

The

MOLECULAR SIEVE

An annual newsletter for alumni and friends of the Andrews University Department of Chemistry and Biochemistry

An American Chemical Society Approved Program

Fall 2010

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Faculty:

David Alonso, PhD

Ryan Hayes, PhD

Getahun Merga, PhD

Desmond Murray, PhD

David Nowack, PhD

David Randall, PhD

Staff:

Dana Johnston, MS

John Rorabeck, MS

Nancy Sheppeler

Garibay Honored as ACS Scholar

Andrews University sophomore Luis Garibay is a 2010 American Chemical Society (ACS) Scholar. The scholarship was announced in August and carries an award of \$5000 per year. The scholarship is renewable through Garibay's fourth year of college.

ACS Scholarships are awarded to historically under represented ethnicities in the chemical sciences on the basis of academic record, career objective, financial need, leadership ability, community service, and participation in school activities. In 2010, 133 ACS scholars were selected by a committee of 19 professional chemists from a variety of academic institutions and industries. This year's list of ACS scholars includes students from leading universities such as Harvard, Columbia, MIT, Cal Tech, Berkeley, Stanford, University of Michigan, and University of Chicago. This year, only two ACS Scholars were selected from the state of Michigan: one from the University of Michigan, Ann Arbor, and the other from our own Andrews University.

Luis, who is pursuing two majors—math, and ACS certified chemistry—is from Colorado, but grew up in Chiapas, Mexico. This semester, he is taking the classic sophomore chemistry major crush: organic chemistry, quantitative analysis, and physics for scientists and engineers, along with Calculus III. Luis also serves as the pastor of the ChemClub.

Professor David Nowack, chair of the Department of Chemistry and Biochemistry, says, "This ACS Scholarship verifies the quality and diversity of students that are attracted to our chemistry and biochemistry programs. We are proud of Luis for his outstanding

commitment to academic excellence and grateful to God for Luis's talents that will ultimately be used for the uplifting of humanity."

Luis decided to apply for the program through the encouragement of his math department advisor, Dr. Shandelle Henson. When asked about the award, he humbly replied, "Since I decided to come to Andrews, I knew that this institution was a great place to prepare me for a career in chemistry and for growing in my faith. This scholarship is an answer to my prayer for two things: money to afford attending Andrews since I do not have my parents' support, and an opportunity to help the Andrews

University Chemistry Department become better known to other students and institutions around the world." Luis continued, "I am so glad that the Andrews chemistry program is certified by the American Chemical Society since that was an important factor in my receiving this award."

According to Professor Emeritus William Mutch, former departmental chair, Luis Garibay is the second Andrews student to receive this prestigious scholarship. In 2007, Nuvia Saucedo became the first Andrews University student to be designated an ACS Scholar. After graduating from the department in 2009, Nuvia is now pursuing graduate studies at the University of California, Riverside.

The ACS Scholars program was initiated in 1994, with funding from the National Science Foundation. In 2010, the majority of funding came from chemical industry sources including PPG Industries, Dow Corning, Proctor & Gamble, GlaxoSmithKline, 3M, DuPont, Xerox, AstraZeneca, and Dow. The ACS administers the program, which has been recognized by a Presidential Award in 2001 and the Building Exemplary Systems for Training initiative.



Grace Carlos, our long-time administrative assistant in the department, retired in May, 2010. Her warmth, cheerfulness and spirit of hospitality made our department an inviting place for students, faculty and guests. Grace will be missed, but we know that Ben, her first grandchild, will receive lots of attention from his doting grandmother.



2010 GC Session

Andrews University had a large booth at the 2010 summer General Conference session in Atlanta, GA. The department of chemistry and biochemistry also had a large presence as three of its members were captured in larger-than-life pictures for the Andrews marketing campaign. Here is one of several photographs featuring Andrews students and faculty. Brittany Foster, Luis Garibay, and Associate Professor Ryan Hayes are shown in a chemistry laboratory setting. Foster is currently serving as a student missionary and could not be here to display the photo.



Luis Garibay and Dr. Ryan Hayes hold a preprint of the photograph used at the 2010 GC Session.

Paging Chantelle

»**Chantelle Krym, an Andrews University** bio-chemistry major, is one of 23 volunteer pages serving at the Session. They perform various responsibilities on behalf of delegates under the direction of Session Management.

"Working in the press box has made me realize that in the future I want to work in a people-oriented environment," Chantelle says. "I think my age plays a part in what I do, because I'm willing to do anything. Here I've gained a greater knowledge and respect for how the church works."



ChemClub Activities

Chemistry Week this year took place from October 18 to October 23, otherwise affectionately known as Mole Day. Each day a new quiz question was posted. On Monday there was a general chemistry question regarding how many M&Ms were in a container. Dr. Hayes insisted that all answers must include calculations. Tuesday was organic chemistry day with a puzzle involving allotropes—which came complete with graphite samples to handle. Wednesday's biochemistry question required the identification of some "amorous" peptides and proteins?! On Thursday there were several questions about energy and entropy representing physical chemistry. On Friday, prizes were awarded to those who answered correctly.



Since Mole Day this year fell during the Sabbath hours, the Chemistry Club decided to commemorate 6.02×10^{23} , that magical number of the good Count Lorenzo Romano Amedeo Carlo Avogadro on Friday instead. We called it the deciMole celebration—since it was held on 10^{22}

instead of the usual 10^{23} . For vespers Dr. Merga told some amazing stories of how God blessed him while he was a graduate student in India. For the two years Dr. Merga was at the school, no exams were held on Sabbath, but before and after that period, all the tests fell on Sabbath! Sometimes money was very tight, but God always made a way. Dr. Merga encouraged all of us to taste and see that God is good. At the annual bonfire vespers we all got a taste of the edible periodic table of elemental cupcakes thanks to the bakery skills of Drs. Hayes and Randall along with their crew of assistant chefs. Combustion of marshmallows and metabolism of hot-dogs with guaca-Mole and le-Mole-nade was the perfect way to cap off a week celebrating the wonders of chemistry.

~ Chantelle Krym, president; and Shieun Jang, PR



Murray Receives Recognition for Early Research Initiatives

In the September 30, 2010 special issue of *Business Review West Michigan*, Assistant Professor of Chemistry Dr. Desmond H. Murray was recognized as one of seven 'thought leaders in education' in West Michigan (<http://www.mlive.com/business/west-michigan/index.ssf?/base=109&coll=1> thought leader in education de.html).

This recognition was based on Murray's 15 years of tirelessly advocating for and providing students with early opportunities to conduct research in both curricular and non-curricular settings through BEST (Building Excellence in Science & Technology), the nonprofit organization he created for high school and college students. Murray describes his programs in which students get hands-on experience in authentic research four to eight years earlier than usual as 'incubators of innovators.' More than 650 students have



participated in Murray's early research programs doing real research into new dyes, hybrid drugs, sensors for toxic agents, and more. Follow-up surveys of participating students indicate 76% say the experience heightened their interest in research, with 71% reporting increased interest in chemistry.

Murray recently launched two YouTube videos about early research participation: *A Passion for Research: Inspiring High School Students* (<http://www.youtube.com/watch?v=G3gQU6pUQSI>) and *Not To Young To Research* (<http://www.youtube.com/watch?v=nQ2PMfCYoAU>).

Actors for the video, which was shot on location at the Andrews University Science Complex, came from the Boys & Girls Club of Benton Harbor, Michigan, the Homeschool HUB of Niles, Michigan, and the Berrien RESA Math & Science Center. Kaylee Edwards, of Sudus, Michigan, a 2010 graduate of the Math & Science Center, was a student in Murray's 2010 Grade 12 organic chemistry research class. Now a computer science freshman at Michigan Tech, she remembers, "I did enjoy the video shoot. Being around the chemistry instruments brought back a lot of fun memories. Knowing that I contributed to spreading a message about not being too young to do research was a great reward in itself."

Research profiles of past and present student researchers have been uploaded to Murray's website dedicated to early research:
<http://www.bestearly.com/home/node/1154>.

In addition, photos from Senator Stabenow's Regional Manager, Mary Judnich's, three-hour 'show and tell' visit to Murray's Grade 12 class can be found on Facebook (<http://www.facebook.com/pages/BUILDING-EXCELLENCE-IN-SCIENCE-TECHNOLOGY/90908626548?ref=mf>).

Michigan elected officials including U.S. Senator Debbie Stabenow, Governor Jennifer Granholm and State Representatives Sharon Tyler and John Proos have applauded the efforts of BEST. And school officials in Detroit, Michigan, and South Bend, Indiana, have expressed interest in the BEST Early program, with an eye toward replicating its success in their high school systems.

Sandra Welch, Program Director for the Informal Science Education program at the National Science Foundation said "Dr. Murray has demonstrated in his video how researchers can have a large impact on young people by engaging them in research experiences, stimulating their curiosity and building their confidence. This video will also be a valuable tool in sharing this successful model with other researchers across the country and encouraging them to develop programs that engage young people at an early age."

Murray's early research participation efforts are being done in the context of America's declining performance in math and science education especially at the secondary level. Reports such as the 2001 Commission on National Security and the National Research Council's 2005 America's Lab Report: Investigations in High School Science highlight this troubling trend. It is also reflected in a 2006 international student assessment that ranks American students 21st out of 30 in science literacy among students from developed countries, and 25th out of 30 in math literacy.

So Murray's passionate advocacy for early research participation as a sustainable solution for science education and economic competitiveness is right on the mark and consistent with efforts such as the recently launched 'Educate to Innovate' initiative by the White House and the U.S. Department of Education.

~ Desmond Murray



Jill Bender (middle) and Zack Mattson (right) explain the rotovap to Michigan's U.S. Senator Debbie Stabenow's Regional Manager Mary Judnich.

John Rorabeck ('80) Joins the Department

John Rorabeck, alumnus of Andrews University and native of Battle Creek, has assumed directorship of the Berrien County Forensic Laboratory operating within the Department of Chemistry and Biochemistry. He immediately felt at home, having served as an assistant in that lab while a student under Lloyd Kuhn and Dr. Dwain Ford.

Rorabeck's experience with forensic chemistry began with a student internship at the Illinois Department of Public Health which handled most of the forensic toxicology for Illinois Coroners. Upon graduation, he assumed

those responsibilities in the fledgling laboratory of the Lake County Coroner's office in Waukegan, Illinois. For the next 24 years, Rorabeck directed the growth of that lab through the evolution of increasingly sophisticated lab technologies applied to post-mortem samples. During those years, Rorabeck attended part-time classes at the Chicago Medical School and received an M.S. in Clinical Laboratory Science in 1992 from what by then had become the Rosalind Franklin University of Health Sciences. His thesis involved verification of analytical techniques for tricyclic anti-depressants in blood.

As a Deputy Coroner, Rorabeck interacted with doctors, lawyers, police officers, funeral directors and policy-makers. He also developed a relationship with the Illinois Eye Bank as a volunteer procurement technician. He began working as a Certified Eye Technician in 2005 which led to a move to the Midwest Eye Banks in Ann Arbor, Michigan.

John is pleased to expand the department's course offerings with a class in forensic chemistry beginning in January, 2011. Students will be introduced to the various fields of forensic science with particular emphasis on how analytical chemistry can assist in criminal investigations. Laboratory techniques will develop the skills for instrumental analysis of illicit drugs as well as preparation for presenting an effective court testimony.

John is married to Christine and they are the very proud parents of John Henri and Anna (junior and freshman, respectively at Andrews Academy). John and Christine enjoy spending time with family and friends, have a variety of musical interests (mostly Christine's piano teaching and the children's various groups) and are active in many church ministries (VBS, Pathfinders, Campmeeting children's leaders). They enjoy living near the campus, as many friends from around the Midwest have reason to stop for a visit while at Andrews.



Scholarly Activities

Publications:

DAVID ALONSO submitted two articles for publication to the Journal of Chemical Education and the Chemical Educator: 1) Isomerization of Methone – A Neat ^{13}C NMR Investigation and 2) A New Look at an Old Reaction: Bromination of *trans*-Cinnamic Acid.



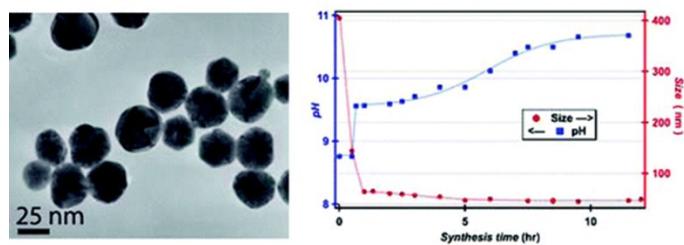
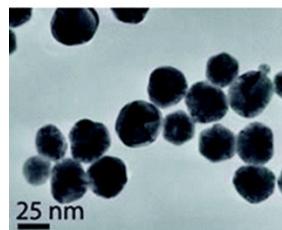
Dr. Alonso with the 900 MHz NMR spectrometer in the Complex Carbohydrate Research Center at the University of Georgia.

GETAHUN MERGA—published an article in the August issue of the Journal of Physical Chemistry.

“Naked” Gold Nanoparticles: Synthesis, Characterization, Catalytic Hydrogen Evolution, and SERS

ABSTRACT

We describe the synthesis of gold nanoparticles upon reduction of Au_2O_3 by molecular hydrogen. The reaction generates particles that contain no foreign stabilizer other than gold or water species. The reaction readily proceeds at slightly elevated temperatures and somewhat higher than atmospheric pressure of H_2 , and these two parameters



control the size of the particles produced. The suspensions of particles were analyzed for particle size, size distribution, residual ions, and metaloatom concentrations using TEM, dynamic light scattering, electrophoretic mobility, pH, conductivity, ICP, and UV-vis spectra. The

Scholarly Activities

particles were shown to be highly active redox catalysts in the conversion of strongly reducing radicals to hydrogen from water in basic solutions. Surface-enhanced Raman scattering (SERS) spectra of a probe molecule, p-aminothiophenol, adsorbed on the particles surface was determined, and the effects of pH, electron injection, and Au (III) ions on the SERS spectra were measured. These effects are compared with similar results from previously prepared silver particles in an analogous procedure.

Research:

DAVID ALONSO—Current research is focused on the isolation of enzymes for the chemical conversion of inexpensive sugars to more valuable ones. The enzymes are isolated from soil bacteria. Purified enzymes will be tested for activity using nuclear magnetic resonance spectroscopy. Dr. Alonso's research group is also involved in the production of antibiotics and the HPLC and GC-MS analysis of naturally occurring plant growth hormones.

DAVID RANDALL—The Andrews University Office of Scholarly Research gave Dr. Randall the opportunity to do research at the University of California, Davis, for a month this summer. At UCD he worked to isolate the Photosystem II protein complex from spinach to learn about ligand binding to the Mn₄Ca cluster where photosynthesis



Dr. Randall with the Bruker EleXsys E-580 EPR spectrometer that operates in CW and pulsed mode at X- and Q- band frequencies. Dr. Randall used this instrument in his research at UC Davis during the summer of 2010.

produces O₂. He also performed some electron paramagnetic resonance (EPR) spectroscopic measurements on some synthetic model compounds using a method called ENDOR (Electron Nuclear Double Resonance)—or EPR-detected NMR, which reveals the electronic structure of paramagnetic metal centers. At Andrews, Dr. Randall continues to update the computational chemistry cluster with Gaussian 09. Dr. Randall teaches quantitative analysis and Phys Chem II (quantum chemistry and introduction to stat-thermo), and he team teaches instrumental analysis with Dr. Murray. Over the summer, Drs. Murray and Randall submitted a manuscript to J. Chem. Ed.

RYAN HAYES—The Hayes research group got under way this past year with the help of Stephen Gardner, recent BS Chemistry graduate. Hayes and Gardner integrated spectroscopic methodologies to quantitate the characterization of dendrimers, highly branched polymer nanostructures. Utilizing NIR absorption spectroscopy, the studies showed how to simultaneously assess the extent of hydroxylation and moisture in dendrimer products which are important characterization parameters regarding the quality of these products. Hayes also worked with Celena Cameron, Biochemistry '11, to develop methods that evaluate the absorptive properties of novel activated charcoal skin care patches. These new products are being marketed by a startup company called Neobiotech located on the campus of Andrews University. Hayes will continue working to understand the properties of dendrimers and how these highly functional polymers improve other materials properties.

Meetings:

ACS—In March, **Dr. Randall** attended the 239th ACS meeting, which was held in San Francisco. He reconnected with colleagues in bioinorganic chemistry and learned of recent advances in that field. He also heard about some advances in chemical education.

Dr. Alonso has been heavily involved in the development of microscale and green experiments for the organic chemistry laboratory. These experiments require significantly lower quantities of chemicals and have minimized the amounts of hazardous waste generated in the laboratory. Dr. Bal Barot, a professor of chemistry at Lake Michigan College who has collaborated with Dr. Alonso, presented some of this curriculum transformation work at the 239th meeting of the American Chemical Society:

Barot, B., Alonso, D.E. "Workshops in the Chemical Sciences Inspired Curriculum Transformation in an Undergraduate Organic Chemistry Course at a Community College" 239th ACS National Meeting & Exposition", March 21-25, 2010, San Francisco, CA.

Chem Ed—In August, **Dr. Hayes** attended the 21st Biennial Conference on Chemical Education, which was held at the University of North Texas in Denton. The conference addressed issues in cognitive development of students, online resources, demonstrations, electronic grading packages, assessment, service learning, engaging students, research in chemical education, teaching methods, green chemistry, pod-casting, and many more topics.



Dr. Hayes attending a BCCE lecture.

Spring 2010 Graduates and Awards

Spring 2010 Undergraduate Degrees Awarded

Kenneth Brian Fletcher, BS Chemistry
James Kendrick Quines, BS Biochemistry
Troy Harrisen Reichert, BS Biochemistry
Jongho Yoon, BS Chemistry

Spring 2010 Awards

ACS General Chemistry Award.....Amy Nadane
ACS Analytical Chemistry AwardKenneth Fletcher
ACS Organic Chemistry AwardDerrick Nelson

Spring 2010 Scholarships

Richard Cook Scholarship..... Adam Shull
Luis Garibay

Dwain Ford ScholarshipChantelle Krym
Tyler Hook, Samuel Kang

Halenz Scholarship Andrew Master, Katie Parker

Richard Minesinger Scholarship Gi Choi
Clarissa Lewis

Lois K. Mutch Scholarship..... Celena Cameron
Joseph Kim, Chantelle Krym,
Tamara Mackey, Joanna McNeill

Mutch, Scorpio, Wilkins Scholarship Andrew Brummett
Andrew Mejeur

R. Scorpio Scholarship..... Daniel Nowack
Andrew Yang

Tait Family Scholarship..... Luis Garibay
Shieun Jang, Soon Park, Adam Shull

Wilkins Scholarship Ethan Catron, Joseph Kim
Chantelle Krym, Tamara Mackey, Joanna McNeill

Chai Hee Wong Scholarship Camille Martin

Chem Alumni *CONTACT*

Please update information about yourself. We look forward to hearing from you.

Name _____

Address _____

City _____ State _____ Zip Code _____

Telephone _____ E-Mail Address _____

Occupation _____

Employer/Firm _____

City _____ State _____ Zip Code _____

Degrees Received:

At Andrews _____
Degree _____ Year _____
Other: _____
Degree _____ Year _____

News about yourself & your family:

E-mail notes to nowack@andrews.edu.
We would love to receive pictures too.

Becoming a Chemistry Partner:

Yes, I would like to help the Department of Chemistry and Biochemistry achieve its goals by making a contribution.

Please use my gift of \$ _____ for:

- General contribution in area of greatest need
- Chemistry Alumni Undergraduate Scholarship
- Named scholarships
- Undergraduate research support

YOUR NAME (as you wish it to appear in the next issue of "The Molecular Sieve", or "Anonymous" if you don't want your name used in connection with this gift.)

Will your employer match funds?

- Yes (if so, please include with this form the matching gift form from your personnel office.)
- No
- Don't know

Credit card information:

_____ Exp _____

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

Department of Chemistry & Biochemistry Shows Leadership in Service

For the past eight years our Department has hosted the Annual kickoff and orientation for the Socrates After School Project in the Amphitheatre. Socrates is a community outreach effort jointly sponsored by Andrews University departments of Biology, Chemistry, Clinical Laboratory Sciences, Computer Science, Engineering, Mathematics and Physics.

Reverend Yvonne Hester, Executive Director of Benton Harbor Street Ministry, a ministry founded in 1990 by the Berrien County Association of Churches, inspired the ministry of Socrates when in the summer of 2003 she wrote



Students of the McCord Elementary School,
a Socrates site in Benton Harbor, Michigan.

a letter to then Andrews University Vice-President Newton Hoilette stating, "Our community is yet in need of more structured programs and activities to empower children, youth, and adults in math, science, and reading. With these programs in place we can raise the standards in our community through educational programs. Andrews University has qualified staff and students to make this program available and successful."

Former Department Chair Bill Mutch and Assistant Professor Desmond Murray were part of the team that took on this challenge and created the Socrates Project in response. Since its beginnings in 2003, Socrates has expanded beyond Benton Harbor to serve other Berrien County students in Berrien Springs and Buchanan. Under Socrates, Andrews University students, staff, and faculty provide K-12 students with free tutoring and homework assistance in all subject areas including science, mathematics, and reading.

The current three Socrates service communities of Benton Harbor, Berrien Springs, and Buchanan, all have different circumstances—history, socioeconomics, and demographics but share the common need, to varying degrees, for academic excellence and educational attainment. For example, the 2000 U.S. census indicated the following percentages of population 25 years and older with a bachelor's degree or higher: Benton Harbor(4.2%);

Berrien County(19.6%); Berrien Springs(28.9%); Buchanan(15.9%); and U.S.(24.4%).

Under the leadership of Dr. Desmond Murray, Socrates continues to invite more individuals to volunteer their time and talent. Tutoring involves a commitment of only two hours per week. Non-tutoring opportunities to serve within Socrates include: writing stories about the Socrates Project; taking photographs of tutors in action; encouraging family, friends, and retire persons to get involved; building and maintaining a Socrates website; providing adult presence and supervision; and inviting us to come to your organization to talk about Socrates.

Murray said, "Being involved in Socrates can show a boy how to become a man; show a girl that she can dream big; inspire self-worth, values, and personal greatness in our youth—and can model a positive attitude and lifestyle for our youth. This is a way of touching someone's life that can be truly life-changing. If you can read, write, or count, you can help."

All are encouraged to join the Socrates After School Project Facebook community at <http://www.facebook.com/group.php?gid=39976847712>. If you are interested in serving, contact Dr. Desmond Murray at (269) 757-1641, or at socratesafterschool@andrews.edu. Socrates provides the opportunity—you provide the hope.

~ Desmond Murray

ChemClub 2010-2011



L-R: Ryan Hayes, sponsor; Shieun Jang, public relations; Chantelle Krym, president; Tamara Mackey, treasurer; Adam Shull, vice-president; Luis Garibay, pastor; Celena Cameron, Secretary

Alumni News

Hyden Choi (B.S., Biochem. '04)

I graduated from the University of Michigan School of Dentistry in May 2009, taking a general dentistry residency at the University of Detroit Mercy. Deciding to stay on to do research, I am currently working on a paper covering oral bisphosphonates and osteonecrosis of the mandible which we hope to submit at the end of October to the Journal of Oral Maxillofacial Surgery. I have also researched the measurement of the manufacturing accuracy of orthodontic brackets and have submitted an abstract to the International Academy of Dental Research, which is holding a conference in San Diego this year, where I will be presenting a poster. My residency ends in June of 2011, and I have applied to several orthodontic residencies, but have yet to receive any interview requests. I am still single, but it is funny how priorities change as time passes. I hope one day to find a wonderful woman to settle down with, but for now, my single state makes the pursuit of my career goals much easier. It is a trade off.

Heidi (B.S., Biochem. '05) got married this year in April to a fellow classmate from medical school. She and her husband, Laren, both graduated from Loma Linda University Medical School in May, 2009, and both are at LLU Hospital for their residencies. Heidi is in her 2nd year of family medicine, and Laren is in his 2nd year of internal medicine. I am not sure what their immediate plans after completing their residencies will be, but I am sure that they will start a family soon. It is weird to think of Heidi as a mom! Here is a picture from the wedding.



Daniel Thomas (B.S., Biochem. '82)

In 1986, I graduated with a D.O. from Des Moines University. My wife, Sylvia Torres (B.S.N., '82), and I now live in Winter Springs, Florida. She is currently pursuing a Ph.D. in nursing from the University of Central Florida, while I am working on a master's degree in nutrition and metabolic medicine from the University of South Florida School of Medicine. We have a medical practice specializing in preventive medicine, nutrition, and fitness. We have two children: Grant, 19 years old; and Spencer, 13 years old.

Warren Jarrard (B.A., Chem. and Bio. '74; M.Div. '79)

In 1971, I married Dianne Erhard (B.S., Elem. Ed. '73). She taught at Ruth Murdoch Elementary School while I pastored at the Village Church until we moved to California in 1981. After pastoring in the Southeastern California Conference, I began teaching religion and doing computer support at San Pasqual Academy in 1985. We returned to pastoral ministry in the Southern California Conference for several years, and then I began teaching mathematics at La Sierra Academy in '94. Mathematics has become my area of specialization since then. I am currently working on an M.A. in mathematics at California State University, San

Bernardino, and have been teaching mathematics at Loma Linda Academy since 2000. Dianne also teaches at LLA, (2nd grade), and both of our children, Todd and Mindy Beth graduated from LLA.

I have many fond memories of our time at Andrews and have appreciated the alumni association information we get, along with regular department news from both chemistry and biology. Of course many things are different at Andrews, but I can tell that the high quality has remained constant. Thanks so much for keeping in touch through the Molecular Sieve. Continued success to the Chemistry Department!

Richard Lester Yukl (B.A., Chem. '67)

I had become interested in chelation during my studies at Andrews, and during my senior seminar presentation I stated that I did not know if I would do research during my career, but that if I did, it would be in the area of chelation. I graduated from LLU with an M.D. in 1971, and spent a career in general surgery in Denver, Colorado. I participated in the development of a pharmaceutical company in 2000. We analyzed the cerebral spinal fluid of patients with spinal cord injuries using mass spectrometry and identified a "spike," which, when isolated, showed extreme anti-inflammatory properties and proved to be a chelating agent derived from the break-down of albumin. Our pharmaceutical company has now gone public, and we are in the midst of clinical trials for the compound's use in an auto-immune therapy application. I owe a lot to the solid science I was taught at Andrews University.

Duane Lemon (B.A., Chem. '65)

After graduating in 1965, I taught science and math on the secondary level for the SDA denomination for 41 years. In 1974, I returned to Andrews for an M.A. My wife and I are now retired in Ooltewah, TN. We enjoy our six grandchildren. I also do substitute teaching in several county schools.

S. Sidney Blakeney (B.A., Chem. '62)

Sidney's fondest memories include life-long friendships established at Andrews, involvement in sports, and working in the cafeteria. In 1975, he graduated with an M.D. from Temple University School of Medicine. He completed an internship at Sinai Hospital of Baltimore, joined the United States Army, and completed an ob-gyn residency in the armed forces at Madigan Medical Center, Fort Lewis, Washington. Then he served as Lieutenant Colonel—Director of OB/GYN at Weed Army Hospital, Fort Irwin, CA—and received a commendation from the U.S. Armed Forces for outstanding service.

Currently he lives in Tacoma, Washington, with his wife, Bettye Mainer-Blakeney, who also attended Andrews. Bettye is the assistant director of Our Sisters' House, a non-profit agency providing supportive services to women and families. Sidney has a private medical practice in Federal Way, WA. They are active members of the Mt. Tahoma SDA church, and work together to assist at-risk teens and families impacted by domestic violence in the local community. They have two adult daughters and two sons-in

Alumni News

-law—James and Krista Blakeney-Mitchell of Brandywine, MD, and Dennis and Kelli Blakeney-Robinson of Tacoma, WA—and five grandchildren. They are proud to say that all are active members of the Seventh-day Adventist Church.

Clifford Vance (B.A., Chem. '58)

I have been so long gone from Andrews that everyone there is new. Actually, when I graduated in 1958, the school's name was Emmanuel Missionary College! I was a pre-med student. Our chair, Dr. Halenz, was an excellent teacher. To earn a small credit of half a unit, I took glass blowing from him and promptly ruined a number of laboratory pieces which he had given me to repair. I discovered that glass blowing is much harder than it looks. But in spite of my mistakes, he gave me a B anyway.

After EMC, I got a medical degree from Loma Linda. I spent five years in general practice, part of that time on a mission appointment to Guam. In 1969, I returned to Loma Linda for radiology training, then spent 23 years as a radiologist out in the Mojave desert in Barstow. I retired about 15 years ago.

We have two sons, both of whom teach at Pacific Union College. Robin is the chair of the biology department and Rodney is head of the film and television section. We wish you success in the chemistry department.

Wesley McNeal (B.A., Chem. '56)

Dr. Halenz was the chair of the chemistry department while I was at Emmanuel Missionary College. I feel that the education I received at Andrews helped me in medical school—I graduated from College of Medical Evangelists (EMC, now LLU) in 1960—and later in medical practice. I interned at the New Orleans Public Health Service Hospital for one year and then practiced family medicine in Green Bay, WI, until 1998. I then moved to Tennessee and now practice two days a week at a family practice clinic in Madisonville, TN, at the base of the Appalachians. Regards!

Herald A. Habenicht (B.A., Chem. '54)

H.R. Halenz was our chemistry department chair—Halenz chemistry wing was named in his honor. In 1954 there were eight chemistry majors. Five of us went on to Loma Linda: Don Caster to dentistry; and Roger Cook, Herald Habenich, Elwin Moore, and Richard Strom to medicine. Don and Roger have recently lost their wives. Elwin and Richard have been gone for many years.

I married Donna Lugenbeal (B.A., Elem. Ed. '54) a week after graduation, then moved to Loma Linda for medical school (LLU '58, pediatrics White Memorial Hospital '61). Upon completion of medical training, we went as missionaries to the Inter-American Division. In 1970 we returned to Andrews and have been here ever since.

My chemistry training was most helpful when I did a subspecialty in allergy and immunology at the University of Michigan in 1982-83. I practiced only allergy medicine in Berrien Springs and St. Joseph, Michigan, until retirement in 2001.

Both our children, Nancy and Larry, graduated from Andrews, but not as chemistry majors. They both did doctorates at LLU, Nancy in dentistry, and Larry in

medicine. Nancy's husband, Bruce Schilling (B.S., Chem. '81) did a Ph.D. in chemistry at California Institute of Technology. He is a professor of chemistry at Southern Adventist University.

We have one grandson, Jonathan Schilling, who graduated with a degree in chemistry from SAU in 2009, and is a 2nd year medical student at LLU. You can see we are trying to keep the chemistry branch of scientific knowledge alive.

Ray Mayor (B.A., Chem. '51)

After graduating from Adelphian Academy in 1947, I attended EMC, majoring in chemistry and minoring in biology. I took classes from Dr. Halenz, Mr. John Christensen, and James Gaitens. I especially enjoyed doing lab tests, but one day I was siphoning some HCl solution and the tip of the glass siphon came out of the acid and I had a burn in my mouth even though I washed it out immediately with water. That next weekend was one of the few in which I had an invitation to eat out. I went, but I could not taste much!

I married Wilma Cesario (attended '46-'49) on June 14, 1951. She was attending White Memorial campus of the College of Medical Evangelists to finish her medical technician degree. We had two children. The oldest, David Mayor (attended '73-'75), married Judy Joseph (attended '73-'75). Their oldest son, David Lee Mayor, graduated from Andrews in 2007, and is a senior medical student at LLU now. Their younger son, Jacob, is beginning to study medicine at LLU also.

Our daughter, Laura (attended '75-'77), married Dan Walter (attended '75-'77). Their oldest daughter is Kristin Walter Balisciano (B.S., Gen. Sci. for Sec. Ed. '06). Their next daughter is Ashley Walter (B.S., Speech-Lang. Path. & Audiol. '09).

I interned at Pontiac General Hospital and then spent two years in the U.S. Army doing ob-gyn. So I decided to specialize in ob-gyn medicine and took my residency at Pontiac General. I finished in 1961, and practiced in Pontiac, Michigan, till I retired in 1994. My wife and I built a home in Berrien Springs, where I currently live. I have been active in the SDA Church and have served as elder, Sabbath school teacher, and on various committees. In the past six years, I have traveled on several medical mission trips to Kenya, Nepal, India, Guam, Philippines, Peru, and Zambia with Global Village Mission connected with the Stevensville SDA Church.

Dwain L. Ford (B.A., Chem. '49)

After graduating from EMC, I taught at Wisconsin Academy for nine years. I earned my doctoral degree at Clark University in Wooster, Massachusetts, in 1962, after four years of study and research. I joined the faculty of Andrews University Chemistry Department in June, 1962.

My beloved wife, Lorraine, and I have enjoyed our life together since 1947. We live at 7041 Dean's Hill Rd., Berrien Center, MI 49102. I work at home now at age 83. In the summer I do gardening and harvesting. In the winter I plow snow with my 70 year-old John Deere tractor. I also haul in firewood to heat the house. Our oldest son, David, is retired

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Alumni News

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and living in Washington state where he likes to garden and ski. Our younger son, Larry, lives nearby and does construction and remodeling work. Our daughter, Diane, is handicapped.

Chet Crawford (B.A., Chem. '48)

Dwain Ford was in many of my classes, and Dr. Halenz was our teacher. Dr. Halenz was my favorite teacher during my years at Andrews. I went on to study medicine at Loma Linda University, graduating from there in '52. I spent 50 years in family practice in Green Bay, WI. My wife, Marion, and I moved to a retirement community in the Denver area in '07, to be near our daughter, Karen Murrill (B.S.N., '77). We have three children and two grandchildren.

Ursula Whiting (B.A., Chem. '47)

It seems like yesterday that I was a student at EMC. Dr. Halenz was my advisor. I graduated from Lena High School in 1941 as class salutatorian and enrolled at EMC in 1943 as a chemistry major with a biology/English minor. There were about 500 girls and 100 boys when I entered—when I graduated there were about 1100 students with an equal number of boys and girls.

I had a Japanese lab partner in physical chemistry or I probably would have failed the course. His father and brother—both pharmacists—were killed when the atomic bomb was dropped on Hiroshima. He couldn't speak very good English, but he certainly knew his math!

After graduation, I went to Oshkosh—University of Wisconsin—where I got my elementary degree and my MA. I've been retired since 1986—after 35 1/2 years of teaching public school. I always say, "If I don't die very soon, I'll be retired longer than I worked." I had also taken pre-med, but the fellows flooded the med-schools when they came back from World War II.

I married a WWII veteran who also taught in the elementary field. Both my husband, who passed away on Dec. 21, 2005, and I taught all of our lives. I loved both high school and elementary—and earned life certification for Wisconsin in both. Our oldest son is now teaching at Lakeshore Technical College in Wisconsin—even though he always said he'd never be a teacher because, "they spend their evenings correcting papers!"

I was glad that I could go to EMC. My uncle, who was a doctor, underwrote my schooling. I worked in the college store and post office for 35¢ an hour during my first year at EMC. Then I worked as a chemistry lab assistant with Dwain Ford and many others for 45¢ an hour. When I finished college, I owed my uncle \$2000. It cost about \$1000 per year at that time. I came back for my 50th class reunion and was amazed at the changes in both the size and the cost of the school now!

When I could afford it, I sent my uncle a check—which he returned with the instruction that I should help someone else get a Christian education. I'm still helping, and in two days I will be 87 years old. I have three boys and twin girls. I see my children and grandchildren (8 boys!) nearly every week after church. I have two great grandchildren—a boy and a girl. The girl is the first girl after 9 boys. She certainly was welcomed. God has blessed me.

Chem Minors Alumni News

This year in our annual mailing we included alumni who minored in chemistry. We received a number of interesting news updates from our alumni "friends of chemistry."

Amber Kolberg (B.S., Animal Sci. '05)

After graduating from Andrews, I went to Michigan State University College of Veterinary Medicine, where I graduated in 2010 with a D.V.M. I am currently working in a mixed-animal practice in Milford, Indiana. In 2005, I got married. Currently we do not have any children.

Jeffrey Karst (B.S., Bio. '98)

At Andrews my academic advisor was the famous Dr. Bill Chobotar. My next degree was an M.D. from Loma Linda University School of Medicine in 2003. I interned for a year in internal medicine before doing a residency in diagnostic radiology from 2003 to 2008. From 2008 to 2010, I did a fellowship in vascular and interventional radiology. Currently I am working full time as a vascular and interventional radiologist at Loma Linda VA Hospital and part time at LLU Medical Center. I'm married to Amanda Aguilera, M.D., who is completing her residency in diagnostic radiology at LLUMC and will complete a fellowship in diagnostic neuroradiology at University of Southern California.

Kate Keith (B.S.M.T., '94)

I was in the Clinical Laboratory Sciences program at Andrews. Next, I graduated from Loma Linda with an M.D. in 1999. In 2003, I finished a dual residency in internal medicine and pediatrics from the Cleveland Clinic. Currently I live in Coloma and am working as a physician with dual board certification in internal medicine and pediatrics at University Medical Specialties here in Berrien Springs.

Keith Calkins (B.A., Math. '81; M.S., Comp./Inf. Sci. '82; M.S., Interdisciplinary Math./Phys. '91; M.A.T., '02)

Because I clepped general chemistry, organic was a challenge, especially the labs. My grades climbed slowly to an A. Dr. Daley was rather surprised by my stellar performance on the standardized final since I had learned only what interested me—what could be done—not the specific reaction details. He graded on complete reaction sequences with partial credit for the reaction conditions. I remember that the "Korting" unit of glass breakage was invented that year—about \$200 in 1976 dollars! I wrote an NMR tutorial for the spring lab project, which Dr. Daley published by May 1978. My work at Argonne National Labs during the fall of 1988 was also published—haloaluminate melts. I managed to avoid quantitative analysis from Dr. Mutch, taking it instead from Dr. Wilkins in the summer. For one lab I analyzed the crystals in the bottom of locally grown grape juice. The purple shade of the ethanol used to help extract it elicited plenty of discussion. I took biochemistry from Dr. Scorpio, but it ended up never applying to any degree.

Alumni News

I received an M.S. from Notre Dame in 1996 in physics and a Ph.D. in 2005. When we measured the D1 line in Cesium to 13 significant digits, my chemistry background was well used. I almost ended up teaching a chemistry class last spring for Lake Michigan College, but that hasn't happened yet. I did a mini-postdoc in chemistry at the University of Rochester in 2006 (RET, Research Experience for Teachers) which resulted in a published paper.

I live in Berrien Springs and complete 32 years of service here at Andrews this December, the last 18 teaching math to bright, public high school students in the Berrien County Math & Science Center. My oldest son is a junior here at Andrews, a National Merit Finalist majoring in math and English. My youngest, a senior at Berrien Springs High School, is also interested in math. My next presentation will be on the family finder DNA test, including some of the ins and outs, statistics, etc. Over half a million SNP is used in the analysis.

Polly Cinquemani Dengel (B.A., Bio. '75)

Fred (B.A., Bio. '75) and I met in chemistry and biology classes at Andrews and now have been married for 35 years. We graduated from Loma Linda School of Medicine in 1978 and moved to Cleveland, Ohio, Fred's hometown, to do residencies at the Cleveland Clinic. We remain here in practice, Fred in radiology, and I in internal medicine. We raised three children, two of whom also graduated from Andrews. Anna (B.S., Bio. '04) went on to LLU where she completed her M.D. in 2008. She is now in her final year of residency in internal medicine at LLU. Fritz (B.A., Pol. Sci. '08) went on to do an M.P.H. at Australian National University. He is applying to law school presently, interested in health law and healthcare policy. Our third child, Caroline, is in her 2nd year at The King's College in Manhattan, NYC, studying Culture, Media, and the Arts, with a plan of continuing with marketing at a master's level. Andrews University is dear to our hearts. We grew in spirit under the influence of wonderful professors, such as Drs. Richard Ritland, Asa Thorsen, and Dwain Ford, all of whom had more impact than just academic. They were our role models and took a personal interest in our lives. Our children had similar experiences and we are grateful for that. Blessings to all!

Reading Room Renovation

Through the generous gifts of supporters of the Department of Chemistry and Biochemistry, the reading room has undergone a significant renovation. The improvements include: new carpet and freshly painted walls; a new conference table and seating; a new white board; a refrigerator-freezer for student and faculty use; handsome new, unique, periodic tables on the wall; and, most importantly, a four-station computer lab with printer.

The reading room, with its open floor plan, is now a hub of student activity as chemistry students and others use the room for individual and group study. The computer lab stations are used by general and organic students for on-line access to web-based homework as well as computer analysis of NMR data generated by our Jeol 400-MHz NMR.

The reading room is not yet completely finished as there are plans for a mini-kitchen with sink, instant hot-water, a microwave oven, and locked storage. Once the reading room is complete we will be honoring the donors with a commemorative plaque as well as publishing a picture of the completed renovation.

~ David Nowack



11/18/2010 13:04



11/02/2010 16:58



11/18/2010 13:04



D. David Nowack, Ph.D.

Message from the Chair ~

All of us from the Department of Chemistry and Biochemistry extend to you our warmest greetings. Our department is privileged to have among the best, most loyal alumni and friends of Andrews University. For that we are grateful.

We have outstanding alumni because we have outstanding students in our program. The front page article announcing **Luis Garibay's** designation as an American Chemical Society Scholar demonstrates that our faculty and facilities attract motivated, talented young people. We are very proud of Luis, and his story is only one of many that could be told of successful students in our department.

Since our last newsletter, **John Rorabeck**, M.S., has joined our department as chief analyst of the Berrien County Forensic Laboratory (BCFL). The BCFL is a community service coordinated by the Department of Chemistry and Biochemistry and funded by the Berrien County Prosecutor's Office. John replaces **Dewey Murdick**, who retired in February, 2010. John, a chemistry alumnus from the class of 1980, brings a wealth of experience to the position as well as a wonderful spirit of service. We are so pleased that John and his family have joined our team.

Another new, but not unfamiliar, face in the department is our administrative assistant, **Dana Johnston**, M.S. Dana is a chemistry alumna from the class of 1983, with a masters degree in theoretical physical chemistry from the University of Chicago. Dana replaces **Grace Carlos**, who retired this summer. She has already made a very positive impact in the department with her unique skill set of both chemistry and business experience. When you phone the department, you will hear her pleasant and highly professional voice answer your call.

The department has successfully completed the "peer-audit" of our hazardous waste management practices. The auditors were pleased with our significant progress in removing old hazardous waste and creating practices and policies to better manage our waste stream.

The department and Halenz Hall are in the midst of a **three-phase upgrade and renovation** of the air-handling system. The university is making a major financial commitment to improve the overall air quality of the building and the department is benefiting by the third and final phase of the project, which is the renovation of the third floor organic chemistry teaching labs with new fume hoods and reformatted work spaces. The department is planning and praying that God will lead generous individuals to partner with the university to complete the renovation in an outstanding and high quality fashion.

Warmest regards to all our alumni and friends.

~ D. David Nowack, Chair

You're welcome to place your *Chem Alumni Contact* news and pictures on David Nowack's Facebook page,
OR place and/or update your *Chem Alumni Contact* information on the AU&ME Alumni website,
OR E-mail *Chem Alumni Contact* information and pictures to David Nowack at nowack@andrews.edu

Alumni Parade



Alumni Weekend always brings energy and excitement to campus. This year the Chemistry Department participated in the Alumni Parade on Friday afternoon pulling along the only true "float."

Chemistry professors, club officers, and members donned lab coats and goggles and guided the Chemistry Week banner as it floated down University Boulevard thanks to the lifting power of over 100 helium, hydrogen and oxygen balloons. Each chemistry participant was also holding an individual hydrogen-filled or oxygen-filled balloon. When it came time to present our float to the judges, these individual balloons were lit on fire above the participants producing explosive sounds and admirable fire balls. This demonstration was thrilling for both the presenters and for the viewers and was one of the highlights of the parade. There are already plans in the works to make next year's parade participation even better.

~ Chantelle Krym

