreation sites protected under the Jackson Greenbelt initiative implemented in the late 1970's. This park has grown to be a wonderful place to walk, fish, or just simply enjoy the outdoors. More importantly, Cypress Grove protects one of Tennessee's most important endangered resources, a wetland habitat. Since wetland habitats are dwindling, Cypress Grove provides a sanctuary for a variety of waterfowl, trees and other plants, and indigenous wildlife. Several "education birds" are also housed at the Park.

In the past ten years, a goal of the City of Jackson and of members of the Biology Department of Union University has been to build an educational building for the park. This project began with Union's Dr. James Huggins and members of the city government agreeing to a partnership to build the educational center. The agreement was that if the funds could be raised for the building, then the city would provide the layout, labor, and a funding match for the project. The collaboration helped to create the Friends of Cypress Grove. This group is a non-profit organization whose purpose is to protect, preserve, promote, and enhance Cypress Grove Nature Park through education, recreation, fundraising, and service. The Biology Department of Union has been involved with this program since its foundation and is still leading the way in its purpose through their leadership and consistent work at the park.

Recently, the funds have successfully been raised for the Education Center, and the city hopes to start building in the summer of 2015. This building will provide an on-site facility that can be used for research that is currently being conducted by several Union Biology students and professors. One research project is being led by Dr. Michael Schiebout who is currently working towards properly identifying all of the trees and plants in the park. The building will also serve as a great meeting location for several courses, such as Wildlife Biology and Conservation Techniques. Additionally, the center will help provide a place for high school and elementary students to come on field trips to learn more about the park. The Education Center will also be a place the city can use to further educate the community about the park.

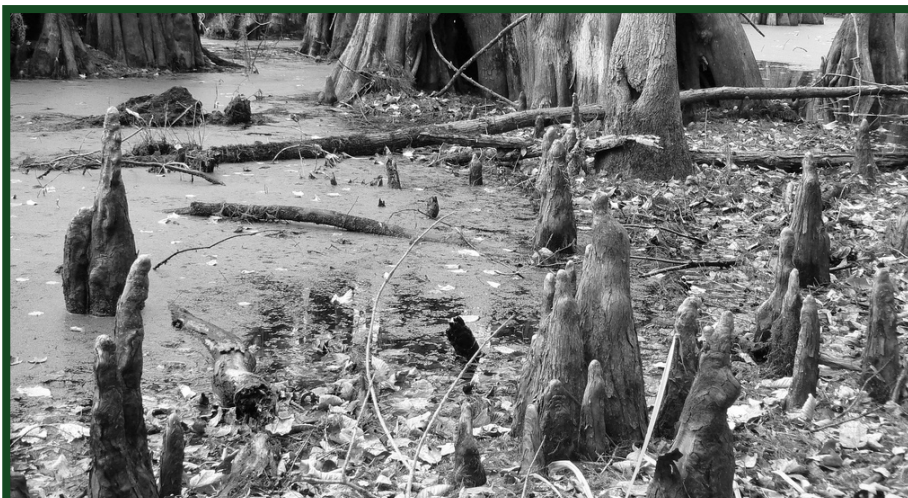
FACULTY PROFILE: DR. WILLIAM (BILL) THIERFELDER

by Rachel Horton

The Biology Department is proud to introduce our newest faculty member, Dr. William (Bill) Thierfelder. While he may be a newcomer to Union, Dr. Thierfelder brings quite a bit of experience from the field of Biology, and he is excited to share his passion for Biology with us. Dr. Thierfelder earned his undergraduate degree at Brown University and went on to earn his PhD in molecular biology at the University of Pennsylvania. After earning his PhD in 1993, he moved to Memphis, TN to do his post-doctoral work at St. Jude Children's Research Hospital in the biochemistry department. He then began teaching full-time at Crichton College in Memphis. He taught at Crichton for nine years and for the last six of those years he went back to St. Jude each summer to work in the biochemistry lab. In 2007, he needed a change and so he went back to St. Jude where he worked as a scientific manager in the Department of Pharmaceutical Sciences for William Evans, Pharm.D, Director and CEO Of St. Jude's. He then worked for an additional year in the Department of Immunology as a lab manager before coming to Union. When Dr. Thierfelder is not teaching or getting ready to teach, he devotes much of his time to his family. He and his wife, Judith, were married in 2000, soon after he began teaching at Crichton. He and his wife have three daughters. He enjoys music and he plays the piano and the guitar. While talking with Dr. Thierfelder, I learned that he enjoys bicycling and he hopes to be cycling to campus before long.

Dr. Thierfelder is working with Dr. James Mahan, Dr. Lunawati L. Bennett, and Dr. Faith Zamamiri-Davis on a research project that focuses on thyroid hormone related enzymes. The group is interested in how these enzymes are affected by different things, especially antioxidants. An article about this project is also featured in this Newsletter.

Dr. Thierfelder enjoys all types of Biology and he enjoys communicating his excitement for Biology to his students. He wants to help the students learn about how their faith is incorporated into their interest in Biology. We look forward to continue working with Dr. Thierfelder as a part of the Biology team.



Cypress Wetland

BIOLOGY AND PHARMACY PROFESSORS COLLABORATE TO STUDY THYROID DISEASE

by Dr. Faith Zamamiri-Davis

According to the American Thyroid Association (ATA), an estimated 20 million Americans have some form of thyroid disease, and women are at least five times more likely than men to have thyroid issues. While diagnosis and treatment protocols are improving, what causes thyroid problems and the mechanisms that account for wide variations in patient response to standard treatment are largely unknown.

Dr. Faith Davis was diagnosed with Graves' disease (an autoimmune condition that attacks the thyroid) in 2004, shortly after the birth of her first child; unfortunately, she did not respond well to conventional treatment methods. The result of this personal struggle was a growing knowledge of the mechanisms of thyroid disease, great empathy for the growing community of thyroid patients who are underserved by conventional treatment, and ultimately a passion to use both to insure that others would not suffer for years before finding individualized help.

The thyroid gland produces two main hormones T4 (a precursor) and T3 (the active form). T4 is converted to T3 by a highly regulated, multistep process involving the enzyme, Deiodinase 2 (DIO2). The standard treatment for patients requiring thyroid hormone is given in the form of synthetic T4, only. However, there is a growing body of literature showing that many patients, like Dr. Davis,

do not respond well to T4 treatment, alone, because of inability to convert it to T3. These patients typically respond better with T3 treatment as well. The details of why or how the conversion is compromised are not fully known; however, DIO2 and related proteins are thought to play a significant role.

In the fall of 2013, Dr. Davis, Dr. Jim Mahan, and Dr. Lunawati Bennett in Pharmacology began discussing ways that they could collaborate on a project that would explore the role of DIO2 in thyroid disease. The recent addition of Dr. Bill Thierfelder to our department also led to the incorporation of a student research component. Currently, he and Dr. Mahan are advising two undergraduate students as they write a proposal for preliminary projects to begin this fall.

Dr. Davis and Dr. Bennett share a research background in antioxidant regulation of gene expression and are

especially interested in how antioxidants might influence the conversion of T4 to T3. The project will begin by using Western blotting to detect baseline and inducible DIO2 protein levels, as well as the impact of various antioxidants, in various mammalian cell lines. Based on initial findings, future studies may use other model systems, such as mice, zebrafish or *Xenopus*. The relative simplicity of the last two models would also allow for the expansion of laboratory research to the Germantown Campus, where Drs. Davis and Mahan teach.

In addition to potential clinical and pharmaceutical applications, this collaboration will provide a unique opportunity for a group of scientists and students from different backgrounds and experience levels to work together, encourage and learn from one another, while seeking to honor God in the process and outcome.



Dr. Faith Zamamiri-Davis



Dr. James Mahan



Dr. Lunawati Bennett

BIOLOGY DEPARTMENT OFFERS NEW MAJORS

by Mary Katharine Williams

The Biology curricula have recently experienced some exciting changes. There are now five majors available to students instead of the three offered in recent years. Students interested in biology will now have the option of choosing Botany or Zoology in addition to General Biology, Conservation Biology, and Cell and Molecular Biology. Previously, Botany and Zoology were offered as a concentration for biology majors. A clear cut major without a "concentration" can be easier for students to navigate as well. "It's just a lot simpler and clearer for everyone

involved," said Molly Foster, a current sophomore who plans to major in Zoology. Dr. Huggins has also noted that prospective students have been confused by the distinction between "majors" and "concentrations", so this will make those conversations more straightforward.

One significant course change is that the 200-level Vertebrate and Invertebrate Zoology courses are being combined into a new course called "Zoology" (Biology 210), while Invertebrate Zoology will continue to be offered at the 300-level (Biology 301).

The catalog reflects other changes in the department as well, such as describing courses offered through the Au Sable Institute of Environmental Studies. Land Resources, Molecular Tools for the Field Biologist, Environmental Applications for Geographic Information Systems and Restoration Ecology are four of the many courses available at Au Sable that are not available at Union. These classes could be quite valuable to any Union biology student.