

BIOLOGY/ALLIED HEALTH DEPARTMENT

ALUMNI SPOTLIGHT

An Unexpected Journey

By Brittney Shazier, BA Biology, 2013 Graduate

It has been nearly 10 years since I graduated from Southern Adventist University with a BA in Biology. Afterward, I decided I wanted to experience the world and travel to a new country. I studied abroad at Universidad Adventista del Plata in Argentina for the 2013-2014 school year. This opened my eyes to the possibilities that were available to me, allowed me to learn a language that has opened many doors, and gave me an opportunity to experience a culture different from my own.

Upon my return to the United States, I was unable to secure employment with my bachelor's degree, so I took many jobs while searching for the right path. One of my former professors at Southern, Freddy Fuentes, encouraged me to think about where I truly felt God was leading my life. I prayed for God's guidance and was reminded of some kind words that Professor Joyce Azevedo had shared with me about becoming a teacher. She had thought I would do well at it, which I thought was impossible, but the Lord had other plans.

I started shadowing teachers from various



Brittney Shazier (center) loves to travel with United in Christ Ministries team members.

grades and backgrounds and found that I was drawn toward the college setting. Self-doubt told me I would never be qualified to teach at the college level; however, I took a leap of faith and enrolled in graduate school. I completed a master's in biology with an emphasis in education in the spring of 2020.

Newly graduated and with the world completely shut down from the pandemic, I found it impossible to get work. I gave up on teaching, started my own photography business, and continued working at a charity that was not the right fit for me; however, God still used this waiting period for my good. I was able to change a child's life through the charity, not only by sponsoring her, but also by getting to visit her in Bangladesh. Months later, in July of 2021, I received a call that changed

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Life Sciences



Brittney Shazier visits with children in Bangladesh.

my life. Chattanooga State Community College offered me a job as a Microbiology Lab teaching technician, a position I had never applied for (or thought I was qualified to do). Recommended for the job despite having no teaching experience, I accepted it on faith alone.

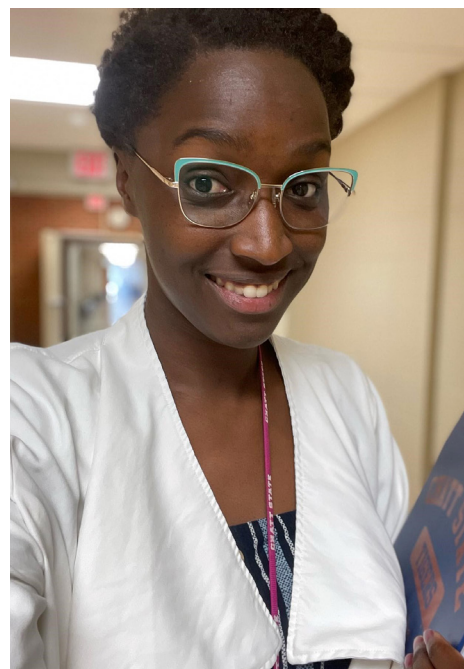
After working for a year, I was offered the position of lead biology instructor. I am in awe of how God has used every experience and setback for my good. He has blessed me with a wonderful job and wonderful people to work with in my dream field, and He has also blessed me personally.

I have been able to utilize the Spanish I learned during my study-abroad experience to be part of United in Christ Ministries. This group's mission is to spread the gospel and teach others to do the same, through a shared passion for music and video, in three languages: English, Spanish, and Portuguese.

I never expected that the reason God had placed on my heart a desire to learn languages was so that I'd be able, years down the road, to spread His Word to more people.

My plans were very different from God's plans for my life. I could not have dreamed of the blessings and opportunities He had for me on the

other side of every trial and waiting period. I hope that future alumni can also experience the wonderful grace, mercy, and love that comes from having the patience to let God construct their future.



Brittney Shazier is now lead biology instructor at Chattanooga State Community College.

INSIGHTS From the Professor

Bioinformatics: Biology's Next Frontier

By Noemi Gonzalez, MS, associate professor of biology

Brian can't believe his ears. Cancer. The diagnosis feels like the ultimate death sentence. But Dr. Laurel isn't so sure. She believes there is a path for treatment, but she needs to know exactly where the mutation is located in the cancerous cells' DNA. Fortunately, science has advanced enough to bring a solution. Enter bioinformatics: the future of medicine.

Bioinformatics is an interdisciplinary field that develops methods and software tools for understanding

biological data. Leading a revolution in genomics and personalized medicine, it stands at the crossroads where the fields of biology, statistics, and computer science meet.

While growing up, you may have heard about the Human Genome Project in school. Your teachers probably emphasized how scientists were working tirelessly to sequence the entire human DNA code and how marvelous this was going to be for science and humankind.

Here's the thing: that marvelous

time is now. The Human Genome Project has sequenced the entire human DNA genome, telomere to telomere, and already it is working marvels. The lengthy sequence is stored in databases available all over the world, where bioinformaticians can access the specific codes and create programs that run data against them. If Dr. Laurel can send samples of the cancer cells to bioinformaticians, these scientists will be able to compare Brian's cancer cells to normal human DNA and pinpoint ex-

Insights, cont. on page 3

actly where the mutation lies. This means that Dr. Laurel would be able to narrow her treatment recommendations to target those mutations and give Brian the exact help he needs.

Bioinformaticians are in low supply but very high demand, especially those that are software developers. They usually have an MS in Bioinformatics or a PhD, where they apply important skills such as computer programming in Python and shell scripting. Important soft skills for a bioinformatician include clear com-

munication and presentation skills, a collaborative spirit, adaptability, and mental agility. The average starting salary is about \$78,000.

Bioinformatic tools can be used to compare genes between species, to analyze mutations in the cancer genome of a specific patient, and to uncover interesting techniques such as the CRISPR system.

Scientists are excited about this new era of information, with some claiming that the age of “individually tailored medicines” is among us. As a

result, the scientific community is encouraging research groups and individuals to become more familiar with the process of bioinformatics—not only with lab skills and clinical skills, but with computer skills as well.

Enjoy stepping into the future. Millions of people just like Brian and Dr. Laurel will thank you.

References: OMGenomics (n.d.). Playlists [YouTube Channel]. YouTube. Retrieved Oct. 16, 2022 from <https://www.youtube.com/c/OMGenomics/playlists>

DEPARTMENT HAPPENINGS

By Keith Snyder, PhD, Biology and Allied Health Department chair

Professor David Nelsen gave a talk as part of the Geoscience Research Institute Latin America series on “Our Origins.” The talk, which was broadcast live on various platforms, included participants from Mexico, Venezuela, and Chile. Professor Nelsen has also been using his Fall 2022 semester sabbatical to investigate the spread and ecological impact of the invasive Joro spider (*Trichonephila clavata*). His first article has already been accepted by the journal *Biological Invasions*, and a second article is well on its way.

With sadness, we said goodbye this past June to three of our professors: Lucinda Hill-Spencer, Richard Brown, and Rick Norskov. But since education is so deeply ingrained into each of these people, we were able to convince both Professor Norskov



Students are already using the new gel imaging system (left) purchased with 2022 Giving Day funds. Genetics Lab students appreciate the two new micro centrifuges (right) the department purchased with small-equipment funds.

and Professor Brown to adjunct one more class this semester. Professor Hill-Spencer is also continuing this year as a research professor, working on origin-related topics with Todd Wood, PhD, of Core Academy of Science, and Danilo Boskovic, PhD, of Loma Linda University’s School of Medicine. They are continuing the research of Professor Joyce Azevedo by further defining the ancient DNA in spruce cones, which was recovered

from a Banks Island Miocene layer by Professor Lee Spencer.

Professor Tim Trott shared that over the summer, we purchased two new micro centrifuges for the Cell/Genetics/Immunology Lab. In use virtually every week, these additions make it much easier for the students, since now we have three identical centrifuges in that lab. We were also able to use funds from Giving Day to upgrade our aging DNA/protein

Dept. Happenings, cont. on page 4



New professor Paulo Dias (center), a Portuguese medical surgeon, assists students with taking a blood pressure check.

gel imaging system. This new piece of equipment is much more student-friendly and allows for more efficient lab workflow. It also produces substantially higher-quality images than our last imaging system and allows for a host of additional imaging analysis options that were not possible with our old system. We have used it extensively this semester to image DNA gels in Genetics lab classes. Its filters allow protein gel imaging for Cell Biology labs and student research projects. We extend a heartfelt thank you to all of our Giving Day donors!

Due to travel challenges in this COVID-19 era, our international trips to the Bahamas and Indonesia have remained on temporary hold. In mid-July and early August, Professor Ben Thornton and his daughter went to Costa Rica to set up a fascinating and educational experience in the tropics. Announcements went out to students in November, and the summer 2023 trip is already fully booked with a waiting list. We are looking forward to having many more trips to this ecologically diverse country.

We would like to introduce Paulo Dias, MD, as our newest associate

professor. A Portuguese medical surgeon, he comes to us with a wide range of experience in many countries of the world. Professor Dias joined us in June and has jumped in full-fledged by teaching one section of General Biology I and most of the Anatomy & Physiology I labs. We welcome him!

Under the tutelage of Professor Randy Bishop, the Allied Health Club has been busy the past few weeks. On October 15, club members manned three stations along the route of the Seventh-day Adventist 7 Bridges Marathon in Chattanooga. Then a Friday evening pumpkin carving activity at the Outdoor Education Council Hut provided artistic individuals with a unique way of illustrating Bible stories. Just this past Sabbath, the club held a sunset vespers among the beautiful trees near the lower Ocoee River that was followed by a game of hide-and-seek in a local corn patch. Fortunately, they found everyone before leaving!

Professor Ben Thornton reports that four different kiosks have been installed on campus to bring attention to the Southern Adventist University Arboretum. Each kiosk depicts the same tree in a different season:

spring, summer, fall, and winter. Laser-cut from ¼-inch iron, over time they will rust to an earthy brown color. The kiosks will contain QR code stands where a map of the Arboretum may be obtained.

In mid-October our department chair, Keith Snyder, traveled to Denver to attend the yearly meetings of the Geological Society of America. Professor Snyder presented a poster developed by Jessica Leal in conjunction with Southwestern Adventist University's Alessandro Franchini and Jared Wood, PhD. The poster focused on Jessica's research at the Dino Dig in Wyoming and a fascinating new micro site she worked on during the summer of 2021. The dig for June 2023 is open to anyone, so keep it in mind as you make your summer vacation plans.

Professor Aaron Corbit presented a talk on November 12 titled "Wrestling With Evolution: A Biology Nerd's Journey" for the Creation Sabbath program at High Point Chinese SDA Church in Ooltewah, Tennessee. He described his experience coming to an understanding of the theory of evolution, including its weaknesses and limitations, and why he thinks the evidence points to a Master Designer.



Four newly installed kiosks on campus are bringing attention to the Southern Adventist University Arboretum.

STUDENTS IN SERVICE

Kendu Adventist Hospital, Kenya

By Gabriel Brown, sophomore biology biomedical major



Gabriel Brown is serving as a student missionary in Kenya.

Student missions wasn't necessarily something I planned on doing when I first came to Southern Adventist University. During my first semester I thought it was an amazing opportunity, but I didn't think it would fit into my biology pre-med schedule. I was afraid of adding another year onto my already mapped academic journey of eight-plus years and getting behind my friends in school. But God was slowly impressing upon my heart to make a decision that would change my life forever.

It wasn't until partway through the second semester of my 2021-2022 freshman year that I fully committed to becoming a student missionary for the following fall. Through much prayer and reading the Bible, I realized I needed to let go of my worry in

order to solely rely on the Creator of this world. God had a plan. He sent people into my life to help me push past the mental barriers the devil was trying to use to keep me from doing God's work. Through prayer and encouragement from those close friendships, I was positively influenced to become a student missionary.

God led me to Kendu Adventist Hospital, located in Kenya, where I arrived in late August. I spent the first few weeks doing rotations through its surgical ward, male ward, and maternity. There was no slow transition from life in America to life in Kenya. My first day of working within the hospital, I witnessed an amputation from below the knee and the removal of an ovarian cyst that was at least the size of a softball! Outside of watching surgeries, which normally are performed only on Thursdays, I helped with cleaning wounds and providing

additional patient care.

Although this was exciting, the first few weeks were a challenge. I was questioning my purpose for being here. The hospital campus has a school for nursing as well as for clinical medicine, and all students are required to do rotations through the hospital. I felt that everything I was doing in the hospital could be accomplished by the staff or students they already had. Though I was getting good experience, I started to wonder if I was truly needed at Kendu Adventist Hospital.

Encouragement came in the form of my amazing staff family, the Hongs. They welcomed the student missionaries with open arms and have treated us as family. We are reading through *The Desire of Ages* together and meet weekly to discuss what we have learned from our studies.

Students in Service, cont. on page 6



Gabriel Brown (right) sends greetings from his fellow student missionaries and friends at Kendu Adventist Hospital in Kenya.

At one of our weekly discussions, I explained to the Hongs how I was getting discouraged. They helped me understand that just because I wasn't able to do much in the hospital, this did not mean I wasn't making a difference. Talking with other staff, getting to know them, meeting with patients, and showing them that I care is important. I didn't need a qualification to make a difference. I only needed to allow God to use me.

Since then, I have had an amazing experience in Kenya. A couple of my fellow student missionaries and I are now working with an architect who flew in from Montana to help prepare for the construction of a new pharmacy, as well as the remodeling of an old surgical center into an ICU that has been funded by Loma Linda.

A big lesson I've learned is that what we believe to be our mission is not always God's mission. He will

guide us where we need to be, and we need only to be willing to serve.



Entrance to Kendu Adventist Hospital.

STUDENTS IN SERVICE, CONT.

Bangla Hope Children's Home, Bangladesh

By Sarah Hunter, sophomore biology research major

-Beauty Through the Pagala-

“You're pagala!” a little girl exclaimed, her brown eyes gleaming as she eagerly grabbed my hand. “That means ‘crazy’ in Bangla,” another kid chimed in, jumping up and down in the soft dirt. Perplexed by how these kids could have assessed me in the two minutes I had been standing there, I laughed and accepted their hilarious evaluation.

Enervated by over two days of travel, I finally made it to the orphanage in Bangladesh, where I'd teach English as well as serve as a mentor/playmate to the kids I met there. Located in the small village of Hazrapur, Bangla Hope is home to more than 100 children, ranging from infants to teenagers.

As I arrived on campus, many enthusiastically greeted me with smiles and hugs. I hadn't even gotten a chance to speak before they were all telling me their names at once. By the end of the day, we had played numerous games, sung songs, eaten eccentric food on colorful floor mats, and

had a water fight that eventually turned into a mud fight.

While the kids have tried to teach me many more Bangla words in the few days I've been here, the word that sticks out to me the most is pagala: crazy. From afar, these indefatigable kids could easily be depicted as pagala, and I wonder if I'm pagala for choosing to live for eight months in a country across the world from my home, surrounded by hundreds of kids who all need my attention.

However, when I think about the



Sarah Hunter, student missionary, embraces a friend in Bangladesh, where she is serving.

smaller, special moments I spend with them, I have my answer. It's giving goodnight hugs to the kids at bedtime, painting the girls' finger-
Students in Service, cont. on page 7

nails, putting unicorn band aids on scraped knees, or braiding the girls' hair before school in the morning that reminds me why I am here...to show them love.

Every single kid on this campus is precious, and I feel so blessed that I get to know each one of them. Although I have been here for only a short while and have so many more memories to make and lessons to learn, I have at least realized one thing so far. There is beauty through the pagala, and I am so glad that I get to be here to experience it.



Sarah Hunter enjoys spending time with the children at Bangla Hope in Bangladesh.

STUDENTS IN SERVICE, CONT.

Orfanato Familia Feliz, Bolivia

By Katie-Jane Emde, sophomore biology major

“There is so much life here!” I thought. I woke up to weaver birds outside, dodged massive millipedes on my floor, showered with a tarantula, and saw a jochi next to our outdoor kitchen. I had worship with the eight little girls I’m living with, held our six kittens, and walked to school to help teach ADHD first-graders and second-graders. It’s amazing that I’m living in the rain forest, feeling more alive than ever!

As a bio major, I’m dedicating my time at Southern to the study of life. When I decided to take this year off to be a student missionary, I didn’t realize that I would continue to study life.

Living here, I’m experiencing simplicity. I have almost nothing electronic, hand-wash my laundry, and live as part of nature. I’ve become



Katie-Jane Emde (front center) joins fellow SMs.

keenly aware of needs versus wants. The staple foods are very basic, but it’s amazing how many ways we can use them. Furthermore, my girls have

very few toys and probably six outfits. Inner beauty takes the forefront. What a reminder that not having much is still enough!

I’ve thrived escaping materialism and the chaos of constant study. Taking time to pause my life has made me realize that slower is possible. And so are miracles. We can generally live self-sufficiently back home, but this donor-funded orphanage wouldn’t be open without constant reliance on prayer. God has taught me that the most joy comes from connecting with and serving those around me. He has shown me what it’s like to have nothing left within myself to pour out and yet still continue to pour, day in and day out.

Knowing that the love I’m giving no longer is sourced in my own heart is the most incredible feeling!

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

Janet Accardo, Office Manager
Joyce Azevedo, PhD
Randy Bishop, MSPT
Aaron Corbit, PhD
Paulo Dias, MD
Ann Foster, PhD
Noemi Gonzalez, MS, MT (ASCP)
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I am also a witness to the tenacity of life. Resilience of living extends past bugs to people: how much dirt we can swim in without illness, how the usual lack of dish soap doesn't hurt, how kids can push through illness or injury, and how every child's trauma is fought with smiles and laughter.

This life involves much energy, laughter, and adaptation. Part of the SM experience is wondering

how much of General Biology I'll forget before the MCAT and how my class is moving on. So I've surrendered thinking about my other life and focus on the present, trusting God to honor those who honor Him.

At Familia Feliz, there is so much life with so many facets! As you continue to study life, may yours be filled with the kind God is showing me!



Katie-Jane gathers with her class in Bolivia.