

MOLECULAR SIEVE

Andrews University

Department of Chemistry & Biochemistry

An American Chemical Society Approved Program since 1976

Fall 2020

COVID-19 and the New Reality of Chemistry 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

What a year it has been! In mid-March, Andrews University, along with colleges and universities across the country, decided to switch to 100% online learning. Faculty were given about 16 days to implement and deploy the needed changes to finish the semester.

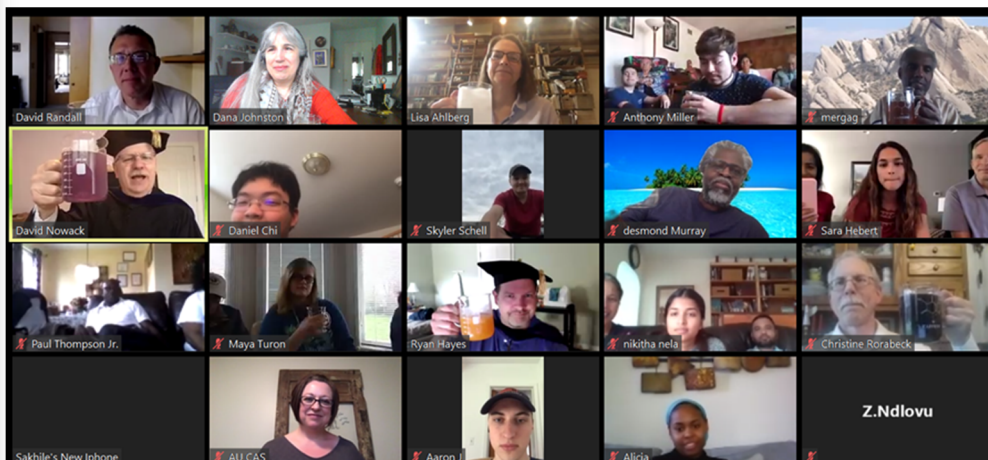
In two days students scrambled to clear out of dorms before leaving campus and returning home for the rest of the semester. As our seniors came to say good-bye, we realized that traditional graduation services were unlikely, so we gathered for a final in-person farewell before the lockdown.

Teaching chemistry requires a drawing surface: a chalkboard, or a whiteboard. Since this would be unavailable when teaching on a virtual platform, we bought economical iPads & iPencils for each faculty member. Faculty spent every minute of spring break redeveloping materials and testing technology so that students could

finish the final five weeks of the semester remotely.

To provide quality education to our students, we became proficient in using the iPads and Zoom to present lectures, Piazza for online classroom discussion forums, CamScanner to collect homework, Moodle to deliver and grade tests, as well as meeting and collaborating with Microsoft Teams and Google Drive. The American Chemical Society (ACS) provided special testing options for remote students in general and organic chemistry. This alphabet soup (and more) of technology, for which we are very grateful, made it possible to continue teaching and learning, with some challenges.

After finals, in spite of the distance, we adapted our traditional Sabbath lunch with all the graduating seniors into a Zoom meeting. Before the event, we sent each graduate and faculty member a beaker mug. By toasting each



COVID-19 (continued)

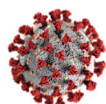
student and affirming the attributes that make them so special to us, we shared a meaningful experience even though thousands of miles separated us. With the university shut down this summer, faculty and staff worked from home with the exception of key tasks such as the weekly cryogen fill for the NMR or picking up a needed book or paper. Dr. Nowack delivered his Biochem I course over the summer 100% remotely.

This fall, we had the luxury of planning ahead. Recognizing the value of being physically together as a learning community, the university carefully brought us back together with physical distancing, mask protocols, hand sanitizer, disinfectant bottles for all, along with an initial screening of all members of the campus community. To allow more physical distance, the university guided us to cut classroom and lab capacity in half, which necessitated more lab sections. The department further limited the capacity of our amphitheater such that half the students attend general chemistry and organic each day in-person, while the others participate via Zoom. Office hours and faculty meetings are conducted virtually as well.

The flexible hybrid-learning approach planned and delivered by Drs. Hayes and Ahlberg allowed us to include students who would have been unable to attend Andrews otherwise—either because of health concerns or because COVID made it impossible to get a student visa. General chemistry serves eleven remote students, biochemistry serves six, and organic one. Four of our majors this year are fully remote.

The ACS affirms our belief that lab work remains a critical component of chemistry and biochemistry studies. We are not offering remote labs for higher level courses, but for remote students in general chemistry, we provide a TA-led lab experience by Zoom in which students do all of the observations and calculations as they would in person. We all await Thanksgiving which will mark the end of in-person instruction followed by 1 week in which students will complete lab reports, etc.

We praise God for the technology, but most of all for the willing and adaptable can-do spirit of students, faculty and staff, who as a team have worked together and encouraged each other through these challenging times to continue to make our department a place where outstanding chemistry and biochemistry education still happens.



Chemical Origins

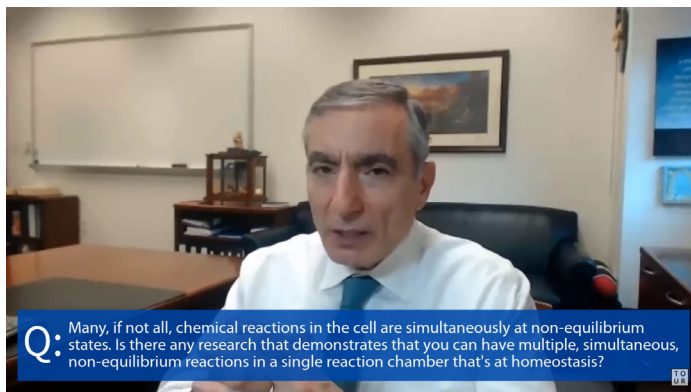
Dr. James Tour, Chao Professor of Chemistry at Rice University, Houston, TX, was welcomed by Provost C. Arthur and CAS Dean A. Rosenthal to present, “Scientists Are Clueless about the Origin of Life,” as the first lecture of this year’s all online Dwain Ford seminar series. With over 700 research publications and 120 patents, Dr. Tour is one of the ten most cited chemists in the world. In 2019, he was named as one of the top 50 most influential scientists. Over 15 companies have been launched based on Dr. Tour’s ground breaking synthetic chemistry research.

In his engaging lecture, Prof. Tour questioned the chemically simplistic narratives often given by evolutionists from the perspective of a synthetic chemist, who knows first hand the challenges in creating molecules. Though he is a Christian, he did not rely on Intelligent Design, but instead called for a chemically sophisticated examination of the lack of evidence for abiogenesis, the origin of the chemistry necessary to sustain life. He demonstrated that the explanations often offered are incomplete, and stated that “the gross chemical changes needed for macroevolution are not understood—and that we cannot even suggest the mechanisms, let alone observe them.”

Almost 400 people attended from around the world via Zoom, and the audience participation through chat and Q&A was lively and informative. The September 3, 2020, video presentation can be seen on James Tour’s YouTube channel which has over 34K views as of the writing of this report.

This lecture was jointly organized by Andrews University’s Theological Center for Interdisciplinary Dialogue, Office of Research and Creative Scholarship, and by the Berrien County RESA. Thanks to Dr. D. Murray for bringing Dr. Tour to campus and organizing our department’s seminar program.

Watch at: <https://tinyurl.com/yyuvsakg>



Quant Lab Coats—The Tradition Continues!



Front: Nels Wangsness, Alyssa Henriquez, Chaehyun Kim, Doyun Kim, Jongwan Bae,
Back: Julia Randall, Zoë Gentles, Owen Faehner

Congratulations to all the brave new analytical chemists in quant this fall,
who earned their own lab coat embroidered with their name and the department logo.

ChemClub Officers



Dr. Ryan Hayes, Sponsor; Isabella Tessalee,
Religious Vice P.; Hannah Castillo, President;
Dara Atmadja, Secretary/Treasurer; Joshua Pak,
Social Vice P.; Zoë Gentles, Public Relations;
Emma Suvacarov, Vice President

Gamma Sigma Epsilon



Chemistry Honor Society
Dr. Lisa Ahlberg, Sponsor;
Joshua Pak, Sergeant at Arms; Aaron Jacobs,
President; Daniel Chi, Vice-President; Recorder,
Theo Sumampouw; Treasurer, Dara Atmadja

2020 Graduates & Awards

2020 Undergraduate Degrees

Alicia Dent, BS Biochemistry

Sara Hebert, BS Biochemistry

- ♦ Summa Cum Laude

Arthur Lee, BS Biochemistry

- ♦ Magna Cum Laude

Anthony Miller, BS Biochemistry

- ♦ Cum Laude
- ♦ JN Andrews Honors Scholar
- ♦ American Chemical Society

Precious Ndlovu, BS Biochemistry

Nikitha Nelapudi, BS Biochemistry

Adolfo Potts, BS Biochemistry

Kristen Proctor, BS Biochemistry

- ♦ Magna Cum Laude

Skyler Schell, BS Biochemistry

Paul Thompson, BS Chemistry

Maya Turon, BS Chemistry

- ♦ Cum Laude
- ♦ JN Andrews Honors Scholar

2020 ACS Class Awards

General Chemistry Award	Ashley Kim
General Chemistry Award	MinSeo Kang
General Chemistry Award	Caleb Jacobs
Analytical Award	Anthony Miller
Inorganic Chemistry Award	Anthony Miller
Organic Chemistry Award	Adam Kim
Physical Chemistry Award	Anthony Miller
Biochemistry Award	Janelle An
Biochemistry Award	Dinelle Abeysinghe
Biochemistry Award	Daniel Chi

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4270 Administration Dr, Berrien Springs, MI 49104
Editor—D. Johnston Editor-in-Chief—D. Randall

Scholarships

Scholarships 2020-2021 school year

Lois K. Mutch Scholarship	Aaron Jacobs
Lois K. Mutch Scholarship	Noe Reyes
Dwain Ford Scholarship	Hannah Castillo
Richard Cook Scholarship	Edgeorge Archbold
Thomas Mullin Scholarship	Nels Wangsness
Ralph Scorpio Scholarship	Daranthea Atmadja
Ralph Scorpio Scholarship	Sofia Hanapin
Theodore Hirsch Scholarship	Asha Miller
Minesinger Scholarship	Emma Suvacarov
Robert Wilkins Scholarship	Jongwan Bae
Robert Wilkins Scholarship	Kieun Chung
H. F. Halenz Scholarship	Elizabeth Borton
H. F. Halenz Scholarship	Andrew Wee
Glen Abbot Scholarship	Theo Sumampouw
Glen Abbot Scholarship	Daniel Chi
Hall & Miller Scholarship	shared by **
** Isabella Tessalee, Alannah Tjhatra, Chaehyun Kim, Joshua Pak	

Partner with Your Department

Our **instrument suite** is the newest and most comprehensive in Adventist higher education. The instruments are the foundation for training professional chemists and biochemists.

Due to entropy and high use, the instruments are increasingly out of factory specification. Down time for the instruments is slowly increasing.

Our department is **seeking to partner with our alumni** to fund necessary work to bring the instruments back into best condition.

The costs for technicians, parts and travel expenses can be thousands of dollars per instrument. The priority instruments are: HPLC, GC/MS, UV/Vis/NIR, ICP-OES (for metals). Our goal is \$20,000 dollars, which is about \$5000 per instrument. This investment in maintenance will create a set of instruments that the students and faculty can have confidence in for many years.

Alternatively, some alumni have chosen to provide funds for **student research stipends** that support our majors in real world lab projects.

If you are interested in either of these specific opportunities, you may send a check clearly marked with your intentions to the department address listed on this page, or contact us at:

chemistry@andrews.edu or **269-471-3247**

Alumni Notes

Edge, Ali (BS Chem '18)

I'm now working at Precision Analytical in McMinnville, OR doing hormone analysis. It has been interesting to discover the differences between research and clinical labs. I definitely learning a lot.

Oregon is beautiful. It is a nice in-between of Andrews and my home in Hawaii. I still get the fun fall colors, but it's not as cold as Michigan. I haven't explored as many hiking trails as I'd like to yet, but that is because I keep returning to the ones that have wild blackberries.

I've been attending the church my grandma goes to in McMinnville, though we've had online services for a good while. I've made a few friends at church and at work, and I'm not far from a friend from my days at Andrews who is now working on her PhD at University of Oregon.



Courtney Tait (BS Biochem '12)

Our family has grown! Wally and I welcomed Gideon Reid Basit on February 26, 2020. We are still living in Lincoln, NE and remain involved at our local church. I'm currently working PRN as a PA in cardiology.



Kimberly Point Du Jour (BS Biochem '07)

I attended Andrews as Kimberly Robinson. After getting my first taste of basic science research with Dr. Murray in organic lab, I graduated and went to Columbia University College of Physicians and Surgeons to complete MD and PhD degrees.

I'll never forget the friendship, education and spiritual support of the faculty—especially Drs. Nowack, Merga, Mutch and Wong—as I navigated the journey through undergraduate and graduate studies. My favorite memories are of Friday evening vespers with the ChemClub and making gifts for my family in glass blowing class. I even got a visit from Dr. Nowack and his family while I was in New York.

Recently, I completed residency in pathology and fellowship in cytopathology at Emory University and I am currently a pathologist in Atlanta, GA. My husband and I volunteer at our local church and love to spend time with our 5-year-old son, Caleb.

Atuhani Burnett (BS Chem '01)

I went to Vanderbilt University in Nashville after Andrews and completed an MD and PhD in

molecular virology. My residency in general surgery was at Rutgers University in New Jersey, followed by a fellowship in esophagus surgery at Allegheny Health in Pittsburgh, and finally a fellowship with oncologic surgery at McGill University in Montreal.

For the last two years, I have been a surgeon of gastrointestinal malignancies at Banner MD Anderson Cancer Center in Greeley, CO.



Meanwhile, I met and married a wonderful woman named Asel. We have been married for 4 years and have two beautiful children.



John Crouse (BS Chem '99)

I was glad Dr. Murray gave me the opportunity to give a talk on "Atmospheric Autoxidation—How Is It Affecting You?" for the departmental seminar this fall. It was great to see faculty and students—through the magic of Zoom.

It's wonderful that Dr. Murray is still working with high school students. I recall teaching math courses to students in the Berrien County Math and Science program with Keith Calkins. It was a lot of fun and a great way to get students hooked on science.

After earning a secondary ed teaching certificate along with a math and a chemistry degree from Andrews, I worked as an analytical chemist for LECO right there in Berrien County. I next completed a PhD in chemistry at Caltech, where I remained as a research scientist studying atmospheric oxidation mechanisms.

When not in lab, I enjoy spending time with my wife and three kids, and tinkering with electronics.

(Continued on page 6)



Alumni Notes

Rick Afton (BS Chem '77)

I was one of the founders of this fine magazine back in the late 1970s. A lot has happened since then. Here are a few bullets. I—

- **Worked** 44 years for Lily Industries, which became Valspar and is currently Sherwin Williams. I hold a number of inventions in coatings chemistry. I am now the Global Senior Technical Director, and retire the end of 2020.
- **Traveled** globally in my career to: Belgium, China, Vietnam, Korea, France, Italy, England, Netherlands, South America, Mexico, Canada.
- **Married** Anne (an Andrews alum) and we have a son and a daughter, Scott (an Andrews chemistry alum) and Danielle. Both of my children are married and doing well. We have two grandchildren, Allie and Jack.
- **Continue** the hobbies I had at Andrews, golf and drumming. I am deep into both activities—playing drums for three different groups now.
- **Remain** an SDA believer and teach a progressive Sabbath School we call “Something Else.” I am an Elder in our church and help support “Pathway,” a program for addicts.
- **Remember** a play we put on while I was at Andrews. I portrayed Professor George Javor while other students impersonated Drs. Mutch, Wilkins and Wong. The other actors were: Ruth Koch, Gary Davis and David Moll.



Richard Guth (BA Chem '70)

My chemistry teacher at Garden State Academy, Robert Childers, influenced me to study chemistry to become a teacher—but an unfavorable number in the Vietnam draft lottery caused me to change to

Alumni Notes

pre-med. I remember several great chemistry professors: Dwain Ford, George Javor, Lloyd Kuhn.

One morning after a very late night continuous Rook game, I was rudely awakened by a phone call from Dr. Kuhn who said, “Dick, were you planning to take the P Chem final exam today? I forget how the conversation ended, but I threw on some clothes, raced over and joined the final which had been in progress for some time. Happily, I did well enough to salvage a decent grade in the course thanks to Lloyd Kuhn’s timely rescue.

Dr. Javor supervised my honors project, and later joined the faculty at Loma Linda University where we still talk occasionally. I completed medical school and residency at LLU, where I married my classmate, Kathlene Brueske. She took radiology and I specialized in Internal Medicine with an MPH on the side. I continued to be active in sports, playing flag football, softball, and started working in the ER. Eventually, I became board-certified in both specialties.

Kathlene and I then went on a mission tour to Montemorelos University in Mexico where we taught medical students and provided patient care for three years. I even taught Biochemistry in Spanish! I think my students did ok in spite of the fact that I would prepare my lectures the night before class—and sometimes ran out of translated material and had to end class a few minutes early.

Our oldest son, Brian, lives in Roseville, CA and is currently Tribal Attorney for the United Auburn Indian Community. He married Emilia Gutierrez and they have a son and daughter. Our son, James, is in charge of Neurocritical Care at LLUMC. He married Janine Giang and has three children. I get to do childcare on a daily basis.

Doug Pond (BA Chem '65)

I married Marilyn Goertzen 2.5 months after graduation, and taught math, science, choir, band, French and Bible from 1965-1982, before earning a masters in educational administration. I worked within the SDA and public school systems until 1989 when I transitioned to pastoral ministry till retirement in 2013.

My work has taken me to France, Zimbabwe, Congo-Kinshasa, Morocco and Canada—and I’ve led evangelistic programs in the Philippines, Ukraine, Mexico, Canada and the US.

I appreciated my time at Andrews and was proud of the quality learning environment offered by our church. Since I was taking an overload and working, I was exhausted each Friday evening and learned to really appreciate the Sabbath. I also learned that required worships and chapels are

Alumni Notes

counterproductive. I liken spiritual input without the opportunity for output to the Dead Sea! This lesson taught me to balance the time spent reading, watching, listening to religious material and the time spent ministering and witnessing to others in my personal life and with my students and children.

Elton Stecker (BA Chem '57)

Elton's wife, Rheeta (née Kelly), reports that they both left Andrews to attend Loma Linda University medical school. They served as missionaries in Malawi from 1963 to 1977. They spent some time in Malamulo, and the last 4 years at Blantyre Clinic.

Back in the US, they practiced family medicine together till they retired at age 80. They have three children—all delivered by Elton at Malamulo. They have both experience issues with osteoporosis and are glad to be able to live with their youngest daughter in Fayetteville, Arkansas.

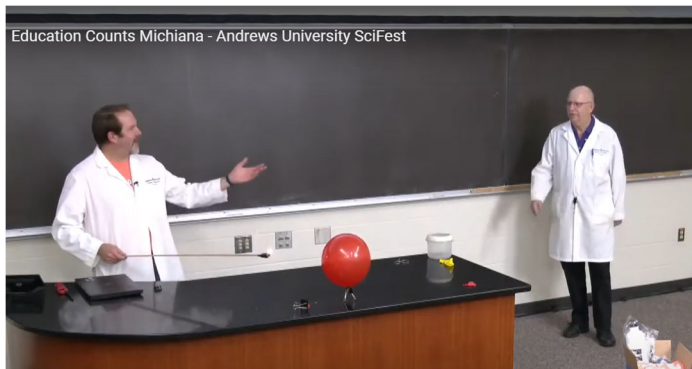
Rheeta remembers taking chemistry courses from Dr. Halenz—and as a biology major, she also fondly remembers Dr. Heidtke's teaching.

Wes McNeal (BA Chem '56)

Dr. Halenz was the department head when I attended Emmanuel Missionary College. I held him in high regard for his ability to educate and his high ideals. Because my father attended EMC in the '30s, my brother and I played with Dr. Halenz's son, Donnie as kids.

I spent time in the US army during the Korean War, and then went to medical school at Loma Linda. I interned at the US Public Service Hospital and then practiced family medicine till 1998.

We moved to Tennessee for retirement, but I went back part time until 2011. I volunteered at the primary care clinic where we saw indigent and non-insured patients. I also worked in a Federally Qualified Health Center where we again saw patients with limited assets.



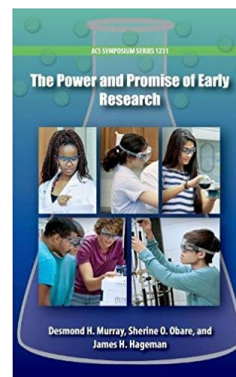
Dr. Hayes and Dr. Nowack at the STEM Show
Watch at: <https://tinyurl.com/y3rs3yxa>

Power & Promise

To enter a laboratory and embrace the unknown world, where a discovery is just around the corner, is a transformative experience. Early introduction to authentic research captures student interest and encourages them to continue with their studies.

To be truly authentic, and thus transformative, young scholars in the lab need to be guided by experts who care for their junior collaborators. This apprenticeship model is time consuming, absolutely essential, and difficult to scale.

Over the last 20 years of teaching high school and college students, Dr. Desmond Murray has advocated for and facilitated seamless early research. He and his co-editors in their new book, ***The Power and Promise of Early Research***, offer a comprehensive overview of how authentic, early research is a strategy for student success. They demonstrate the importance of early introduction to authentic research for all students, including those that are most likely to be left out during the normal sink-or-swim research university curriculum.



Virtual SciFEST

Over 300 high school and academy students from around the world participated in this year's two-week online STEM experience, ***SciFEST Comes to You!*** Students were placed on teams and connected via Zoom, Google Hangouts, etc. They completed lab activities—including chemistry experiments developed by our own Dr. Hayes—in their classrooms or homes and submitted solutions, photos and videos.

Dr. Nowack emceed the livestreamed ***STEM Show*** on September 13 to kick off the program. The awards ceremony on October 4 showcased student videos, a project led by Dr. Murray. Top student teams received medals and scholarships.

This year's virtual event was a COVID-19 necessity, but because of the high level of engagement by off campus students, we hope to host one on-campus SciFEST and another remote SciFEST in the future.

Dear Alumni

Quality education has been the goal of the faculty for the past 79 years! This year has been especially challenging. Yet God has blessed our department through it all. I am proud of how each faculty member conquered obstacles and provided a quality experience for students. When faced with confusing situations, God guided us to make decisions that proved wise and effective.



In this uncertain environment, I am happy to report that our department enrollment increased by about 10% from the previous two years. We continue to rejoice in excellent students. The student leaders in our department have been creative with ideas for safe fellowship. Outdoor events have been popular.

In March, we bid bon voyage to our majors with a quick in-person party. And in May, a Zoom celebration with our graduates their families on graduation Sabbath afternoon replaced our traditional shared meal.

We appreciate the leadership of the university through very challenging times for higher education. At the same time, difficult decisions were made in to address financial difficulties that the pandemic has brought. Accordingly, we adapted as some of our faculty and staff have been placed on furlough for parts of the year.

While teaching, learning, and mentoring through COVID has been downright hard, your department is adapting and growing. Looking toward a COVID-managed tomorrow, I am optimistic that many of the tools we developed out of necessity during this season of COVID-19, will enter our repertoire of tools to deliver outstanding chemical & biochemical education to our students, in an environment that reflects Christ. We continue to have hope and courage for the future.

As always, the generous prayers and financial contributions of our alumni continue to inspire us. We don't know the future, but it sounds great to celebrate 80 years of the department's existence in a year or two.

All of God's richest blessings this holiday season,

Forensic Lab Report

The Berrien County Forensic Lab, continues to serve the southwest Michigan region with accurate and timely analysis of confiscated controlled substances.

In January Lab Analyst **John Rorabeck** was asked by the county probation department to evaluate data from the past four years to review the submissions of methamphetamine and to analyze the trend of samples to be combined with heroin and/or fentanyl. Mixtures of meth with either heroin or fentanyl have increased significantly since 2016, probably due to the increased availability of high purity meth at lower prices and the growing opioid crisis.

We already knew that meth submissions were steadily increasing, from 366 in 2016, to 919 in 2019. Overlaying the heroin and fentanyl data revealed a steady increase in combined heroin/meth cases (21 to 32 to 44 from 2016-18). Fentanyl/heroin/meth began to appear in 2018 with 9 cases, and rose to 56 in 2019 while the meth and heroin combination dropped to 27 that year. This type of data can inform and guide intervention programs and prevention efforts.

Submissions to the lab dropped off as we entered the COVID-19 era. Court appearances have just recently resumed and lab documents, more often than not "speak for themselves" during the pandemic. The lab remained open even as Becky was furloughed from May to August and John just had to learn to prepare his own reports. It is great to have her back as well as the student's presence bringing the campus back to life. Visiting alumni are a welcome sight, even if it is from six feet away.



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

A Hasty Good-bye to 2020 Graduates



Pictured above from left to right: **Paul Thompson** is working at AbbVie Careers in North Chicago and considering graduate school; **Nikitha Nelapudi** is applying to medical school for the fall of 2021; **Sara Hebert** is at Loma Linda University School of Medicine; **Anthony Miller** is at Notre Dame working on a PhD in chemistry; **Maya Turon** received a job offer at Whirlpool—but because of COVID-19 is currently working with Dr. Ahlberg; **Kristen Proctor** is at Loma Linda University School of Medicine; and **Adolfo Potts** is a medical technologist at Chalmers P. Wylie VA Hospital in Ohio.

Not Pictured: **Arthur Lee** and **Skyler Schell** are both at Loma Linda School of Medicine; **Precious Ndlovu** is pursuing a degree at the Massachusetts College of Pharmacy and Health Sciences; and **Alicia Dent** is applying to medical school for the fall of 2021.

It is difficult to graduate into a world immersed in a pandemic—please pray for our graduates.

Happy Holidays

From your Department of Chemistry & Biochemistry



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