



Biology Department
1050 Union University Drive
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BIOLOGY: PRE-PHARMACY



Students study in the A&P Lab

AS YOU MAY HAVE HEARD, Union began its new program in pharmacy in the fall of 2007. What you may not have considered is how much this new program is affecting the Biology Department. Due to exciting changes in the field of pharmacy, doctors of pharmacy are taking more active roles

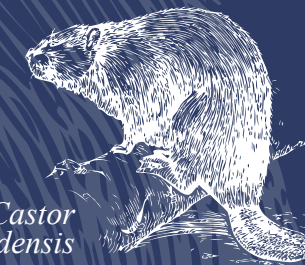
in the lives of patients, and they need to have a thorough knowledge of the biology of the human body in order to understand the action of the medicines that are prescribed to patients. A major in general biology or cell biology, along with a chemistry minor, continues to be of immense benefit to the pre-pharmacy candidate. As a result, the number of Biology majors at Union is increasing. We've added an Advanced Human Anatomy and Physiology course, and we've made it possible for pre-pharmacy students to complete a 3+1 option. This 3+1 option, although rigorous, allows a student to complete the necessary Union coursework in three years, with the bachelor's degree earned after the first year of pharmacy school. If a student opts either to delay going to pharmacy school or chooses another career option, only one additional semester of coursework is required to finish the degree. Either way, the 3+1 program is a great choice for a disciplined pre-pharmacy Biology major.

In addition to these changes in our curriculum, we are also excited regarding the construction of the Pharmacy Building. The new building will be located next to (and will be slightly larger than) Jennings Hall. This close proximity benefits our program in that faculty members in pharmacy are also interested in working with biology undergraduate students on their research. This building will provide not only much-needed space for this exciting program, but also will house new equipment, some of which will be accessible to the Biology Department, and the Pharmacy faculty will be in a better position to utilize some of our equipment as well. We are anticipating the purchase of some additional equipment shortly, but we continue to have a desire for equipment and resources to advance our program even further. Please visit www.uu.edu/advancement/giving/biology.cfm to see how you can be a part of making this happen.

DEPARTMENT OF BIOLOGY NEWSLETTER

VOLUME 2.2 | SPRING 09

*Castor
canadensis*



CHAIR'S CORNER



Dr. Mark Bolyard

Spring is finally here! The trees are blooming, the temperatures are getting warmer, and we are at the end of the 2008-2009 school year. Exciting things are happening! We have hired two new faculty members, which will bring us up to eleven. Dr. Jennifer Gruenke will take over responsibility for the Immunology course and help with other courses in the Cell Biology Concentration. Mr. James Kerfoot will contribute to our Conservation Biology major and help with teaching anatomy and physiology. We will introduce these two new members to you in upcoming newsletter articles. We can use the help, as Biology (along with English) is now the largest producer of student credit hours in the College of Arts and Sciences! Another important change is the introduction of Advanced Anatomy and Physiology courses for Biology majors and minors to better prepare them for their chosen careers.

For those of you who attended Union in the late 1970's, you might be interested to know that Dr. Robert Morgan, who was Biology Department Chair from 1975-1980, returned this spring to teach Anatomy and Physiology II and our Survey of Microbiology courses. Dr. Morgan and his wife are longtime friends of Mrs. Smith and her husband, and they have provided great help and support to Mrs. Smith as she continues to help her husband recover from his stroke. Please continue to pray for Mr. and Mrs. Smith.

We always enjoy hearing from you. Please continue to pray for us as we teach and minister to Union students. I know it's easy to ignore materials that come from the alma mater, but we hope you consider reengaging in a relationship with Union. I tend to disregard information from my undergraduate institution because we have significant worldview differences, and from my graduate alma mater because they really don't need my support. We hope that neither of those is the case with your relationship to Union. We are still Christ-centered and still need your support, both prayer and relational, and, if you feel led, financial. As a way of continuing this relationship, please fill out and return the enclosed postage-paid survey.

In the rest of this issue, we focus on two of our faculty members (Drs. McMahan and Weaver) and a recent alumnus who is now pursuing his Ph.D. We also introduce you to our new department secretary (Erica Tuns), as well as discuss exciting new changes to our curriculum to improve our ability to offer pre-pharmacy preparation. We hope you enjoy this edition of our newsletter.

INSIDE THIS ISSUE

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ALUMNI CONTACT PROGRAM

We've already gotten responses to our survey from those of you that we were able to email. Thanks! We've so enjoyed hearing from you and will continue to pray for you. You will find a survey response card included with this newsletter. If you've already e-mailed us your survey, there's no need to fill one out again. If we haven't heard from you yet, please let us know what you've been doing lately. We can't wait to hear from you!

Special thanks to Nathan Chatham, Senior Biology Major, for his contribution to this newsletter.

FACULTY PROFILE
by Blake Butler, Sophomore Biology Major



Dr. Michael McMahan

DR. MICHAEL MCMAHAN, University Professor of Biology, is no new face to the halls of Union University. Dr. McMahan is completing his 34th year of teaching, with 29 years at Union University. As a biology major at the University of Mississippi, Dr. McMahan

did not consider teaching as a career; however, after being employed as an undergraduate teaching assistant, he realized the rewards of teaching at the post-secondary level. After graduating from Ole Miss with a concentration in vertebrate zoology, he pursued a Ph. D. in invertebrate zoology at Louisiana State University to provide a more diverse background for teaching.

Dr. McMahan decided to teach at a smaller college where he could develop closer relationships with students. He initially became interested in Union University due to its location near family; however, as he learned more about Union, he was impressed with its academic reputation, potential for future growth, and Christian focus.

With the expansion of the biology department over the past few years, Dr. McMahan has seen a great deal of change. For instance, when he first started his teaching career at Union, there were only three faculty members

in the department and there will be eleven in fall 2009.

When asked what his hope was for Union students, he stated, "My hope always has been (and continues to be) that my students would see that the Lord's calling for them involves an expectation that they use the gifts that He has given them to the best of their abilities." Dr. McMahan, like many professors at Union, continues to let his faith direct his life through teaching, where he wants to see each student find his/her potential and profession that God has set for them. It is his desire that each student will "seek His guidance in all things and develop a Christian world-view that provides the proper framework for all things to come." Dr. McMahan remains passionate about getting to know students and guiding them in the journey to give their hearts over completely to the lordship of Christ.

his MS after only one year. In late March, he was accepted into the PhD program in the same department where he was completing his master's work. Simultaneously, he was awarded a pre-doctoral fellowship appointment at the Naval Medical Research Center where he could complete his dissertation research for a Ph.D. In keeping with his busy personality, he also accepted a position to coordinate clinical research in the Department of Orthopaedics at the Walter Reed Army Medical Center.

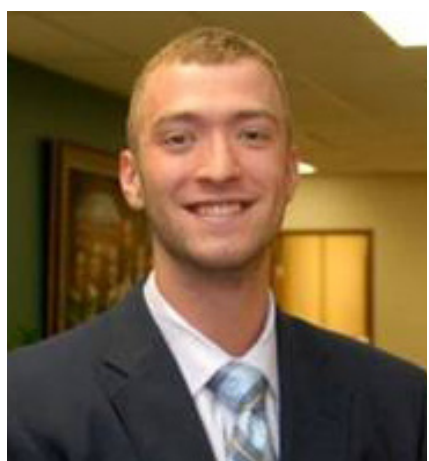
For the next 3-5 years, Hunter will be in Washington DC finishing his doctoral degree and from there, the world is his oyster—so the saying goes. Ultimately, he would like to end up in one of two places: working either as a research professor at a university, or as a medical scientist (MD/PhD) conducting translational medical research (research that takes lab work directly into patient care).

horizons. Upon his arrival at Georgetown University to pursue a master's degree in the fall of 2008, he acquired a staff consultant position in environmental science with the EPA using the eco-toxicology and environmental chemistry background he received in his Union coursework, and he also began work on his master's thesis. Having never studied virology in depth, he chose a mentor who is renowned in the scientific community for the study of hepatitis viruses.

Coursework at the graduate level, although challenging, was much different from Hunter's undergraduate experience. He believes the teachers at Union definitely prepared him for the rigors of graduate school in terms of knowledge and the way that graduate schools test. In both regards, he felt himself to be well ahead of most of his peers due to that experience.

After major progress in his thesis work during the spring semester, Stepp learned that he would be able to graduate with

ALUMNI PROFILE



Wesley Hunter Stepp

WESLEY H. STEPP—HUNTER, as many in the Union community know him—graduated from Union in the spring of 2008. Since his departure, he has experienced a world of opportunities, including a summer spent in France, broadening his

RESEARCH UPDATE
by David Tosh, Junior Biology Major



Dr. Carol Weaver

DR. CAROL WEAVER, Professor of Biology, has been a professor at Union for the past eleven years. Ever since she was a little girl growing up on a farm, she has been interested in science and how things work. Her interest in biology led her to Union, where she received her Bachelor of Science degree in biology. She received her Masters at The University of Missouri at St. Louis,

where she studied a certain species of nematode that infected pine trees. She later received a PhD from St. Louis University in Biology. Her PhD work involved studying *Histoplasma capsulatum*, a disease carried by birds. This disease was especially troublesome in St. Louis because St. Louis lies in a major avian fly way along the Mississippi River. Her research involved developing a PCR method for detecting a gene encoding protein unique to *H. capsulatum*. Dr. Weaver said that the research that she was doing was out of necessity because many people were getting sick in St. Louis, and there was no quick method for detecting this pathogen that didn't involve surgery.

Currently, Dr. Weaver is involved in a research project here at Union. Dr. Weaver is working with the USDA Wildlife Agency to determine if *Francisella tularensis*, a pathogenic bacterium that causes tularemia, is present in the beaver population of western Tennessee. Very little research has been done on the beavers in West Tennessee, and

F. tularensis has not been documented here. Liver samples from the beavers are being collected by the USDA, and DNA is being extracted in the lab. A PCR method has been created to test for the presence of the bacterium, and initial results from those tests suggest the presence of the bacterium. Because *F. tularensis* can be passed from an infected organism to humans by contact and through the air, this research could benefit many people in western Tennessee, including trappers.

Dr. Weaver is interested in having students work with her on this research, as well as on other projects such as testing water samples, and looking for other pathogenic bacteria and parasitic organisms in beavers and other indigenous animals. Dr. Weaver's research is very beneficial to the community, especially when more people are going outside and enjoying nature. Research students will have a chance to help their neighbors be safe by helping them to be well informed before going out.

STAFF PROFILE
by Gusty Paffrath, Senior Biology Major



Mrs. Erica Tuns

ERICA TUNS is one of the newest members of the "White Hall family", working as a secretary in the Biology and Chemistry departments. She is currently participating in the Missionary-in-

Residence Program at Union University which provides temporary housing for missionaries serving on stateside assignments. Hosting missionary families, such as Erica and her husband Cornel, provides a wonderful opportunity for faculty and students to meet missionaries and discuss life, missions, and cross-cultural experiences. Erica's background in missions provides insight on these topics. In the past, she has served in missionary work in East Asia and also has worked with Chinese and other international students at Iowa State University, welcoming them and sharing Christ with them. Her insight on global mission work is not limited to her own experiences. Her husband Cornel (who works for Security on campus) has also been a faithful servant in global efforts. For instance, Cornel served in Romania for eight years, training and equipping

local pastors and church planters with the means to preach God's Word faithfully. Cornel and Erica also were able to lead a team of Union students to Romania on a GO Trip over spring break. As one can imagine, it is an adjustment living again in the United States, especially on a college campus. But the transition for both Erica and Cornel has been a rewarding experience. Erica stated that "the experience has been an adjustment, but mission work is not just limited to overseas, and I have been involved with ministering to a number of students on campus during my stay." The newlyweds will continue living on-campus until their expected return to Romania in the spring of 2010. We are grateful to have the Tuns family as well as other families serving as Missionaries-in-Residence at Union University.