

MOLECULAR SIEVE

Andrews University

Department of Chemistry & Biochemistry

An American Chemical Society Approved Program since 1976

Fall 2017

First Annual Change Day at Andrews

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Faculty:

Lisa Ahlberg, PhD
Ryan Hayes, PhD
Getahun Merga, PhD
Desmond Murray, PhD
David Nowack, PhD
David Randall, PhD

Staff:

Dana Johnston, MS
John Rorabeck, MS
Rebecca Turk, BS



On September 14, 2017, Andrews held its first-ever “Change Day,” an event which put scores of students, faculty and staff to work helping others across the county. **Dr. Desmond Murray** one of the designers of the action—has received one of the first Andrews Heart Awards for his efforts.

The list of places where we could choose to get involved was long! We had people running a career fair for high school students—including some bused in from Benton Harbor. There were crews trimming bushes and clearing leaves in local parks from Niles to Dowagiac. Other volunteers completed needed painting projects for elderly community members.



Some of our students are from far away countries and they shared their stories with local elementary students in Berrien Springs and Benton Harbor. The students at the Benton Harbor school also created a beautiful mural of influential African American leaders and pioneers that will remind the young people that we at Andrews care about them.

The picture above shows **Dr. Ryan Hayes** and students working at Sarett Nature Center to eradicate invasive species. Other helpers prepared backpacks for refugees in an effort promoted by Campus Ministries.

Great memories were formed. Can't wait till Change Day 2018!

Honored Alumni



Andrews has a reputation for educating those who go on to become educators. **Dr. Kent Davis** (BS Chemistry, 1992) has been teaching at Pacific Union College in California since 2002. This April, he was recognized as 2017 Educator of the Year.

As Davis was invited to the platform to receive the award, the sanctuary exploded with cheering and applause for the popular professor.

A senior chemistry major shared a touching tribute to Davis and the positive impact he has had on his life. Davis also received accolades from faculty members. He was praised for taking the complexity of chemistry and patiently explaining it until there is clarity. He is good at sorting out the trivial from the important, but it was argued that he is best at turning complacency into curiosity.

Dr. Nuvia Saucedo (BS Chemistry, 2009) was involved in nanoparticle research began before she even entered Andrews. Her passion for science took her all the way to a position as the newest faculty member of the department of chemistry at Southern University.

While Saucedo was looking to find employment in a research lab, a friend suggested that she should apply for a temporary teaching job. She says that



when she started teaching, many pieces of her life and experiences came together, and she knew that she was meant to be “Professor Saucedo.” At Southern, she is very happy to be both a scientist and a Christian.

We are proud of our alumni and glad to share their expertise and excellence with our SDA sister institutions.

A Chemical Spark ♥

Did you hear the one about the biologist and the physicist who went on a date? Nothing came of it because they didn't have any chemistry.

But **Dr. Lisa Ahlberg** and **Dr. David Randall** sure have all the right chemistry going on...from the organic lab to the physical chemistry lecture. These two were featured in this year's Valentine's Day Student Movement issue. Here are some details.

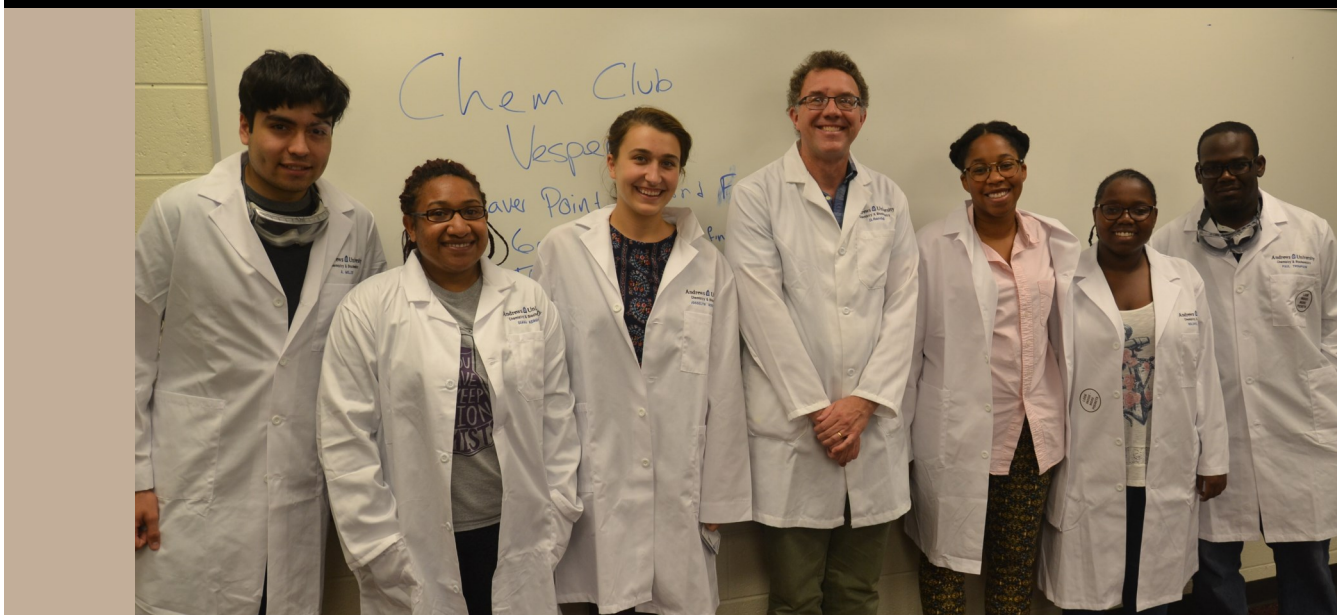
They met in that most romantic of venues—the chemistry stockroom. Perhaps there was a love potion hiding on one of those shelves. Lisa was a Gen Chem assistant and David worked in reagent prep. How did they know when the chemistry was right? Well, David says, “I thought about her a lot. It was hard to realize how I felt but my friends helped me recognize my feelings. They were conflicted at first, but after explaining it to my friends, I was able to come to the correct conclusion.”

Lisa tells us, “I knew (it was love) when I started to worry about him and was concerned if he was paying attention to me or not.”

After one year in graduate school at UC Davis, they married, and the rest is history. Through the years they have kept the chemistry going. They stay committed and continue to work on the relationship conscientiously. They enjoy doing many things together—even dates to Meijer! They like to reflect on their past shared experiences and constantly plan things to do together and with their two children, Julia and Daniel.



Quant Lab Coats



Anthony Miller, Diana Kerowa, Josselyn Roosenberg, Dr. Randall, Lisa Hayden, Precious Ndlovu and Paul Thompson

We continue the tradition of awarding lab coats to our majors who take **Quantitative Analysis**. Each coat is embroidered with the name of the courageous student unafraid to tackle some serious chemistry.

ChemClub Officers



Danielle Oh, Social Vice-President; **Victoria Kim**, Public Relations; **Tammy Leong**, Media Coordinator; **Nathaniel Srikureja**, President; **Juliane Johnson**, Religious Vice-President; **Arthur Lee**, Secretary

Afraid of Needles?

Every year Andrews hosts a Blood Drive on campus. **Dr. Ryan Hayes** is always a participant. In fact, he gives blood frequently all year long! Here are some of his insights.

Over the years I watched my father donate blood in our town. I remember he even got to a point where he donated so much blood they gave him a pin and printed his picture in our local newspaper. When I reached the age to donate, I did. During my undergrad years here at Andrews, when I was in graduate school, and even when I began working I would donate every eight weeks.

There are several benefits to donating blood. The immediate benefit is that I actually feel better. Not in an altruistic way, where I think that I've done a good deed, but I actually physically feel better. For some of us, when we lose blood we feel rejuvenated; I can get off the table and walk out. That's not the case for all of us, so please eat the cookie, drink some juice, and make sure you feel good. I feel good though, physically and mentally. I also know that I am filling a real need in the community.

The imagery of the blood that Jesus shed resonates deeply with me as a Christian. Blood is amazing, even from a scientific perspective, the pH control, the water that's in there, the enzymes and the nutrients—it's just a life-giving substance, and to know that we can lose some of it, and give it without really hurting ourselves thrills me. We're able to give and it comes right back to us.



The Molecular Sieve is produced annually
by the Andrews University
Department of Chemistry and Biochemistry

Editor—D. Johnston
Editor-in-Chief—D. Nowack

2017 Graduates & Awards

2017 Undergraduate Degrees Awarded

Aderotimi, Laniyan BS Biochemistry
Kaydra Bailey, BS Biochemistry, Summa Cum Laude
J Gabe Butlin, BS Biochemistry, Summa Cum Laude
Noah Chun, BS Biochemistry, Summa Cum Laude
Adriana Delgado, BS Biochemistry, Summa Cum Laude
Irene Hwang, BS Biochemistry, Summa Cum Laude

♦ J N Andrews Honors Scholar

Abraham Lee, BS Biochemistry, Magna Cum Laude
Kyungsin Park, BS Biochemistry
Hyelin You, BS Biochemistry, Summa Cum Laude

♦ J N Andrews Honors Scholar

Dillon Zimmerman, BS Chemistry, Summa Cum Laude

♦ American Chemical Society endorsed

2017 Class Awards

ACS General Chemistry Award	Juliane Johnson
ACS General Chemistry Award	Tereza Cincala
ACS Analytical Chemistry Award	Dillon Zimmerman
ACS Biochemistry Award	Warit Chirachevin
ACS Biochemistry Award	Irene Hwang

2017 Scholarships

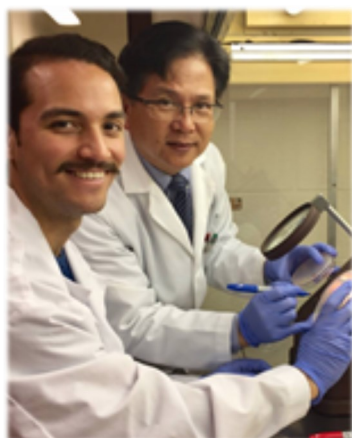
Lois K. Mutch Scholarship	shared by **
** Jesse Gray, Jakub Krzywon, Nathaniel Srikureja	
Dwain Ford Scholarship	shared by **
** Sara Hebert, Victoria Kim, Danielle Oh	
Halenz Scholarship	Lauren Bitterman
Richard Cook Scholarship	Arthur Lee
Thomas Mullin Scholarship	Anthony Miller
Ralph Scorpio Scholarship	Kristen Proctor
Mutch, Scorpio, Wilkins Award	Josselyn Roosenberg
Richard Minesinger Scholarship	Jason Grellmann
Robert Wilkins Scholarship	Donn LaTour
Taylor & Abbott Scholarships	Gergana Milkova

Become a Chemistry Partner

Send checks to:

Department of Chemistry and Biochemistry
4270 Administrative Drive, HH225
Andrews University
Berrien Springs, MI 49104

Student Research



Rayford Alva is working on products of burning heterocyclic amines with Dr. Hayes.

Michaela Souza is looking at the synthesis and activity of novel dual-binding transfectors with Dr. Murray.



Skylar Schell is using GCMS to examine Dr. Hayes' heterocyclic amine combustion.

Lauren Bitterman studies copper complexed dendrimers on the ICP with Dr. Hayes.



Jason Grellmann uses the HPLC to identify drugs in collaboration with Notre Dame and Dr. Hayes.

Yewon Kim and Dr. Murray are investigating the synthesis and antibacterial properties of oxygenated boronic acid substituted α -cyanostilbenes.



Diana Kerowa's project is synthesis of mixed O,S acylals via electrophilic carbonyl addition with Dr. Murray.



Jacob Jackson is researching novel one-flask sequential reactions of chloro-sulfonyl isocyanate with Dr. Murray.



Colored dendrimers are the focus of the research **Jesse** Gray is carrying out with Dr. Hayes.



Teddy Kim and Dr. Merga are synthesizing silver nanoparticles.



Ali Edge is analyzing amino acids from glaucous-winged gull eggshells with Drs. Ahlberg and Randall.



Message from the Chair

The number of majors (Chemistry, Biochemistry and the new one, Biotechnology) in the Department has reached a total of 50. This is the highest number in the last 20 years at least.

The professors in the Department are among the most awarded in the University for excellence in teaching. Since 2012, four of the six professors in the Department have been honored. **Dr. Desmond Murray** was presented with the Michigan College Teacher of the Year by the Michigan Science Teachers Association. Both **Dr. David Randall** and **Dr. Ryan Hayes** earned the Daniel A. Augsburg Award for Excellence in Teaching. And the AUSA chose **Dr. Lisa Ahlberg** as Teacher of the Year.

The JEOL 400 MHz Superconducting suffered a catastrophic coolant failure with subsequent quenching of the magnet in September of 2016. After consulting with the administration, the NMR was repaired and recommissioned. (The cause of the failure was a hidden corrosion problem that caused the cryogen dewar to lose its vacuum.) The NMR is near the end of its use cycle and, even now, some parts for repairs are unavailable new and the instrument is being kept alive by salvaged parts from decommissioned instruments that are stored by JEOL. The Department is working with the administration to make plans to replace the instrument. Alumni support will be a crucial part of the acquisition of a new NMR.

The Department graduates continue to perform well in their subsequent education opportunities, whether in professional school (medical, dental, pharmacy) or graduate school.

D. David Nowack

Forensic Lab Report

The Berrien County Forensic Lab (BCFL) was established within the AU Chemistry Department in 1972 under the direction of Chair Dwayne Ford. Now in its 45th year, it continues to respond the changing landscape of illegal substances and abused drugs in America. The nation finds itself in an epidemic of opioid use that is claiming the lives of too many young people. New restrictions on prescription pain-killers appear to be driving some to heroin use which has been on the rise for the past couple of years. Southwestern Michigan, like most of the country, is seeing its heroin supply frequently laced with other, more powerful, narcotics. By October this year, BCFL had exceeded the number of fentanyl submissions for all of 2016.

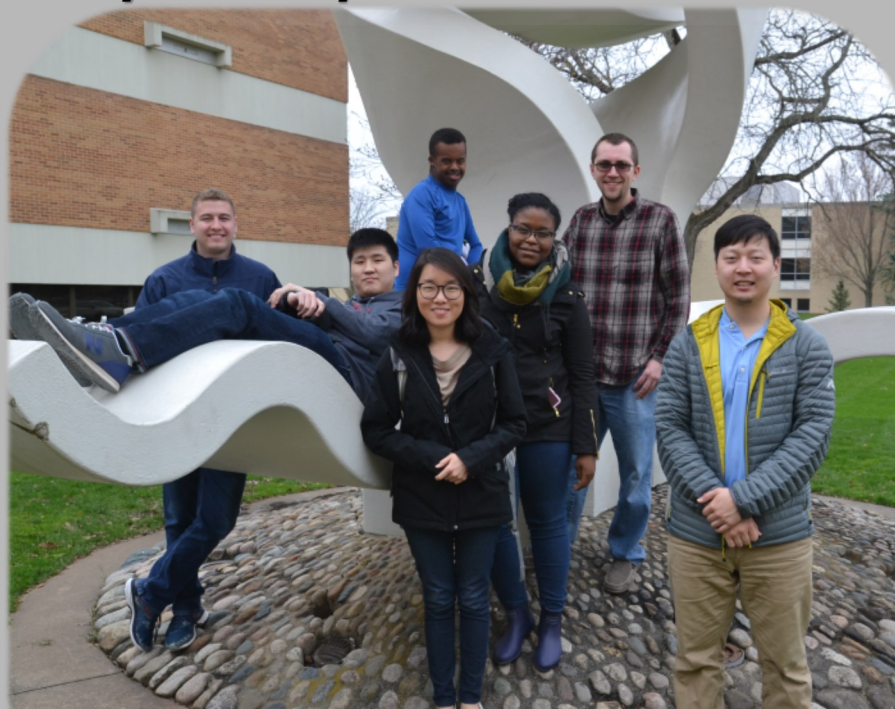
Lab Director **John Rorabeck** collaborated with LECO Corporation in presenting some of these findings and the advantages of screening such opioids with High Resolution Time-of-Flight Mass Spectrometry (HR-TOF-MS) at the Pittcon trade conference in Chicago this past March. The high-speed data collection and broad spectrum analysis provided by HR-TOF-MS is particularly valuable in the forensic laboratory setting where unknown powders can contain a wide variety of drugs and adulterants.

This fall, LECO is again partnering with Berrien County to make a new TOF-Mass Spec instrument available to Andrews University, replacing the one that has been in service since 2008. We are pleased to have earned the trust of these community leaders and to use our talents and facilities to provide this valuable service to the citizens of Southwestern Michigan.



E-mail alumni updates and pictures to David Nowack at chemistry@andrews.edu

We Say Good-bye to our 2017 Graduates



Pictured above from left to right: ***Gabe Butlin*** is at Loma Linda School of Medicine pursuing his goal to become a doctor; ***Abraham Lee*** is also studying medicine at Loma Linda University; ***Joshua Getahun***, Dr. Merga's son was excited to pose with the graduates; ***Hyelin You*** is studying medicine at Loma Linda; ***Kaydra Bailey*** decided to seek a medical degree from Indiana University-Purdue University Indianapolis, so we hope to see her from time to time; We are blessed to have ***Dillon Zimmerman*** around for an extra year so that he complete his MAT in secondary education before beginning to teach; ***Noah Chun*** was accepted to Loma Linda School of Medicine, but has decided to take a year to spend quality time with his mom and younger sister before matriculating in the summer of 2018.

Pictured below on the front row, third and fourth from the left are ***Adriana Delgado***, who isn't too far away, having chosen to attend University of Cincinnati Medical School; and ***Irene Hwang*** who is training for the dental profession at Columbia University Dental School.



Not pictured: Our friend, ***Aderotimi Laniyan*** has embarked on a career with Charm Science; ***Kyungsin Park*** completed his course work some time ago, and just finished up the paperwork to graduate this year.

Happy Holidays

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Andrews University
Department of Chemistry & Biochemistry
4270 Administration Dr
Berrien Springs, MI 49104-0430
Address Service Requested