

MOLECULAR SIEVE

Andrews University

Department of Chemistry & Biochemistry

An American Chemical Society Approved Program since 1976

Fall 2018

Dr. Robert A. Wilkins 1938-2018

In This Issue:

- 1 Dr. Bob Wilkins
- 2 Honored Faculty
- 3 ChemClub Officers
Quant Lab Coats
- 4 Awards & Degrees
- 5 Alumni Notes
- 8 From the Chair
Forensic Lab
- 9 2018 Graduates

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

As many of you already know, we lost a long-time leader in our department this July when Bob Wilkins passed to his rest after a few short weeks of illness.

Dr. Wilkins served as Chair of the Chemistry Department from 1971 to 1988 and then returned to classroom teaching until he retired in 2002.

Several times Bob received the annual Faculty Award for Teaching Excellence and was also selected as Teacher of the Year by the students numerous times. He was regarded by students as an excellent advisor and was sought out by students who were not even officially assigned to him as advisees.

One of his students, Bill Mutch, formed a bond with Bob that went beyond the classroom and onto the tennis court where the two made a formidable team. Later, in 1973, Bob hired Dr. Mutch as a professor in the department. Bob and his wife encouraged Bill and his wife Pat to purchase the lot next to their home on Garr Road.

There was soon a well-worn path through the woods connecting the two homes. The couples also spent several summer vacations together and held a mutual love of the great outdoors. All of the faculty who knew him held Bob in warm regard.

During retirement, Bob and his wife loved to travel. They took several trips to participate in digs staffed by the Andrews community at Tall Jalul, Jordan. He was



fascinated by archaeology and believed it to be extremely important in validating the Bible. His love of scripture was evident in the Sabbath School class that he formed and lead for many years.

After his wife's stroke, Bob lovingly cared for her for years. He also stayed engaged with friends in stamp collecting and served many hours at the local Adventist community services store, Neighbor to Neighbor.

Bob Wilkins left an inspiring example of sincere friendship, life-long learning, community service and Adventist spirituality. We look forward to the day we will see him again in the new earth.

Bruce Lee Service Award



Dr. Ryan Hayes is the personification of the ideals of the Bruce Lee Service Award. Ryan's selfless service to the Church, through his Science, Creation and Faith demonstrations and presentations, have been seen all over the United States...most recently during a week of prayer in a school in Washington State during Spring Break. His son Carter was his assistant! Ryan sees himself as a "Chemical Missionary."

He serves his local church in a variety of leadership capacities included Worship Coordinator Leader, deacon, Adult/Youth/Kindergarten/Sabbath School leadership, Kindergarten Co-leader and piano player, Children's Story Teller, and member of a Church School Board. He developed and led out in a Science Camp with 17 nights of programming and has conducted Weeks of Prayer for church schools. He has been an invited speaker on multiple occasions and a past president of the Intersarsity Graduate Christian Fellowship in Northwestern University. His worship talks are highly cited in his class evaluations.

In scholarly service Ryan is a member of the Faith and Science Council and a reviewer and editor of scholarly journal articles and a textbook reviewer. He is the founder, lead scientist and business developer for the Andrews University Chemical Services company. Ryan serves the Department and the University by bringing positive energy and an upbeat attitude to advising and mentoring students, and to every committee meeting, vespers, workday and every extra thing he does for his students and student researchers. Any event in which Ryan participates, will be better and more fun because he is there making a positive difference.

JN Andrews Medallion

Dr. Desmond Murray is the founder of "Building Excellence in Science and Technology" (BEST), People First, Innovate Early. This program provides early research opportunities for high school and college students. Since 2010, Murray has been the organizer for an annual BEST Early Research Symposium.

Desmond has been involved in numerous other community-related activities. Since 2001, he has been an editor and columnist for the Benton Spirit Community Newspaper. He also developed the Benton Harbor Science Initiative to provide STEM enrichment programs for students. He also began the Socrates AfterSchool project for joint science department assemblies and tutoring workshops.

Murray is well known as a remarkable research mentor for his students. He has mentored 91 undergraduate research students, 28 high school students, 25 J.N. Andrews Honors Research students and seven graduate students. In addition, he has collaborated with over 23 professors and colleagues in research, produced six peer-reviewed publications and written 32 scientific abstracts.

Murray created and chaired the Community Engagement Council to facilitate the university's engagement with our surrounding communities. Change Day is one initiative inspired by this council. He is also a member of the Scholarly Research Council and the Race & Justice Subcommittee.

Murray has won several awards, including College Science Teacher of the Year from the Michigan Science Teachers Association and the Outstanding Service Award from Andrews.

For his service to the community and his dedication to research and his students, the faculty of Andrews University presented Desmond Hartwell Murray with the John Nevins Andrews Medallion.



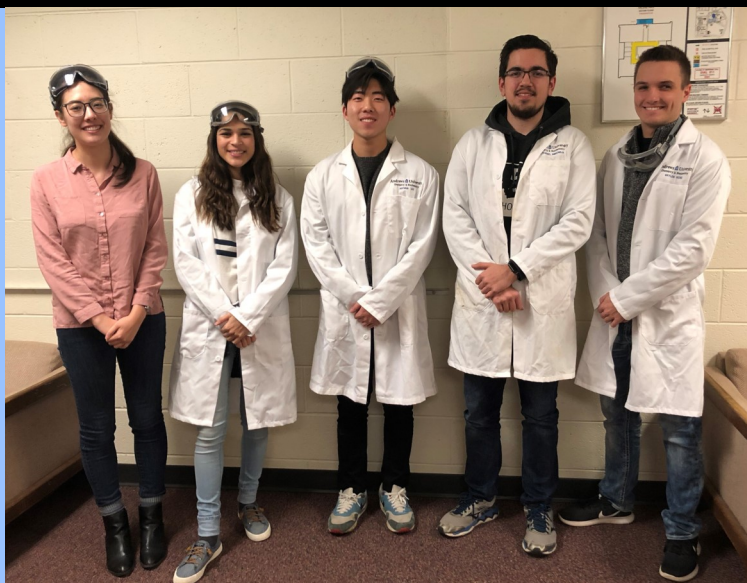
Quant Lab Coats



Dr. Randall, **Aaron** Jacobs, **Alicia** Dent, **Jakub** Krzywon, **Sofia** Hanapin, **Kristen** Proctor, **Sara** Hebert, **Adolfo** Potts, **Nikitha** Nelapudi, **Skyler** Schell, **Yahaira** Huancaya, **Theo** Sumampouw, **Maya** Turon

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

ChemClub Officers



Jo Ann Johnson, Religious Vice-President; **Sara** Hebert, Secretary-Treasurer, **Arthur** Lee, Public Relations; **Nathaniel** Srikureja, President; **Skyler** Schell, Media Coordinator;
Not pictured: **Juliane** Johnson, Social Vice-President

2018 Graduates & Awards

2018 Undergraduate Degrees Awarded

Alastair Acre, BS Biochemistry

Lauren Bitterman, BS Biochemistry,

♦ Summa Cum Laude

Alexandria Edge, BS Chemistry

Obed Galla-Pimentel, BS Biochemistry,

♦ Cum Laude

Jason Grellmann, BS Biochemistry,

♦ Summa Cum Laude

Dong Wan Tom Kang, BS Biochemistry

Victoria Kim, BS Biochemistry,

♦ Summa Cum Laude

♦ J N Andrews Honors Scholar

Yewon Kim, BS Biochemistry,

♦ Cum Laude

♦ J N Andrews Honors Scholar

Michael-Anthony Lawrence, BS Biochemistry

Tammy Leong, BS Chemistry

Brenden Mutz, BS Biochemistry

Danielle Oh, BS Biochemistry,

♦ Summa Cum Laude

Shanagaye Spence, BS Biotechnology

2018 ACS Class Awards

General Chemistry Award

Daniel Chi

General Chemistry Award

Kieran Taylor

Analytical Award

Nathaniel Srikureja

Organic Chemistry Award

Juliane Johnson

Organic Chemistry Award

Hannah Chi

Physical Chemistry Award

Obed Galla

Biochemistry Award

Nathaniel Srikureja

Overall Excellence Award

shared by **

** Daniel Chi, Josselyn Roosenberg,
Arthur Lee, Nathaniel Srikureja

Become a Chemistry Partner

Send checks to:

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

Alumni Notes

Wes McNeal (BA, Chem. '56)

Dr. Halenz provided the capable leadership for the department when I attended EMC. His son, Donnie, was a playmate of mine, as we lived in the community of students.

After medical school, I took an internship in the US Public Service in New Orleans, and then moved to Green Bay, WI, where I practiced Family Medicine for 37 years. We moved to Loudon, TN, in 1998—fully expecting to live out our lives in retirement. But we found an acute need for primary care in rural east TN, so I went back to work part time until 2011.

I'm married to Mary, who is an RN, and is the Parish Nurse in the church where we attend. We have four sons. I fondly recall my college years; I feel I got a very good education at EMC which helped me in my professional life. Congratulations on the Blue Ribbon in the alumni parade!

Duane Lemon (BA, Chem. '65)

I followed up my degree in chemistry by earning an MA in Education (also from Andrews) in 1974. Now, retired from Forest Lake Academy, after 41 years of teaching, I am currently teaching math at Ooltewah high school here in Tennessee.

2018 Scholarships

Lois K. Mutch Scholarship

Anthony Miller

Dwain Ford Scholarship

Jakub Krzywon

H. F. Halenz Scholarship

Adriana Luna

Richard Cook Scholarship

Andrew Hodgins

Thomas Mullin Scholarship

Joiliana Lecointe

Ralph Scorpio Scholarship

Gergana Milkova

Mutch, Scorpio, Wilkins

Paul Thompson

Minesinger Scholarship

Sara Hebert

Robert Wilkins Scholarship

Katherine Nelson

Max Taylor Scholarship

Seung Ho Park

Glen Abbot Scholarship

Skyler Schell

Theodore Hirsch Scholarship

Nikitha Nelapudi

Hall & Miller Scholarship

shared by **

** Theo Sumampouw, Jesse Gray, Alicia Dent

The Molecular Sieve is produced annually

by the Andrews University

Department of Chemistry and Biochemistry

Editor—D. Johnston

Editor-in-Chief—D. Nowack

Alumni Notes

Last year I filled in as a long term substitute for the chemistry teacher. I enjoy the classroom environment and hope to inspire young people to pursue a career in the sciences. I also present an influence for spiritual things in a public setting.

Richard Yukl (BA, Chem. '67)

After Andrews, I attended Loma Linda to earn my MD in 1971. My surgical residency was spent at Mayo Clinic. For twenty years, I pursued my surgical career with a solo practice in Denver, CO. I then took on the responsibility of trauma director, overseeing the establishment of a trauma center in each of three hospitals and the development of a helicopter system with statewide reach.



My wife, Joylin Campbell, was also a graduate of Andrews. Her degree was in music. Following her death in 2003, I retired and moved to Loma Linda, CA. I have remarried and have no children. My professional service in retirement includes the writing of medical scripts for Adventist World Radio and participation in various medical mission trips.

I remember clearly the requirement that each chemistry major conduct a senior colloquium. My topic was chelation, which I found to be very interesting. Some thirty years later, certification of Level I trauma centers required documentation of clinical research.

Our lab's mass spectrometer identified a spike in the cerebral spinal fluid of cord injured patients. Characterization of the compound identified it to be a chelating agent with strong anti-inflammatory properties which we are currently preparing for approval by the FDA as a therapeutic for severe arthritis of the knee.

Gary Ruba (BS, Chem. '83)

I have three jobs, which keep me busy 24 hours a day. I work for Eli Lilly and Co. in Indianapolis, IN, Monday through Friday as a lab grunt. I run routine analysis required for the release of pharma products to the global market. I have worked in the industry for thirty years and have contributed to the success of many life-saving products.

I love my work because it allows me time for my other jobs. I volunteer with the Morgantown Rural First Department as a fire fighter, EMT, hazmat and

rescue tech. Sometimes I have to take vacation time in order to recover from an all-night house fire!

But my most rewarding work is as a lay pastor with the Indiana Conference. I work with thirty of the most God-fearing people as we share the gospel and prepare for Jesus' soon return.

You may remember that I married Janelle in 1984 and we have four adopted children. Blessings to all of you from Pastor Gary, Fire Medic 16-13, or Associate Scientist.



Nuvia Saucedo (BS, Chem. '09)

I have been "missing in action" for a while—grad school was hard. Praise be to God, I have my PhD in Analytical Chemistry and am a professor. God had been preparing me unbeknownst to me.

I am at Southern Adventist University—another blessing! I teach General Chemistry and two Intro Chem courses for non-majors. I am still playing trombone; not surprisingly, as music has always been a refuge for me.

I loved my time at Andrews, and the chemistry department had a HUGE role in that. I remember Kim Robinson, Robert Wilson, Sangmi Mun and Stephen Gardner. I hear great things about the department there and it makes me proud.

Stephen Gilbert (BS, Biochem. '14)

I recently finished my graduate degree with an MS in Chemistry from Purdue, and I wanted to express my thanks and gratitude to Professor Hayes in helping me get to this point in my life. His mentorship has been invaluable.

My thesis was on the synthesis of next generation open-shell small molecules: effects of functional group modulation of Blatter's radical. I am in the job market now and trying to stay in the Midwest. At some point I'd love to visit Andrews and see what is new in the department.

Camille Martin (BS, Chem. '14)

Dr. Merga ran into Camille at the 256th National ACS meeting in Boston this fall. Camille was giving her first ACS meeting poster presentation. She was very happy to see Getahun and expressed her love for all the faculty here. She commented on the wonderful learning and research experience she received at Andrews. We are looking forward to

Alumni Notes

having her return to give one of our famous Thursday seminar talks soon.

Jordan Holzschuher (BS, Biochem. '15)

I have been accepted to McMaster University to begin work on my Masters in Chemical Biology January 2019. The school is very research intensive, and I cannot wait to learn from all the different scientists on campus.

I will be studying under Dr. Britz-McKibbin doing research on metabolomics—specifically cannabinoid metabolites and how they change the action of other drugs. This is the perfect for me because of the interest and knowledge I developed in John Rorabeck's Forensic Chemistry class and because marijuana has been legalized in Canada.

I only took that one class in forensics, but it had a huge impact on my life. That was the first class where chemistry started really intriguing me—and where I learned real life applications. I can't wait to come visit you there at Andrews.

Kaydra Bailey (BS, Biochem. '17)

I am writing from the Indiana University School of Medicine where things have not been easy, but I have adjusted to the new environment and a workload unlike any I've seen before. The classes are taught on a pass/fail bases, where the passing grade is based on the class average and a standard deviation from that average. It is a bit terrifying!

Many students begin medical school studying in the same manner they did in undergrad and do not pass. In the first two weeks we covered the amount of material that took us two months in undergrad. I've been so grateful for the things I did learn at Andrews, especially Biochemistry II, Cell and Molecular Biology, Human Anatomy (PT version) and Developmental Biology. On the other hand, I truly wish I had prepared for medical school by taking the following classes: Histology, Immunology, Microbiology and Genetics.

Thank you so much to my Andrews academic advisors and to all the faculty there. Please feel free to share my insights with your current students.

Shanagaye Spence (BS, Biotech. '18)

I have the honor of being the very first Biotechnology graduate from Andrews. I am happy to report that I am now working at Atlas Precision Plastics. I'm on the quality control team and feel that I am using the information and the skills I learned at Andrews. Thank you to all the faculty for your impact on my life.

Maker Faire & NAD Event

This March, the Technology, Innovation, Engineering program at Loma Linda Academy hosted its first ever Maker Faire, where Loma Linda Academy students and others shared hands on experiences or things that they had made with over 5000 individuals who attended. The STEM division of Andrews University had a strong presence: Drs. Lisa **Ahlberg** and David **Randall** represented our department. Visitors got actively involved in chemistry by making slime, identifying drinks with the most vitamin C (by doing a titration), exploring the conductivity of solutions, or using potatoes with different metallic electrodes to learn about batteries. It was also great to catch up with some alumni in medical or dental school there.



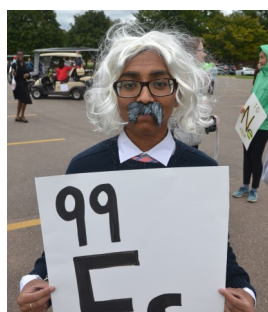
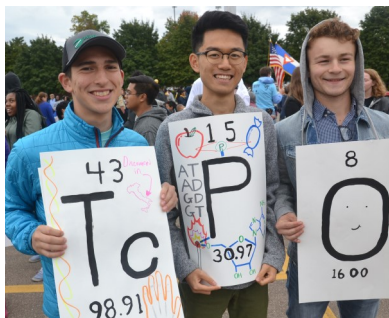
In August, many of our professors presented at the North American Division Teachers Convention in Chicago. Over 6,000 Adventist elementary and secondary teachers from the United States and Canada came to participate in professional growth. Drs. Lisa **Ahlberg**, Ryan **Hayes**, Desmond **Murray**, David **Nowack**, and David **Randall** led six of the breakout sessions available to the participants. In addition, the Andrews STEM departments hosted a booth in the exhibit hall to make connections with teachers, provide them with resources, and inform them about a new interdisciplinary course (STEM Boost) designed specifically for teachers.



Alumni Parade Victory!



We did it! Yes, our marching Periodic Table of the Elements won first prize in the annual alumni parade this September. We had some stunning costumes and decorations to represent the elements and the ChemClub officers put on an amazing demonstration of the “elephant’s toothpaste” reaction: rapid decomposition of hydrogen peroxide with potassium iodide.



Faith and Science

The **Hayes** family and three Andrews students headed to Indiana Academy the last weekend in



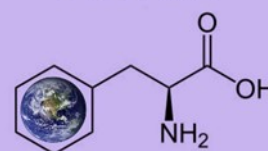
February, where they gave four presentations to around 400 people. The theme was “Salvation” written with Periodic Table elements. The stage was decorated with molecular structures drawn on backdrop.



Blacklights shining through tonic water created glowing solutions as quinine fluoresce with the UV light. Dr. Hayes’ son went safely through the flames for a demo on how God protects His people. We ended with some Hydrogen-Oxygen balloons in a salute to our Creator!

The chemical evidence of God’s hand at work to sustain life should be understood by college students. Each semester Dr. **Hayes** gives a series on how finely tuned for life are the air, water, light, radioactivity, and other aspects of chemistry. The program is filled with experiments, videos, and educational information to connect students to the chemical design all around us. The students have found their faith in the intelligent design of Earth strengthened. About 50 to 70 students attend each week. The series takes place in Chan Shun Hall so it gets us out of the science complex and attracts more attendees. Dillon Zimmerman was instrumental in getting this off the ground in the 2017-18 school year and helped connect us to PMC’s Grow Groups.

EXPLORING CREATION DESIGNS



CO-CURRICULAR SHORT COURSE

TUESDAY . 11:30 AM
GARBER AUDITORIUM
CHAN SHUN HALL

9/5 . 9/12 . 9/26 . 10/3 . 10/17



Andrews University Department of
Chemistry and Biochemistry



Message from the Chair

Midway through my tenth year as chair, I am able to look back and consider those years carefully.

The first thought is to realize how many blessings have been bestowed upon this Department. The greatest blessing is the team of colleagues who are warm, caring human beings, excellent teachers and staff, skilled chemists, and thoughtful mentors. Where do you find such people—all gathered in a single place? It's a rhetorical question of course, but it can only be a blessing of God. Other blessings: hard-working, talented chemistry and biochemistry majors; a committed group of supportive alumni; and an administration that has supported the renovating of the teaching labs and the acquisition of new instruments.

The second thought is to reflect on the past that has prepared us for the challenges that the department faces in the future. An important achievement for our Department that occurred several years ago (2001-2002 to be exact) was the acquisition of the 400 MHz NMR. This instrument, while a tremendous resource for the Department, has reached its end of life. Repair parts are not available except for parts stripped from defunct machines that JEOL graciously provides. Sometime in the future, a part will fail and there will not be a replacement. Interestingly, permanent magnet NMR technology has progressed dramatically over the last few years and a low frequency, non-superconducting NMR may meet our needs. But that is a big "may". It is a decision that will take the collective wisdom of our faculty. Please pray for us on this decision.

Thanks so much for your continued support. It means so much, both practically and for the morale of our faculty, staff and majors.

D. David Nowack

Forensic Lab Report

The Berrien County Forensic Lab (BCFL) continues to serve more than thirty local law enforcement units with narcotics analysis and court testimony as they navigate the ever-changing landscape of drug interdictions. The impact of the new legal status of marijuana in Michigan has yet to be determined.

John Rorabeck, Lab Analyst, reports that submission of non-plant cannabis items (THC-wax, oils and edibles) has nearly doubled in 2018 over the prior year. This is an added concern for two reasons: the potency of the marijuana is much higher than what was seen in the past and with edibles the effect is not felt immediately. So a user may be surprised and overwhelmed when the THC does kick in. Compounding the possible confusion is the fact that the average joint carries about 15% THC, while concentrates have THC levels of 50-90%.

Opioids and heroin continue to plague young adults in our communities. Perhaps equally troubling is the increase in methamphetamine seizures in Berrien County, exceeding cocaine for the first time in the Lab's 35 year history.

The availability of low cost/high purity crystal meth is fueling this trend. BCFL's ability to determine and report these purity levels is garnering the attention of more local law enforcement agencies needing this data for successful prosecutions of drug trafficking cases. Those successes should send the message that southwest Michigan is not the place to peddle your drugs.



We Say Good-bye to our 2018 Graduates



Pictured above from left to right: **Obed Galla** is at Loma Linda School of Dentistry; **Danielle Oh** is studying medicine at Loma Linda University; **Shanagaye Spence**, our very first Biotech graduate, is working at Atlas Precision Plastics on the quality control team; **Michael-Anthony Lawrence** headed home to New York after graduation; **Tammy Leong** is in graduate school at Tulane University pursuing a PhD in physical chemistry; **Jason Grellmann** is at Loma Linda School of Medicine; **Lauren Bitterman** is also studying medicine at Loma Linda University; **Yeuon Kim** is nearby at University of Michigan School of Pharmacy; **Brenden Mutz** is attending Loma Linda University School of Pharmacy.

Not pictured: **Alastair Acre** headed to Loma Linda Dental School after graduation; **Alexandria Edge** is happy to be home in Hawaii this winter; **Don Wan (Tom) Kang** is taking a gap year before starting dental school; **Tori Kim** has arranged a delayed entrance for Loma Linda School of Medicine.

Happy New Year

From your Department of Chemistry & Biochemistry



Like us on Facebook!



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