



BIOLOGY/ALLIED HEALTH DEPARTMENT

Insights From the Professor

Why Medical Laboratory Science (MLS)? Why Not?

Although most of their work goes unperceived, medical laboratory scientists (MLS) play a pivotal role in the medical field, one that aids both patients and their physicians. Medical laboratory scientists (sometimes referred to as clinical laboratory scientists or medical technologists) are responsible for performing a variety of tests on patient samples with the goal of detecting different diseases. Examples of common laboratory tests include detecting anemia, diagnosing diabetes and strep throat, and providing blood typing for a transfusion to an accident victim. These laboratory professionals also contribute to wellness testing, help guide treatment, and monitor patient progress. An estimated 70% of decisions regarding patient treatment are based on test results performed by medical laboratory scientists. MLS professionals provide answers to life-and-death decisions every day.

These scientists have significant responsibilities and duties within the healthcare field. However, unlike physicians or other advanced healthcare professionals, MLS professionals must only complete a four-year degree in order to practice in their field.

At Southern Adventist University, after three years of undergraduate coursework, the student applies for the clinical (senior) year program at Andrews University, which is fully accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). The clinical year prepares students with a combination of lectures and clinical rotations in hematology, clinical chemistry,

microbiology, mycology, parasitology, immunology, immuno-hematology (blood bank), and sometimes genetics. In addition, during the final 20 weeks, the student will work side-by-side with healthcare professionals to obtain hands-on experience, which many times translates into job offers before the student even graduates.

An MLS degree opens doors to careers not only in medical labs around the world, but also in pharmaceutical companies, public health centers, veterinary offices, research facilities, criminal justice, etc. The degree also provides excellent preparation for medical, dental, or graduate school.

The profession is growing “much faster than average,” according to the [US Bureau of Labor Statistics](#), with a 22 percent increase in employment projected from 2012 to 2022—twice that of all other occupations. The salary for laboratory professionals varies according to their level and location. According to the American Society for Clinical Pathology (ASCP) 2017 Wage Survey of Clinical Laboratories in the United States, the national average is \$61,112 per year and \$78,267 per year at the supervisory level. Salaries are higher for those who become lab directors or faculty members.

Consider focusing your interest in biology or chemistry into this more specific and marketable major. If you enjoy the challenges and rewards of medicine and science, this might be the profession for you!

By Noemi Gonzalez, MS, MT (ASCP)

Life Sciences

Students in Service

Erin Burke at Nile Union Academy in Cairo, Egypt

Since arriving as a student missionary in Egypt, I've learned that God looks out for you in a whole new way when you're in the mission field. For example, by some miracle, one of my housemates was home when our washing machine

There I stood, on Monday of the second week, surveying the science lab, my own personal, un-air-conditioned queendom, where each day I reign over 79 students in four grade levels. At the moment, my queendom was covered in broken glass, melted crayon, and papier-mâché. I hoped my students knew something about rocks now.

I should probably explain that the mess was a result of my decision to actually go through with one of my more questionable ideas for teaching earth science. The broken glass wasn't supposed to be there, but unfortunately, the melted crayon and papier-mâché were all planned.

Classroom management had been a real circus so far. The sophomores...alas, the sophomores...that class was teetering on the edge of chaos every second of every day. Students left their seats, shouted to their friends, and at least once a student tried to escape. For reasons I cannot recall, I decided that the sophomores were the class that should do the melted crayon activity.

We were talking about igneous and sedimentary rocks. Igneous rocks form when lava cools, and sedimentary rocks form when layers of silt are subjected to extreme heat and/or pressure. For the activity, the students would pour hot melted crayon into a petri dish and watch it harden to represent igneous rock, and they would create layers of papier-mâché

in another petri dish to understand sedimentary rock.

Honestly, I don't know what I was expecting. The class was so loud and in so much chaos that I had to shout for the entire 40-minute period. Then a student in the back knocked over a beaker and glass shattered all over the floor. The reaction was indescribable. The kids couldn't hear my instructions to move away from the broken glass, and after class at least three people walked all over the pile of shards because they "didn't know it was there." Yep, that class did worksheets for the rest of the week.

Thankfully, not every day on the job has produced such spectacular results as the Crayon Apocalypse. Over the next two weeks, I worked very hard on my classroom management skills (better defined as "managing your own personal zoo"). This, combined with a small mountain of discipline sheets and office referrals, put the fear of God into (most of) the students, so instead of spending every second fending off chaos, I could actually start getting to know them.

The first project for the freshman class was to learn about four types of earth scientists—geologists, meteorologists, oceanographers, and astronomers. One of their assignments was to "draw something that each scientist would study." While they worked, I wandered around the room, and once they figured out that I would come to each individual's desk to admire his or her work, the whole class nearly erupted in excitement.

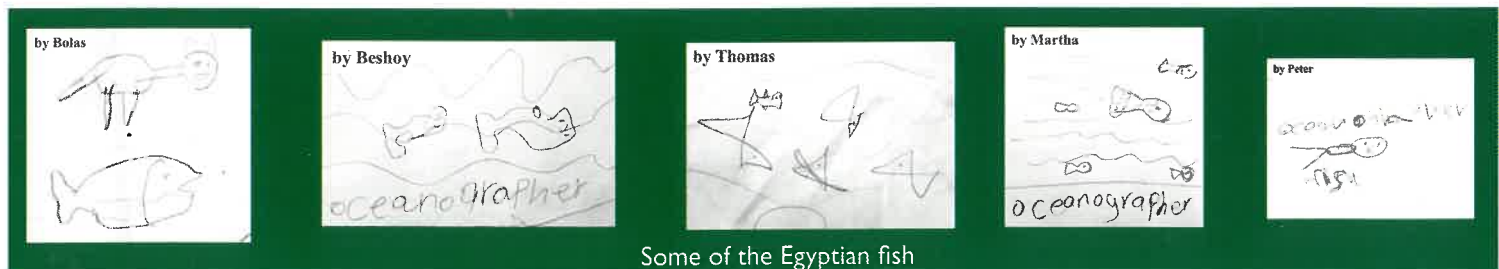
The drawing assignment produced some rather interesting results, particularly the requirement for drawing something that an oceanographer would



Erin with Stefani (another staff member to the right) and some students after vespers on Friday night

randomly burst into flames. Yep, it's been an interesting two months.

To set the stage, I am the science teacher at Nile Union Academy in Cairo, Egypt. I teach Earth Science I to freshmen, Earth Science II to sophomores, Chemistry to juniors, and Physics to seniors. When I arrived, I was given strict instructions to teach from the textbook—except for the minor detail that students in three of my four classes did not have textbooks. So I've ended up writing all of my own curriculum—notes, homework, quizzes, tests, and projects. For the first few weeks of school, the reagents in the science department consisted of water, so I was forced to get creative with my hands-on activities. This produced some mixed results...



Some of the Egyptian fish

study, as shown in the photos on the previous page. While I squinted at their creations, the students gleefully informed me that “No, Miss, this is an Egyptian fish!” Hands down, it was one of the best days I’ve had with any class.

To be honest, for most of my time here, I haven’t felt much like a missionary. Instead of giving Bible studies or such, I’ve been scraping melted crayon off of desks and turning in discipline reports. But then there are days when my students

draw Egyptian fish, or I see miracles like my housemate finding the combusting laundry. So I count my blessings where I can find them, fiery washing machines and all.

By Erin Burke, junior biology major

Alumni Spotlight

Naomi (Jackson) Franco, PhD Candidate

Shortly after graduating from Southern Adventist University in December 2012, I found myself on a



Naomi and her husband, Nefty Franco

flight across the globe bound for foreign lands. The Southern missions bug had bitten me, and I answered the call to serve as an English teacher in Thailand for a semester. Would I do it again? A million times yes! I highly recommend serving as a missionary. The experience was rewarding, the new friends unforgettable, and the timing was perfect as I awaited the results of my graduate school applications. My hope was to be accepted into Loma Linda University’s (LLU) Basic Sciences Doctoral Program. I’d fallen in love with their

research program after participating in two positive undergraduate summer research experiences there. When I got the acceptance call, I was thrilled!

In the fall of 2013, I started the PhD program and found myself in the perinatal department lab. My work focused on studying the lasting effects of gestational stress on offspring health, with emphasis on structural and functional changes in neonatal cerebral arteries. One of the main takeaways of my research was that changes to the intrauterine environment do alter the course of development and lead to persistent changes in the offspring’s physiology.

I am currently wrapping up my dissertation writing after having recently completed what I considered to be the most challenging hurdle in graduate school: publishing a first author, peer-reviewed paper. My dissertation defense is around the corner, graduation is finally in sight, and I plan to begin a short-term postdoctoral fellowship in the next few months. My passion is to work on better understanding maternal-fetal health and improving the prenatal environment in order to better the life of the vulnerable unborn. What fascinates me about research is that

one can step into the unknown and make it known. I find that it’s like discovering God, in that I come to understand a little more of His creation and amazing, purposeful character.

Where I am today and the scientist that I have become have both been heavily shaped by my time at Southern. In those long and nearly curfew-breaking hours at Hickman Science Center, I discovered what research is: identifying a need, asking unanswered questions, developing and executing methods to answer those questions, and sharing the results in a meaningful way. My research work with fruit flies in Ben Thornton’s Ecotoxicology course, other science classes, and ministry involvement through Southern helped to prepare me academically and spiritually for graduate school.

For those considering research-based careers, whether in academia, government, or industry, make sure you get your feet wet by doing research throughout the school year and especially getting research-based summer internships. Take statistics seriously. Develop your soft skills (people skills) and realize that you are already forming your professional network with your peers, professors, family, and other acquaintances. Remember your God-given value. Take time now to serve the community, because that is the heart of research—discovering truths and solutions to make the world a better place.

By Naomi (Jackson) Franco, '12



Naomi in the lab at LLU



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ADVENTIST UNIVERSITY

Power for Mind & Soul

Biology/Allied Health
Department
PO Box 370
Collegedale, TN 37315
1.800.SOUTHERN
www.southern.edu

Joyce Azevedo, PhD
Randy Bishop, MSPT
Aaron Corbit, PhD
Ann Foster, PhD
Lucinda Hill, MD
Noemi Gonzalez, MS, MT (ASCP)
David Nelsen, PhD
Rick Norskov, MD
Keith Snyder, PhD
Debbie Strack, Office Mgr.
Ben Thornton, PhD
Tim Trott, PhD

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Department Happenings

MAY

- May 12–July 17: The Biology Department hosted the first summer ALTIUS MCAT prep program at a Seventh-day Adventist college. We had about 20 in attendance, and participants were very pleased with the results. A cohort of 17 started in September 2019, with more joining in January 2020. During the summer of 2020, we will again offer the condensed 10-week program.
- Joyce Azevedo presented a gift to each Southern alumnus graduating from Loma Linda University with a professional degree. This included graduates from the schools of Pharmacy, Dentistry, and Medicine (including basic sciences). Smiles and leis were the order of the day.

JUNE

- Rick Norskov and Tim Trott hosted 28 high school students for a Pre-Med Summer Camp. This was the most popular camp of the summer, and based on feedback, we expect a surge in medical doctors in the near future.
- Five students joined Keith Snyder for the Dino Dig class in Wyoming during the month of June. The class is offered in conjunction with Southwestern Adventist University (SWAU). Two of our students were site leaders, and three others were taking the class for credit.
- David Nelsen and Aaron Corbit presented research on adhesive coatings in defensive silk produced by black widow spiders at the

American Arachnological Society Conference. Several students have also been involved in this fascinating research.

AUGUST

- Ben Thornton and Tim Trott led 18 students to Andros Island in the Bahamas. They studied both terrestrial and marine environments, immersing themselves in the joy of learning. Fortunately, they got out a few weeks before Hurricane Dorian threatened the island.
- The first annual Biology Orientation for Success (BIOS) six-day boot camp was held by Keith Snyder and David Nelsen just prior to the start of school. This program, developed by Louisiana State University, has produced an increase of approximately 10% in the four-year graduation rate. Students rated it highly, so we plan to expand this program to other areas on campus.
- Aaron Corbit and David Nelsen participated in the Biology of Scorpions Minisymposium in Rodeo, New Mexico. Nelsen's Medical Toxicology students are using local scorpions for their research projects this semester.
- Keith Snyder and Art Chadwick (SWAU) submitted for publication a paper on the taphonomy of dinosaurs found in the main quarries at the Hanson Research Station in Wyoming. This encompasses 20 years of successful digging and the training of thousands of individuals about God's incredible creatures.

By Keith Snyder