

Southern Adventist University
Knowledge Exchange

the Periodical – Chemistry Department
Newsletter

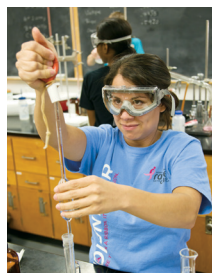
Departmental Newsletters & Publications

2023

The Periodical 2023-2024

Southern Adventist University

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the Periodical

Southern Adventist University Chemistry Department



Department of Education Grant to Benefit Chemistry Department

Southern Adventist University has been awarded a five-year, \$3 million grant from the U.S. Department of Education through its Developing Hispanic Serving Institutions (DHSI) Program. This grant will fund a STEM Success Program to improve the recruitment, retention, academic success, and career preparation of Hispanic students and other students from underserved demographic groups who pursue degrees and careers in STEM (science, technology, engineering, and mathematics) fields, and equipment for academic units on Southern's campus involved in educating these students.

Three portions of this DHSI grant will directly benefit the Chemistry Department and its students. The first of these provides \$1 million to be distributed over the five-year grant period for laboratory and research equipment for STEM

departments. While the majority of the funds will be directed toward equipment for Southern's new engineering laboratories, \$289,000 is budgeted for equipment to support research in the Chemistry Department. "We hope to direct most of this funding toward the purchase of a high-field NMR (nuclear magnetic resonance) spectrometer," said Chemistry Department Chair Brent Hamstra, "but that will likely require additional funding for the NMR's purchase and maintenance, and identifying and preparing a proper location for the instrument."

The second portion provides \$200,000 toward funding a \$400,000 endowment to provide paid internships and research opportunities for Southern students. Students doing research in the Chemistry Department are expected to be among those who will be paid to perform research on Southern's campus.

The third portion funds faculty development activities to enable instructors to better support students who struggle to succeed in challenging courses. Several of the Chemistry Department's courses will likely fall into this category.

Professor Hamstra said: "While the DHSI Program focuses on improving educational opportunities and outcomes for Hispanic students, we know that every chemistry student will benefit from this grant. It will be transformative for the university and for the Chemistry Department."

By Professor Brent Hamstra

From the Department Chair

The sudden entrance of artificial intelligence (AI) sites and services into the educational environment has brought substantial worry and uncertainty to collegiate faculty and administrators. Some see AI as an existential threat to education—for if students can provide a prompt to an AI service and receive an outline, an essay, a procedure, or other product that an instructor expects students to generate from the knowledge and skills they've acquired, then will students actually learn how to perform these tasks or develop the ability to know whether AI provides useful output when given a task? Others see AI as an opportunity to enable students to do things above and beyond what they could do before, both in school and in their future careers.

Both groups are correct. AI presents threats to and opportunities for student learning and success. In this respect, AI is like one of humanity's

original resources—time. Some students use time effectively and productively, and time becomes an ally in their growth and development. Other students fail to use time wisely, and foolishly used time becomes an obstacle to their learning. Over the 25 years I've spent here at Southern, I have learned that the greatest challenge for most college students is in developing the discernment necessary to harness the value of time so that they can best attain the mental, physical, emotional, and spiritual fitness needed for success in college and throughout their lives.

Likewise, AI also requires discernment if its benefits are to be fully realized by our students. Our students need HD/AI—artificial intelligence guided and evaluated by human discernment. If we give our students the discernment to use AI in ways that add to their knowledge and skills, rather than serving as a substitute for them, then we will give them the power to use AI



Brent Hamstra

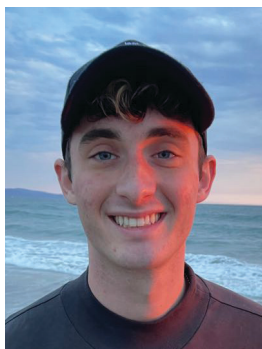
tools to accomplish even greater.

As educators continue to navigate this new AI-enabled educational environment, we will develop a variety of approaches to help students discerningly use AI. I believe that we at Southern will provide additional value in helping students use HD/AI, because we will teach students not only about the limitations of AI and the limitations of their discernment, but also how to access the unlimited wisdom available to them from God, which will be essential to their success here and now and in the eternal world to come.

December 2023 Chemistry Graduates and Their Plans for the Future



Bobby Jeong
BA Chemistry
Attend dental school



Daniel O'Connor
BS Biochemistry
University of Oklahoma
College of Medicine



Eugene Choi
BA Chemistry
Loma Linda University
School of Dentistry



John Larson
BS Biochemistry
Loma Linda University
School of Medicine



Karina Lim
BA Chemistry
Loma Linda University
School of Medicine

2024 Chemistry Graduates and Their Plans for the Future



Ana Guerrero
BA Chemistry
Join the workforce



Nathan Dickerhoff
BA Chemistry
Loma Linda University
School of Dentistry



Ryan Howell
BA Chemistry
Loma Linda University
School of Medicine



Tryg Stokes
BS Biochemistry
Loma Linda University
School of Dentistry

McKee Foods Interns

Alumnus Jared Freeman Lands Full-Time Position

When did you graduate, and with what degree?

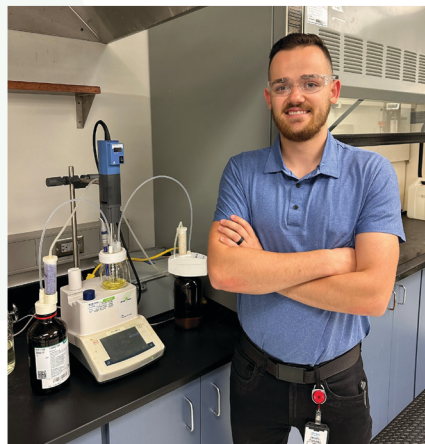
I graduated in May of 2023 with a BS in Chemistry.

What was the process of getting your internship at McKee Foods?

I applied and was chosen for an internship in the lab at McKee during my junior year. I enjoyed the year I spent interning and applied for a full-time position when I graduated. I officially started my new position at the end of August 2023.

In what department do you work, and what are your specific tasks?

As an analytical chemist, I work with the Research and Development Department to develop, test, and problem-solve new products, existing quality assurance projects, and production line issues. My specific duties include running a sugars analysis via high performance liquid chromatography (HPLC), determining the total fat content



Jared Freeman, BS Chemistry of samples via acid hydrolysis, identifying specific triglycerides using gas chromatography, testing absorption and other parameters used to determine flour quality, and creating new instrumental methods to gather information for improving process development and product development.

In what ways did your Southern experience prepare you for getting the internship?

My experience at Southern helped me achieve my

current position by introducing me to analytical chemistry, specifically instrumentation. Taking Quantitative Analysis from Professor Schilling my sophomore year helped me to get the internship my junior year. My senior research project involving P-31 NMR gave me method development and instrumental experience that relate directly to my current assignments. Serving as Chemistry Club president gave me practical experience working within and leading a team, which is proving to be valuable in the industrial world.

Would you like to share any other thoughts related to your experience at Southern, specifically in the chemistry program?

The most valuable things my Southern experience gave me were the relationships I was able to make with other Southern alumni, professors,

Continued on page 7

Biblical Applications

“Be Filled to the Fullness of God”

It is year seven for me in the blessed position of Chemistry professor here at Southern Adventist University. As I think back on these years, one thing remains constant: God’s immeasurable love for His children. For one of my opening worship thoughts this Fall 2023, we read Ephesians 3:18-19. “and I pray that you, being rooted and established in love, may have power, together with all the Lord’s holy people, to grasp how wide and long and high and deep is the love of Christ, and to know this love that surpasses knowledge—that you may be filled to the measure of all the fullness of God.” Is chemistry awesome? Of course it is. We can describe, calculate, analyze,



and predict. God’s love cannot be calculated. It is not finite. And I pray that every student who passes through our program comes to know how big God’s love is. Take a look at the picture of Nutella. Is this a big jar? I don’t know what kind of jars these students have been buying, but they answered, “No.” Then I showed them another jar, and another jar bigger than the previous, until I showed them a man floating in the deep ocean.

Now that’s a large jar - an ocean full. And God’s love is even bigger than that every day, never running out. What a beautiful thought- floating in God’s love, completely surrounded. Dwell in the thought of God’s love for you. Your value because He loves you, your salvation because He loves you, your purpose because He loves you. He loves you with a love that never diminishes or runs dry. He loves you forever and back.

Thank you, Father, for your faithfulness, for pouring Yourself out on us for us. Thank You that Your love is immeasurable. Help us to receive it, know it, and surrender ourselves to it. Amen.

By Professor Nuvia Lawson

Department Happenings

Chem Club News

Hi there! My name is Elias Hanson, and I am the president of the Chem Club for the 2023-2024 school year. I served as the club’s pastor last year, so I was honored to take up the torch this year alongside our crew of amazing officers. I enjoyed maintaining the traditions as well as putting on new events this year.

In August, we started off with a vespers at Professor Schilling’s house, and in October, we enjoyed our slightly rainy but still beautiful annual fall outing. We also celebrated National Chemistry week, which focused on the chemistry in modern medicine—a relevant topic for most chemistry majors.



Pumpkin carving event at Professor Schilling’s home

We concluded our celebrations with the well-attended annual pumpkin carving. Speaking of pumpkins, we sold professor Schilling’s famous pumpkin bread again at the 423 market.

Our last events for the school year included helping the local Samaritan Center with our

service event in mid-November and again at the end of February. At the end of March during the department convocation, we held Chem Club elections for the school year 2024-2025. We are proud of our Chem Club events and our continued work toward creating a fun and supportive community for those excited about chemistry. It is surprising how fast the school year flew by; before we know it the winter semester will be over.

In our constant pursuit of accomplishment and happiness, I find it important to take the time to actually be happy. And I think that’s what Chem Club is all about: a social respite from the flurry of hurry and worry.

By Elias Hanson

Alumni Spotlight

James Larson, PhD

What years did you attend Southern?

I came to Southern in 2015 and graduated in May 2018.

What attracted you to this university?

I grew up in Chattanooga, so Southern was always part of my community. I remember playing baseball in Collegedale Little League behind the Village Market. Despite this, I did my freshman year at the University of Tennessee at Chattanooga (UTC). However, after being at UTC for a year, I wanted to go somewhere with a Christian environment, so Southern was the obvious choice for me. I remember coming to class on my first day and immediately feeling like I was at home.

Why did you choose to study chemistry?

From a young age, I was always interested in science. In high school I had a great chemistry teacher who made chemistry fun and exciting, so I chose to major in this branch of science when starting college.

What is your favorite memory from your experience at Southern?

I had a great time at Southern. I think my most memorable experiences at Southern involved participating in the MLK Jr. volunteer days. One year the Chemistry Department went to Red Clay Farm, and we helped to plant seedlings in one of their greenhouses. I particularly remember chasing down a goat to give it some medication.



James Larson, PhD

Where was your favorite place to study?

My favorite place to study was in the chemistry study room. I pulled several all-nighters in there.

What was your favorite class?

My favorite class was Instrumental Analysis with Professor Bruce Schilling. I loved using all of the instruments and learning how they worked. This carried over nicely to my graduate work. A lot of my research in graduate school was spent learning how different instruments worked, what they could and could not detect, and figuring out what instruments would work for my research.

What school did you attend immediately after Southern, and when did you graduate?

After graduating from Southern, I attended Florida State University for graduate school

in chemistry. I worked in the lab of Professor Susan Lattuner. We used metal flux synthesis to study the effect of small atoms on the magnetic properties of intermetallic compounds. What this means is that we would insert small atoms, such as hydrogen or carbon or fluorine, into the gaps between large, magnetic metal atoms. Doing this would change the distance between the magnetic atoms, and we wanted to see how this affected the magnetic properties. I graduated with my PhD in May 2023.

What are some challenges you encountered?

When I started graduate school, I was deathly afraid of public speaking. This is a big problem in graduate school, because you have to give a presentation at the end of each year about the research you have done. My first presentation was terrible, but somehow I passed. As the years went on, my presentations got better and better, and now I am completely comfortable with public speaking.

What are some rewards?

The most rewarding thing about graduate school is publishing papers. It's really rewarding to see the result of your hard work culminate in a published paper.

What are you doing today?

I am currently applying to medical schools.

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Alumni Spotlight (continued)

What advice do you have for current students who want to make the most of their time at Southern?

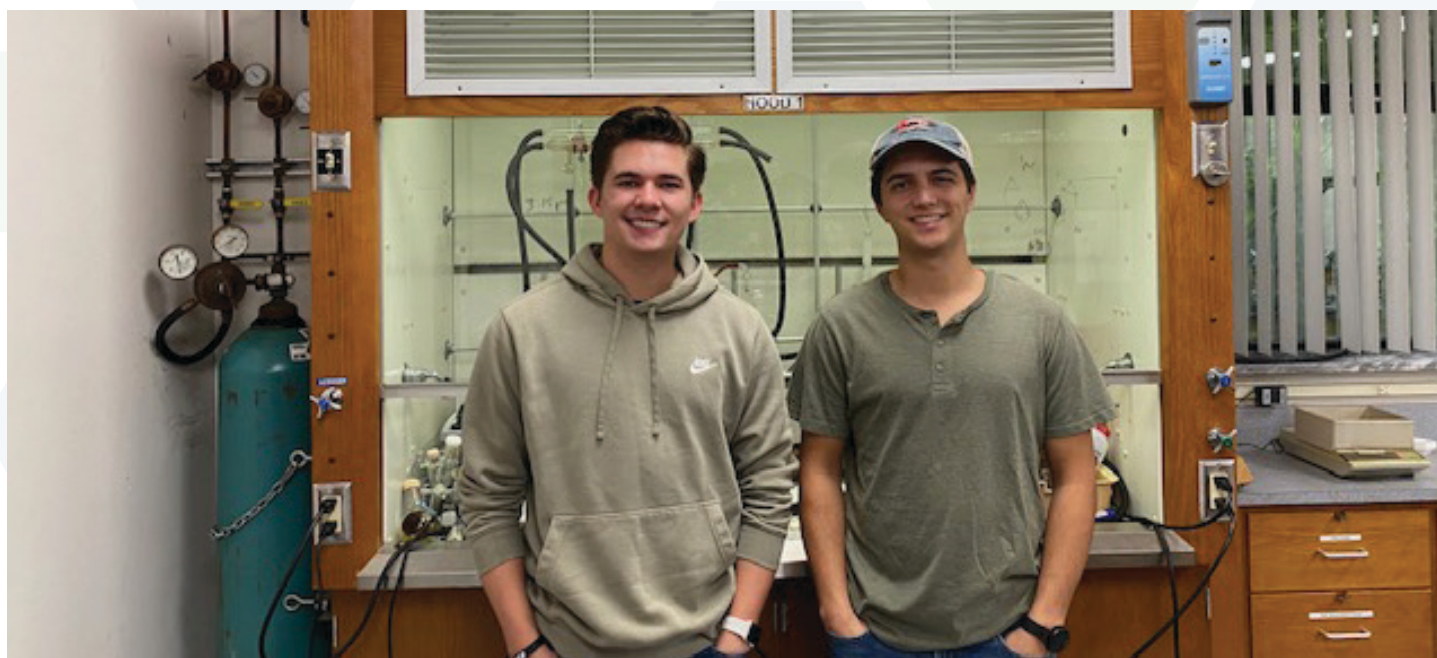
I would advise students to take advantage of LifeGroups and

convocations. I know that it can be annoying as a busy student to have to worry about getting all of the required credits, but having the chance to be part of a LifeGroup or attend convocations

is a unique opportunity that you can't get anywhere else. And you never know; you might miss it once you graduate.

By Dennisse Blood

2024 Outstanding Seniors



Ryan Howell (BA Chemistry), Tryg Stokes (BS Biochemistry)

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To be featured in the Alumni Spotlight, please write us at chemistry@southern.edu.

McKee Foods Interns (continued)

and my peers. I appreciate the Chemistry Department's focus on working in the department. Serving as a stock room worker,

TA, and Safety Data Sheets database assistant helped me apply my classroom knowledge to impactful activities and gave

me experience to talk about in my interviews.

By Professor Mitch Menzmer

Nathan Dickerhoff Completes Year in McKee Lab

What is your academic program and expected date of graduation?

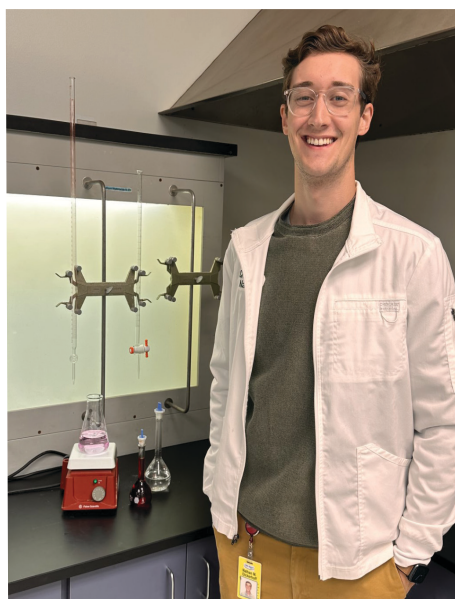
I expect to graduate in May 2024 with a BA in Chemistry and a minor in business administration.

Could you describe the process of getting your internship at McKee Foods?

I received an email from the Chemistry Department here at Southern about the McKee Foods chemistry lab intern position that was open to applicants. My dad has worked at McKee for many years, and I knew that it was a good company to work for. I sent in my application in May 2022 and went through a series of personality tests, critical thinking tests, phone interviews, and in-person interviews until I was hired and started in July 2022.

In what department do you work at McKee Foods, and what are your specific tasks?

I work in the Research and Development Department at McKee, specifically in their analytical chemistry lab. Throughout my internship, I have performed many different tasks. I have been involved in analyzing the water activity, pH, moisture, viscosity, salt, sodium and sugar



Nathan Dickerhoff, BA Chemistry

of ingredients, intermediate products, and final products. I have also been working on fat analysis in the areas of peroxide and free fatty acid content, solid fat content, and total fat analysis.

In what ways did your Southern experience prepare you for getting this internship?

Southern's Chemistry Department did a wonderful job of preparing me for my internship. The material I learned in General Chemistry, Quantitative Analysis, and Biochemistry prepared me for the theory behind the tests that I perform in the McKee Foods lab.

The lab experiments that were assigned in Quantitative Analysis and Organic Chemistry prepared me for the work I would be performing in my internship.

Would you like to share anything else about your experience at Southern, specifically in the chemistry program?

Southern's Chemistry Department has given me a high-quality and enjoyable university experience. I have spent three years as a Chemistry Club officer and have had fun spending time with my peers and professors outside of the classroom. It has been made clear to the students in the Chemistry Department that the professors at Southern are truly devoted to their pupils' success and will spend time to give guidance to each student.

By Professor Mitch Menzmer



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ADVENTIST UNIVERSITY

Power for Mind & Soul

Chemistry Department

P.O. Box 370

Collegedale, TN 37315

Phone: 423.236.2931

Fax: 423.236.1931

southern.edu/chemistry

facebook.com/chemistryatsouthern

Faculty & Staff

Brent Hamstra, PhD

Bruce Schilling, PhD

Crystal Zhang, PhD

Matthew Duffy, PhD

Mitch Menzmer, PhD

Nuvia Lawson, PhD

Tamie Suzuki Kawakami, PhD

Dennisse R. Blood, Office Mgr.

Dr. Shaw with 2024 Recipients of the Shaw Scholarship



Left to right: Kaitlyn Delong (Physics), Abigail Cornelius (Finance), Lauren Fenwick (Business), Kasey Castellanos (Business), Brandon Gustrowsky (Computer Science), Dr. Rahn Shaw, Marcus Stokes (Biochemistry), Hannah Shull (Mathematics), Emily Rojas (Biology).