

Lifelines



Biology/Allied Health Department

Insights From The Professor Ignorance Is Bliss

A student in my genetics course relayed to me the details of a conversation she had with her father, who had taken genetics years ago (not from me). She was explaining some of the complicated concepts she was learning in her course while her father listened curiously. At the end of her explanation, her father replied, "Wow, you've covered everything I learned in my whole semester of Genetics in the first few lectures of your class!" Indeed, this is correct, as our whole understanding of genetics has changed dramatically in the past few decades.

Being a college educator is a rewarding profession, but there are a few exceptions to this wonderfulness. As a professor, I must constantly live in a state of ignorance. Now this may sound a bit odd to my students. "Aren't the professors supposed to know and understand all of the information they are teaching to us?" they may be thinking. The answer is, of course, "Yes, we do understand what we are teaching you," but it is a constant struggle to keep up with the ever-changing and constantly increasing level of knowledge that is available in every scientific field.

As just one example, when I was an undergraduate

student, the technology of DNA sequencing was in its adolescence. The multinational Human Genome Project was underway and nearing completion. Sequencing of this first human genome required the combined effort of thousands of people spread around the globe, almost 10 years of work, and upward of \$6 billion. Today, sequencing technology has improved so dramatically that medical researchers can now sequence an individual's genome overnight for a fraction of the cost (less than \$1,000). Both the reduction in price and increase in speed of DNA sequencing continue to change exponentially. The

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Nicole Yim, senior biology major, and Tim Trott in Genetics class.



Power for Mind & Soul

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sequencing machines of today utilize technology and biological processes that were completely unknown only a few years ago. This new ability has allowed access to unprecedented levels of genetic information. For example, oncologists can now sequence normal, noncancerous cells as well as cancerous cells from tumors and directly compare the genetic changes present in the cancer of each individual patient. It is a constant race to keep pace with the breadth of knowledge and diversity of applications possible in just this one field. In the face of these rapid

changes, I often feel ignorant.

However, the more I study, the more I can relate to the old adage “Ignorance is bliss.” Instead of being overwhelmed by this constant barrage of new material to integrate and understand, I stand in constant awe of the creative and imaginative power of our Lord and maker, Jesus Christ. Just within the field of genetics, one subspecialty of biology, the amount of detail, intricacy, wonderful mechanisms, and tiered levels of staggering amounts of information is more than can be learned in a lifetime. Instead of being overcome

by the mountain of information, I hope that my students grasp the blessing of knowledge our Creator has prepared for us. This never-ending journey into understanding is the cause of the bliss of ignorance. As lifelong students of the Master, we can always learn more, always understand in greater detail, and always come closer to the Creator by examining the work of His hands. His library of knowledge is never ending. In this case, ignorance IS bliss.

By Tim Trott

Undergraduate Research

Growth and Death in Dinosaurs and Spiders

Research is heating up in the faculty research lab. The summertime saw great progress in several projects. Our paleohistology project seeks to understand the growth of the duck-billed dinosaur *Edmontosaurus annectens*. Biology student Alyssa Cheung is studying whether these dinosaurs had a more reptilian or mammalian growth pattern, and working to understand the demographics of the bones found in the quarry. All bones were collected as part of the Dino Dig project held every June near Newcastle, Wyoming. Over summer break, biology students Joseph Min, Jessica Ahn, and Jin Hyung Moon worked tirelessly and have ground most of the bones into thin sections. The work continues as photographs of each thin section are being made (see Fig. 1). Preliminary data suggest that *E. annectens* grew seasonally and rapidly.

The venom projects are also beginning to gain momentum, especially with the recent purchase of a High Performance Liquid Chromatography (HPLC). An HPLC is used to separate complex mixtures

of chemicals and is especially useful in purifying specific compounds for further analysis. This fall and last summer, we have collected numerous venom samples from male and female black widow spiders. These samples will be used to analyze differences between the venom of males and females at the same age and at different ages within a given sex. Our preliminary results suggest venom composition changes as a spider ages, especially within males. Early data suggest that males lack the vertebrate-specific toxin (Alpha-latrotoxin) in the earliest juvenile forms, gain it during the intermediate ages, and again lose the toxin once the spider has reached sexual

maturity. This is the first time this phenomenon has ever been reported, and we are proud to have our students participating in this discovery.

By David Nelsen

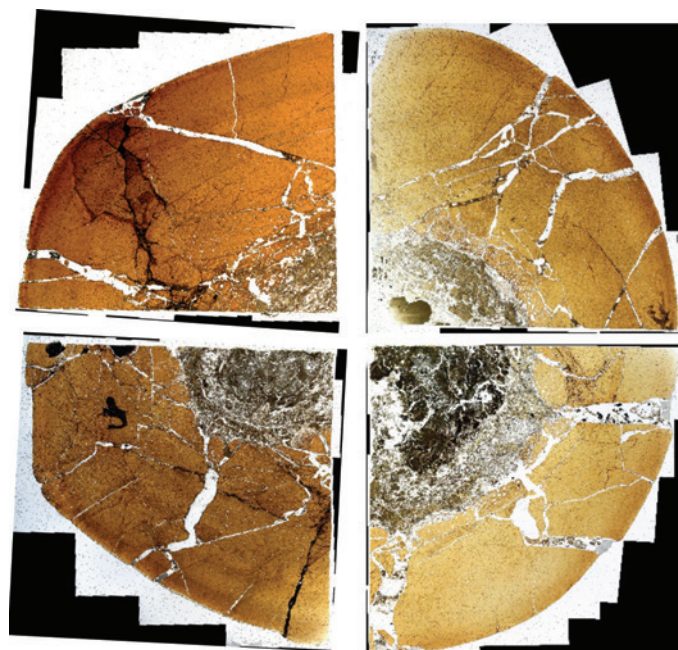


Fig. 1: Four sections of an *Edmontosaurus annectens* tibia, specimen #755. Growth marks can be seen following the circumference of the bone, suggesting that these dinosaurs grew in a seasonal cycle similar to modern-day crocodilians.

Alumni Spotlight

Joy-Lynn Norris, Biology/Pre-med & Physical Therapy, Class of 1999

In 1999, I graduated from Southern Adventist University with a BA in Biology/Pre-med and an AS in Pre-Physical Therapy. At Southern, I had a fantastic group of friends. We enjoyed hiking, camping, caving, rafting, and basically anything that got us outside and active. If the weather permitted, we would get out every weekend. On rainy Sabbath afternoons, we would get together and read mission stories, listen to inspirational music, or just enjoy each other's company. Southern was a great place for all of that.

My last year at Southern, I was still trying to figure out what God wanted me to do when I "grew up." I felt He wanted me to help people become healthier. I initially thought that I was to become a medical doctor. But as graduation approached and the big question of "What do I do from here?" got closer and closer, I started feeling uneasy about being a medical doctor. I didn't want to feel forced to give medication when I didn't think that was the best option, and I didn't want to do surgery either. So I thought physical therapy (PT) might be what I wanted. But just to make sure that is what God intended for me, I worked as a student missionary (SM) for a year after graduation. I had already interviewed, applied, and been accepted to Andrews University to start PT school soon after finishing my year as an SM. I was at Andrews the day the program started, but I couldn't bring myself to even go into the building. So back to searching I went. I applied and got accepted into three different medical schools. But I needed something halfway between PT and an MD. My brother suggested I research the chiropractic method. So I did, and that was exactly what

fit the need in my heart. I could be a doctor and do what I felt was best for my patients naturally, without drugs or surgery.

Now that I was at peace knowing what God wanted me to do, I started researching chiropractic schools. I searched for the school with the best reputation and the hardest curriculum

outweigh the frustrations. Not only do most patients get their aches and pains healed, but the vast majority have an improved quality of life as well. When patients tell me that I gave them their life back, that really makes my day.

Since graduating from Southern, I married Gary Norris, and we have two children: Caleb, age 9, and Jasmine,



Joy-Lynn Norris enjoys time with her family at Snooper's Rock overlooking the Tennessee River.

which happened to also be the hardest to get into, and that was Palmer College of Chiropractic in Davenport, Iowa, so that is where I went. My profession has lots of rewards and a few challenges. The main challenge is navigating insurance and the changes they make on a regular basis. Any time a money person behind a desk tells me what I can and cannot do for my patients, I feel frustrated. Therefore, I accept insurance only from insurance companies that let me be the best doctor I can be. Another challenge is when people make judgments about my profession when they haven't even tried it. However, the rewards far

age 7. I opened Joy Chiropractic Clinic in Collegedale, Tennessee, 10 years ago. Now I get to show my family all of the great outdoor activities I enjoyed with my friends at Southern.

My advice to biology students is follow your dream and your calling even if it takes you in a different direction than you originally expected. And enjoy everything about Southern: its location with all of the natural abundance, its spiritual influence, and that it draws the best students if you take the time to seek them out.

By Joy-Lynn Norris, DC

Students in Service

God's Children Teaching Me in Bolivia

Last year, I went to Bolivia as a senior biology major and had dedicated the year to serving God before heading off to medical school. I taught English and Music to grades 5-8 at the school/orphanage in Beni, Bolivia. However, the kids live at Familia Feliz during the school year, so I also got to be a dean, a cook, a parent, a worship leader, and much more. Sometimes my heart felt like it was going to burst because I fell completely in love with those kids. While writing this, I was smiling because I heard some of the younger boys squealing in their wrestling match. To be honest, I didn't know how I would ever be able to leave them at the end of my term. I wanted to adopt them all and keep them forever!

My time there was one interesting experience after the next. I accidentally set the jungle on fire and almost burned down one of our houses, I battled tarantulas with a broom and snakes with a machete, and I almost crashed a motorcycle while learning to drive one. Also, I treated rat bites, machete wounds,



Students work the school garden in Beni, Bolivia.

and nail punctures on my kids, had to deal with very real spiritual warfare, and much more. I even had to be flown out of the jungle on an emergency flight to get my appendix taken out. Although a lot of things put me out of my comfort zone, I loved that every day there was a different adventure!

As my time in Bolivia was nearing an end, I was wishing I'd had more time with the children.

They changed me in a way I never thought possible and taught me things I never knew I didn't know! One thing I learned is that life will go on, regardless of whether or not I am a part of it. So why not give something of myself to make it just a little bit better? I used to struggle with knowing how

to give of myself, because I didn't feel like I was making a difference. Then I realized that each moment adds up until one day I looked back and saw how different things had become. How different I had become. It is sad to say that when I first got to Bolivia, without knowing it, I thought I was better than the people there. I was going to give nine months of my time and do them a favor because I came from an educated, fast-paced, well-developed, CLEAN place. But I was the ignorant one. The people there are better than me; they are happy and do not have such silly blindfolds. They are very giving, very joyful people, content with what they have and willing to work hard to help one another out. It doesn't matter what another person looks like or how long they have gone without a bath; people there are simply willing to help out their neighbor. Jesus never had such blindfolds, and I am so



Everyone gathered in a circle to close the Sabbath.

thankful that He managed to strip mine off amidst my selfishness.

I wish I could write about everything I learned and everything I came to love about being in the mission field, but this would take far too long. If I'm honest, I cannot say that I loved every second of it. Living in the jungle takes a lot of getting used to. I had to deal with being dirty and sweaty most of the time, gaining weight (don't believe the lie that everybody loses weight in the mission field!), getting infections, burns, mosquito bites (like 30 at a time . . . on each leg), tension with staff, working extra hard to love specific kids, etc. I still don't like walking around after dark, because I can't see what creatures (mostly snakes) I might step on. Looking back now, those things aren't as important to me as they once were; they have just become a part of life, and I almost feel foolish for thinking they were

so significant. Sometimes I would ask the staff, who grew up in South America, what they thought of my



Baby Yanet and Coco are never far from each other.

“American-ness” when I first got there, and they just shook their heads, smiled, and said, “You don't want to know.”

For anyone thinking of

spending a year in mission service as a student missionary, DO IT! I remember listening to previous SMs tell about their experiences, and I wondered why in the world they were so enthusiastic. It was only nine months in another country! Now I understand their enthusiasm, and as much as I want to put my love for Bolivia and love for my kids in you, I know you will only find the fullness I've found if you look for it yourself. Don't go to do the people a favor; their friend across the street can do that. Go to serve them—to give of yourself as Jesus did. Go to love them. Go to make their world just a little bit brighter, because Jesus asked us to “go.” Just go. See what Jesus will do with you, in you, and through you. You will be amazed, and you will understand the enthusiasm that the SMs speak of. DO IT! DO IT!

By Victoria Ahles

Department Happenings

We are pleased to announce that Aaron Corbit has successfully defended his dissertation titled “*The Dynamics of Human and Rattlesnake Conflict in Southern California*” this past April. He has been working full time in our department for about three years, while trying to finish the writing and computational portion of his research. We are proud to have another PhD in our department. Congratulations, Dr. Corbit.



Department chair, Keith Snyder and his son, Ivan, were fortunate enough to find and remove approximately 100 associated fossil bones of a *Thescelosaurus* dinosaur at the Dino Dig in Wyoming. This dig, founded by Lee Spencer, is currently housed and curated at Southwestern Adventist University. This find was the first semi-articulated specimen to be unearthed on the ranch, and it is one of the most complete of the five previously found specimens of this species in the world.



Ivan Snyder carefully excavating the *Thescelosaurus* bones.

By Keith Snyder



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Department Happenings



Alumni donate funds to the Biology Department every year. After having accrued about \$25,000 over the past few years, the university matched funds with our department, allowing us to purchase a High Performance Liquid Chromatography (HPLC) machine. This will enable us to carry out several different kinds of research requiring separation of complex biological samples. We have great hopes for the HPLC and will report on its usage in the future.

The Biology Trails will be renamed in the next few months. Over the past four years, community members have donated about \$90,000 and 3,000 hours of labor to help us create some of the best hiking/biking/running trails in Tennessee. This past summer, the university created 10 additional miles of trails on Bauxite Ridge on the other side of the valley. These 30 miles of trails will be renamed *Fenton Forest*, after the mythical forest in Gordon Bietz's sermon parables.

By Keith Snyder

