

Lifelines

Fall 2011



Biology/Allied Health Department

Biology Student Research



Tyler dos Santos beginning measurements on an Olive Ridley sea turtle on the beach of Punta Raton, Honduras.

Our Biology students are getting involved in research projects both in the department and at off-campus sites. Tyler dos Santos worked in Punta Raton, Honduras, Martina Houmann is currently working in Southern's Biology department on her Southern Scholars research project, and Naomi Jackson worked in the Biochemistry lab at

that every year approximately 1.5 million children die of diarrhea, an illness often contracted by contaminated water. Most of these people live in dire conditions, having little money for food, let alone a water purification device. Martina is constructing a simple water filter, made from cheap, readily available materials so that people in developing countries can have access to clean drinking water. The filter is constructed of PVC pipe, charcoal, and sand, all things that can be made or purchased at a local market. Over the next couple of months, Martina will be doing tests to see how efficiently it can filter out *Escherichia coli* and other contaminants in water. If this filter is effective, the model can be used in developing countries to increase the availability of clean water.

Naomi Jackson contributed to research in the Biochemistry department on the campus of Loma Linda University this past summer. Research in this oncology laboratory focused on exosomes, vesicles produced by a wide range of mammalian cell types that function in intracellular signaling, and the inhibitor of Survivin, an apoptosis protein. Naomi says, "What is really interesting is that the specific area that I was researching was briefly presented by Dr. Joyce Azevedo in my Cell and Molecular class at Southern and in a couple of paragraphs of our text. Amazingly, my lab expounded on those two paragraphs in ways that showed there was so much more to learn. Specifically, my goal was to uncover the mechanism of uptake of Survivin. Survivin is an important protein because it is very selective to cancer cells. Once it is taken up by cancer cells it promotes cellular proliferation, tumor cell metastasis, and resistance to radiation therapy." She continues, "Using immunocytochemistry (antibody targeting) and confocal microscopy, I was able to confirm the involvement of two important receptors in Survivin's uptake." She was also able to

Loma Linda University.

Tyler dos Santos spent four weeks in Honduras studying Olive Ridley sea turtles in a small place called Punta Raton. He was given this opportunity by Dr. Dunbar with all tuition for the class paid for by Loma Linda University, and Tyler provided his own travel funds and expenses while in Punta Raton. He received two credits of Research in Biology and thought the experience was well worth the time invested.

Every night the team would go out for three or so hours and walk the beach looking for turtles. After a turtle was found, the shell was measured, the turtle tagged and photographed, and eggs were counted. All the information was put in a database containing the turtle population around the bay. Dr. Dunbar and students working with him also educated the villagers of Punta Raton to help increase their income by teaching them trade skills. Tyler thoroughly enjoyed himself while on Punta Raton and would do it again in a heartbeat.

Martina Houmann has a strong interest in missions work and knows that people are dying for lack of clean drinking water. UNICEF states



Power for Mind & Soul

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Tim Trott, PhD
Neville Trimm, Jr., PhD

Notes From the Chair

God's blessings have been poured out upon this department.

Research – About 15 students are currently involved in research on and off campus. Faculty have obtained four on-campus research grants.

Students – Over 200 biology majors registered this fall, plus 160 in allied health.

Faculty – We are privileged to have highly qualified new faculty, but biology and chemistry are still at the highest student per teacher ratio in the university. We hope to add additional faculty soon.

Alumni – We are blessed with

donations from alumni that have allowed us to strengthen our courses and research. Thank you so much!

Concern – The strategic planning committee is considering closing the main road through campus for increased student safety. I am concerned that the top two probable roads around campus cut right through the unparalleled treasure of the biology trails. If you have comments, please direct them to the president's office (423-236-2801).



Keith Snyder

Dendrochronologist Visits Ecology Class

On November 15, 2011 Ecology students were treated to a visit by Dr. Henri D. Grissino-Mayer, world renowned dendrochronologist and University of Tennessee/Knoxville professor. During his visit, he explained the intricacies of dendrochronology. He explained the science of tree rings and how they can indicate past events such as drought and fire. The rings also indicate the age of the tree and give perspective in climate and habitat in the surrounding area. He used illustrations as well as samples of trees to further explain the concept to the class. After the lecture, the students hiked up the Biology trail to get hands-on experience on how to core trees. Along the way, Dr. Grissino-Mayer stopped several times to look at old tree stumps and gave the approximate age of the tree. He also was able to point out trees that had experienced a variety of climate changes, which gave life to his lectures.

Dr. Grissino-Mayer continued in the evening and gave an E.O. Grundset lecture on the same topic. Speaking to a packed room, he explained how dendrochronology was applicable to everyday life. He gave examples of how he used the science of tree rings to help solve a murder case. Also, his expertise in tree dating was used to verify the authenticity of a famous 19th century violin. He included his graduate students and discussed the

field work in which they were involved. Citing his love for nature as a main reason for his interest in trees, Dr. Grissino-Mayer concluded his lecture by urging students to consider dendrochronology as a field of study in the future.

Dr. Grissino-Mayer supervises Tara Weeks' coring a tree.

Biology Student Research Continued from page 1

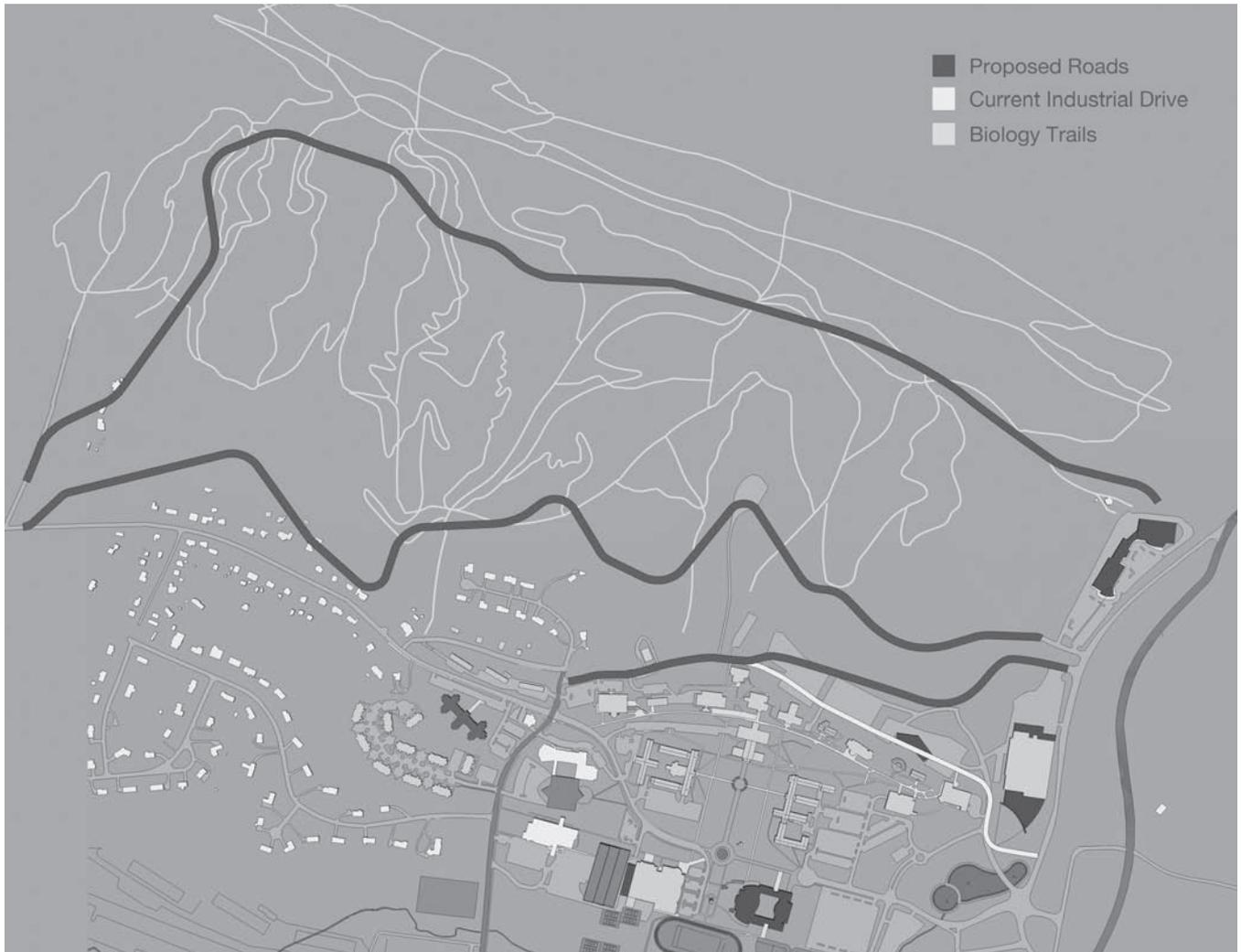


Martina Houmann and her water filter model.

confirm her decision of wanting to pursue research in her career. "Overall, my experience at Loma Linda was a blessing!" During the school year at Southern, Naomi pursues her interest in research with Dr. Ben Thornton, an environmental toxicologist in the biology department, studying the effects of vitamin C supplementation on pesticide detoxification in *Drosophila melanogaster*. Dr. Thornton states, "Vitamin C is thought to promote the expression of a special set of proteins known as cytochrome P450s. These special proteins aid in detoxifying poisons, like pesticides." Naomi goes on to explain, "Because many organisms, including humans, possess similar detoxification systems, we can hypothesize that the results of these studies will be directly applicable to humans. We live in a pesticide-dependent world and are continually being exposed

to these poisons. Finding ways to limit pesticides exposure and enhance detoxification is paramount." Dr. Thornton is active in promoting and working with students in undergraduate research here at Southern. He says that, "Undergraduate research opens the minds of students to new possibilities as they seek God's leading in their lives." For Naomi, "The most important thing that I have learned is that anytime one asks a question in science there is a flood of questions that follow behind. I look forward to discovering and doing research here at Southern."





Possible road options to limit on-campus traffic. A fourth possibility is utilizing the existing College East Drive.

Alumni News Corner



Traci Carmichael Sherbondy (08) graduated from Southern Adventist University with an associate degree in Allied Health and entered the Physical Therapy program at Andrews University the following August. The program at Andrews is nine semesters comprised of class instruction, lab experiences, and clinical training. Traci graduated with her Doctorate in Physical Therapy July 2011 and is currently working for Stellar Therapy Services in Chattanooga, Tennessee. She works with both orthopaedic and pediatric populations. Within the Hamilton County schools, Tracy helps children develop gross motor skills that are needed to participate more fully within their educational environment. She is grateful for God's direction in her life and thankful for the opportunity to serve others. Traci and her husband Derek live in Ooltewah—close to Southern's campus—where



Derek is employed as a network analyst. In their free time, they enjoy participating in intramural activities at Southern, spending time with their puppy, Zoey, and traveling.

Pre-Professional Campout

The first weekend of October, the Pre-Medical, Pre-Dental, and Pre-Pharmacy clubs hosted a Pre-professional club campout at the Gee Creek Campground. There was a turnout of about 30 officers and members, with Dr. Snyder and Mrs. Lee attending as sponsors. Although it was a little chilly at night, everyone seemed to enjoy the campout. On Friday night, there was a vespers around the campfire followed by a s'more-making session. There was plenty of food, especially at breakfast with scrambled eggs and pancakes, some were even made by Dr. Snyder. On Saturday morning, there was Sabbath school followed by a testimony given by Laurel Guthrie about her time in Ethiopia. The official campout ended by noon and people were free to stay or leave as they wanted.



Biology students listening to Laurel Guthrie's testimony Sabbath morning at Gee Creek campground.

Meet Our Newest Professors



Dr. Tim Trott joined our department August 2011.

Many changes have recently come to the Biology/Allied Health Department at Southern. Along with the growth in the number of students we are teaching, has come a growth in the number of professors we have working in our department.

This fall semester **Dr. Timothy Trott** joined the faculty of the Biology/Allied Health Department. Dr. Trott comes to us from Atlantic Union College (AUC) where he taught in the Biology department for eight years, and served as the director of their Honors Core Program. A New England native, he received a Bachelors of Science degree in Biology and minor in Chemistry from AUC in 1997. He then accepted an invitation to the Cell and Molecular Biology program at the University of Vermont where he completed his doctoral studies focusing on the structure and functional roles of plant cell wall proteins in 2003. At Southern, Dr. Trott will be teaching several sections of Microbiology, Genetics, and Issues in Science and Society. He also is beginning to establish his research program here at Southern, encouraging undergraduates to discover the thrill of original research.

Dr. Trott brings his most precious gifts to Southern, his wife Selena and their three young children, Brianna (8), Aliya (6), and Caleb (2).

He enjoys being a home-handyman, spending time with his family, and pretty much any outdoor activity.

team.

Valerie Lee is another of our new professors you will see walking the halls on the second floor of the Hickman Science Center this semester. Valerie's responsibilities include assisting with General Biology and Anatomy & Physiology. She is well suited for this task, having a BS in Biology from Union College and a Masters in Biology from Loma Linda University. Her particular interest while completing her MS was the song of the Bahama Oriole (*Icterus northropi*). The "Maxwellites" (i.e., students



Dr. Lucinda Hill working on material for the Origins exhibit in the department hallways.

Lucinda Hill, M.D. has worked in the Biology/Allied Health department as a temporary professor for over a year and has taught classes in Anatomy and Physiology, Human Anatomy and General Biology labs. Her love for teaching and interacting with students has been obvious and the Biology faculty voted for Dr. Hill to join the staff as a full time, permanent member during Fall semester, 2011. We are delighted that Lucy has agreed to join our

at Southern who attended Maxwell Adventist Academy in Kenya) might recognize Valerie since she served as the Girl's Dean there as a student missionary during the 2005-2006 academic year.

In October of 2010, Valerie married James Lee—a mechanical engineer. Southern students who like the outdoors might like spending time with Valerie rock climbing, camping, or hiking—as these are some of her favorite hobbies. For those who prefer the indoors, maybe she could spend time mentoring you while scrapbooking, cooking, or over a game of Rook.

We are pleased to have Valerie join Southern's Biology/Allied Health faculty. We look forward to many opportunities with her to share biology and God with our students.



Valerie and James Lee take a brief rest during one of their many hikes.

Snapshots



▲ Kaitlyn Seheult and Cassie White try to put up a confusing departmental tent.



▲ General Biology class camping trip in the Smoky Mountains.



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