

Lifelines

Winter 2011



Biology/Allied Health Department

Research in Ecological Assessments

Many threats to the health of our local ecosystem can go unnoticed for decades without the aid of environmental monitoring programs. Students in the Ecology class have helped to design and implement a water quality monitoring program for the Wolftever watershed surrounding Southern Adventist University. Monthly, during the fall semester, students collected water samples from streams at four different sites and measured physical parameters such as temperature, salinity, turbidity, and flow rate. Using portable spectrophotometers, chemical analyses were conducted in order to monitor the presence and concentration of more than 15 different environmental contaminants. This effort, in conjunction with biota surveys conducted by the Tennessee Valley Authority, will serve as a sensitive indicator of possible threats to the aquatic habitat in our local watershed. With the proper funding, this program may expand to allow our students to serve rural residents by testing the quality of their well water.

The Ecology class has also taken advantage of our biology trail system to set up a field research site where they are in the process of permanently tagging, identifying, and measuring all the trees in the site. Yearly measurement will be made on each tree thus documenting the rate of growth and demise of each species. In collaboration with the University of Tennessee at Chattanooga, Southern students will continue this research by studies in Dendrochronology, gathering information about past growing conditions by studying tree rings. Relative age will be determined for all trees over a specified size. This study will allow students to document the process of ecological succession on our campus.

This year, we have introduced a new course into our biology offerings, Ecotoxicology. Ecotoxicology integrates course work from biology, chemistry, physics, and mathematics. Students are introduced to various classes of toxicants and learn how they get into the environment, their dispersal, fate, and the affects they have on animals, from the single organism on up through the ecosystem. Research is a core component of this course. Students learn how to conduct bioassays to determine the toxicity of various environmental contaminants. They then develop and



Sabine Monice and Naomi Jackson work on their Vitamin C research project.

conduct an independent research project to determine factors that affect the toxicity of these compounds. Currently, Naomi Jackson and Sabine Monice are conducting novel research to determine if vitamin C in the diet increases resistance to pesticide exposure by enhancing detoxification of the harmful substance. Research such as this has direct implication for human health and dietary supplementation. A major goal of this class is to provide students with research experience in the field of Ecotoxicology and for the students to present their work at the annual meetings of the Tennessee Academy of Science and/or the Association of Southeastern Biologists. Students learn how to create solid experimental designs and to present their results in a professional manner that will stand up to peer review, analysis, and evaluation.



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Notes From the Chair

What a wonderful time of year. The Bradford pear trees are done blooming, the daffodils have long since nodded their bright yellow heads, and the wildflowers are all racing to open. The seniors are fighting off “senioritis” in order to graduate, and the freshmen are starting to breathe a little easier now that they have almost one year of college under their belts.

It is always good to see what God has wrought. In this newsletter, we want to share with you some of the joys we get to experience daily. As a department, we are concerned that so few of our students go on to get a Ph.D. in biology. We find that this is such a fulfilling career, that it is hard to understand not wanting to move forward, break new ground in research, and help mold lives to represent Christ to others in the classroom. So this year, we have started to meet in the back of the cafeteria several Fridays a month, letting students share concerns, wishes, and information about becoming a professional biologist. There are so many areas of study, so each person chooses just one to present to the group.

They do the background work, and share what they have found with the others. Sometimes they request a professor to present a specific area of interest. The group is growing and meeting a real need in our department.

Practical application is a key to helping students check out different areas of professional interest. It also helps them remember what they have studied. Dr. Ben Thornton has joined us this year, and has already made a significant impact on our program in practical application of “boring” classwork. He has helped the students test water samples throughout the local watershed, teaching them practical and applicable skills that can be used in the future. He has also started a multi-year research project in part of the Biology Trail woods. This is teaching our students all aspects of research, and will hopefully ignite a passion for learning that will be carried throughout life.

Another opportunity to understand professionalism is active involvement in the Tri Beta National Biological Honor Society. Southern has been a chapter for over 35 years,

and each year students with good grades in the biological sciences are invited to join. The society offers an opportunity to publish in its journal and helps propel students toward success.

Dr. S. Jack McClarty embodies the kind of success that our students attain. Jack grew up here in Collegedale, and availed himself of the many opportunities in music, sports, and science that Southern provides. After finishing medical school and his residency in Anesthesiology, Jack has chosen to come back to his home stomping grounds in Chattanooga. The foundation built here at Southern well prepared him for his future. We appreciate his willingness to be a role model for our students.



Keith Snyder

As you go about your daily activities, look for evidences of God's leading in your life. Share them with others. That is the best kind of teacher.

“You’re So Smart, You Should Be a . . . Ph.D.”

Every Friday, a handful of biology and other science students can be seen eating lunch with one or two biology professors in the back of Southern's cafeteria. These students are investigating careers in biology related fields. Comments like “You spend half of the summer on the beach in Honduras to study sea turtles” or “Acceptance into a Ph.D. program requires good grades but also undergraduate research experience” can be heard. “Neuroscientists are in demand and paid well” might be another comment heard if

you join this growing group of serious future scientists. Some students swap information about summer internships. “I need the contact information for that zoo internship.” Current research projects and ideas for next semester are shared and occasional journal articles are mentioned covering a variety of biology related careers. These students are quite aware that Biology ranks 7th out of 200 best jobs “<http://www.careercast.com>”.

Each week, a different student reports on a biology related career such

as nanotechnology, marine biology or animal behavior and ecology. Occasional visiting guests have ranged from visiting Ph.D. biology professors to marine biologists. Most students' topics are non-medical careers although two students are considering an MD/PhD career. The group is open to any student interested in biology related sciences.

“You don't need straight “A's” to excel in a research-based degree,” comments Ben Thornton, Ph.D. professor of biology, “but you should have some undergraduate research

experience and a strong desire to pursue answers to difficult questions.” Thornton goes on to note that students can begin preparing today for a career in biology. “Choose a journal article this afternoon and read about a field that interests you,” he tells students.

Keith Snyder, chair of the biology department, tells students that “Exposure [to various careers] is

very important. Google “Jobs in biology” and see what comes up. Follow interesting links---expand your horizons.” He continues, “there are so many options that it is mind-boggling.”

“I truly appreciate the Friday lunch meetings,” says Emily, a freshman biology major. She relates it is difficult to see “other options than a medical career at the end of a bi-

ology degree” with the number of hopeful premedical students in her class. “This (Friday) group gives me....motivation to explore numerous possible careers in biology.” She’s not yet certain what science career she’ll choose, just like many college students, but she will soon know about the many possibilities.

Alumni News Corner



A native of Collegedale, Tennessee, S. Jack McClarty attended Standifer Gap Elementary school and then Collegedale Academy prior to enrolling at Southern Adventist University in 1995. Along with sports and music, he always had an interest in the sciences, which led him to pursue a major in biology under the advisory of Dr. Azevedo. Specifically enjoying the gross anatomy lab with Dr. Snyder, Issues in Natural Science and Religion and Histology with Dr. Ekkens, and research initiatives with Dr. Foster, he cultivated a desire for further education. Always encouraged by his parents, Drs. Jack and Wilma McClarty--both former educators at South-

ern, he decided to make a career in medicine, moving to Loma Linda University in 1999 to begin medical school.

After four study and work-filled years, the new Dr. McClarty found that he missed the South, and came back to Emory University in Atlanta for a residency in Anesthesiology. In spite of a strenuous schedule in medical school, he still found time to meet his wife, Susan, at Loma Linda. Also a Southern graduate, she was getting her graduate degree in Marriage and Family Therapy, and they ultimately got married just days before residency began at Emory. After countless nights on call, early morning lectures, and

a written and oral board exam, Dr. McClarty was finally a board certified anesthesiologist and was fortunate enough to find a job back home in Chattanooga, Tennessee, working for Anesthesiology Consultants Exchange, based out of Erlanger Hospital. Like his parents, he desired to remain involved in academics, and currently provides volunteer lectures at the University of Tennessee at Chattanooga, School of Nurse Anesthesia. Never forgetting the love of music and sports, he continues to perform with the East Tennessee Symphony Orchestra and plays golf and softball whenever he gets some free time--though since the birth of their son, Boston, most of the free time is now spoken for! In all, he had a marvelous experience at Southern, felt well prepared for his future career from the education he received, and encourages all who may follow in his footsteps at Hickman Science Center that it was definitely worth the effort.



TriBeta Biological National Honor Society

Beta Beta Beta (TriBeta) National Biological Honor Society was founded in 1922 at Oklahoma City University by Dr. Frank G. Brooks. It was initially meant to stay on the Oklahoma City's campus, but quickly became a national organization. What started as a biology fraternity is now divided into regional and district groups, each of which holds annual conventions. In 2008, there were 521 chapters. In total, over 210,000 young biologists have been inducted as regular members of TriBeta, in addition to thousands of associate members.

TriBeta National Biological Honor Society is an organization for students, particularly for undergraduates. The organization defines itself as "an honor and professional society for students of the biological

sciences." It was created to stimulate students in the field of biological research and with their academic endeavors. The society seeks to encourage scholarly success in the field of biology.

The national organization of TriBeta is active in journal publication. The quarterly journal of Beta Beta Beta Biological Society (BIOS) has been in publication since 1930. It has three main purposes: to distribute information that pertains to affairs of the Society, to distribute articles written by its members, and to increase the general biological knowledge of its readers. The organization is also involved in scholarship and award presentation.

The Southern Adventist University chapter of TriBeta was started in 1975. It was founded with the

intent to encourage undergraduate biological research on campus. Besides coordinating research, TriBeta at Southern has been involved in tutoring basic sciences (Chemistry, Biology, and Mathematics) at Collegedale Academy. The club also joins the Pre-Medical Club during social functions.

Biology majors who demonstrate academic prowess in their biology classes by maintaining a 3.0 GPA are invited to join the club as regular members. However, the club is not exclusive to just biology majors. Students who show interest in biology classes who are not biology majors but who fulfill the academic requirements may also apply for associate membership.



Tri Beta Officers 2010-11: Alex Yeo, Jon Creech, Nicolas Ludi, Alex Arquitt, Stephanie Laroche, Cassie Brauer

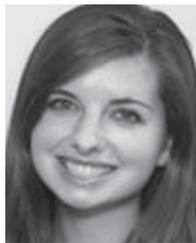
Biology Graduates 10-11



Jon Creech
Biology



Chris Christiansen
Biology



Alyssa Erskine
Biology



Aldo Espinoza
Biomedical



John Howe
Biology



Stephanie Laroche
Biology



Esther Lee
Biomedical



Jin Lee
Biomedical



Jordan Netzel
Biology



John Shim
Biology



Alex Yeo
Biomedical

No picture available:
Linna Reyes, Biology

Allied Health Graduates 10-11



Cesar Bernardino
AS Occupational Therapy



Karen Briggs
AS Health Info Admin



Brittney Burnett
AS Physical Therapy



Hal Conley
BS Clinical Lab Science



Autumn Davis
AS Physical Therapy



Andira Ferguson
BS Clinical Lab Science



Ellie Fernandez
AS Physical Therapy



Daniel Gonzalez
BS Clinical Lab Science



Candice Granger
AS Occupational Therapy



Janelle Junn
AS Dental Hygiene



Erika Mikkelsen
AS Physical Therapy



Travis Moore
AS Physical Therapy



Lauryl Murphee
AS Physical Therapy



Ney Rivas
AS Physical Therapy



Christine Sailo
AS Nutrition/Dietetics



Jill Sampson
AS Nutrition/Dietetics



Jenna Schleenbaker
AS Occupational Therapy



Michelle Stollenmaier
AS Occupational Therapy



Sean Stultz
AS Occupational Therapy



Dyan Urboda
AS Occupational Therapy



Brittany Weis
AS Physical Therapy



Jillian Zollinger
AS Physical Therapy



OLD GREENHOUSE GETS NEW MAKEOVER



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