

12-2017

## Mole Street Journal, December 2017

University of Arkansas, Fayetteville. Dept. of Chemistry and Biochemistry

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## Special points of interest:

- Xiao awarded Chancellor's Fund Grant
- Sakon secures 3 patents
- Tian collaborates on nanoscale chewing study
- INBRE conference highlights
- Scholarships, cumes
- Notes from the Chair

## Inside this issue:

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## Nanowired Drugs Could Treat Patients with Parkinson's or Alzheimer's Diseases

Millions of Americans suffer from neurodegenerative diseases such as Alzheimer's and Parkinson's. Researchers have identified promising new treatments, such as cerebrolysin, but current clinical approaches are ineffective because critical concentrations of the drug dissipate within the body before reaching the brain and central nervous system.

To address this problem, researchers have focused on various delivery vehicles for sustained and targeted drug release. An effective, targeted approach would eliminate the need for inefficient, high dosages that cause adverse side effects.

In recent years, biomedical engineers have experimented with nanomaterials as an approach to targeted delivery. Under the direction of Ryan Tian, associate professor of chemistry at the University of Arkansas, doctoral student Asya Ozkizilcik has improved the nanowiring of drugs for an international team of researchers who are working on a new method for treating neurodegenerative diseases.

This week, at Neuroscience 2017, the annual meeting of the Society for Neuroscience, held in Washington, D.C., Ozkizilcik, on behalf of the international research team, delivered two presentations about nanowired delivery of cerebrolysin in neuropathological models of Alzheimer's and Parkinson's diseases. The team's research was selected as newsworthy from a pool of nearly 14,000 abstracts. Their research was also included in the Society's Hot Topics book.

Ozkizilcik worked with titanate, a bioceramic material made of titanium dioxide. Titanate has many advantages. Its nanowires are chemically inert and therefore do not interact with biological components. In addition to biocompatibility, the nanowires are resistant to corrosion in biological fluids, which is ideal for sustained, in vivo drug release without harming cells or tissues.

Ozkizilcik made the titanate nanowires in an autoclave treatment and then loaded cerebrolysin onto the nanowires. Though detailed mechanisms are unclear, the nanoparticles may prolong the intact delivery of cerebrolysin all the way to blood-brain barrier, where high concentrations of the drug are then released into the brain. The drug's efficacy was tested on rat models with co-administration of mesenchymal stem cells. Mesenchymal stem cells have been used for developing therapeutics for various autoimmune and other diseases.

Ozkizilcik's research is part of the international team's broader goal of finding a more effective treatment for neurodegenerative diseases such as Alzheimer's and Parkinson's. The international team has also demonstrated efficacy of this treatment on a Parkinson's disease model after traumatic brain injury. "We believe titanate nanowires could be considered as potential drug delivery tools for neurodegenerative diseases and may be translated into clinical use in future," Ozkizilcik said.

Ryan Tian, pictured left, relates that the editor of EurekaAlert! of the AAAS (the publisher of the science journal) was so excited upon seeing her meeting abstract that he contacted our UA PR Office, who then contacted Asya and him and asked to help them put the news release out timely.



Photo by Eric Pipkin, University Relations  
Asya Ozkizilcik, Biomedical Engineering Graduate Student



## Faculty News

### On the Go

**Matt McIntosh** gave a talk entitled “Radical Chemistry of the Breslow Intermediate” at the Midwest Regional ACS Meeting in Lawrence, KS on October 20, 2017.

**Chengung Fan** presented “Biochemical Characterization of Lysine Acetylation of Tyrosyl-tRNA Synthetase in *Escherichia coli*” at the 11th IUBMB Focused Meeting on Aminoacyl-tRNA Synthetases in Clearwater, FL on October 30, 2017.

### Publications

**Lutishoor Salisbury, Anuradha Rai Chowdhury & Jeremy J. Smith.** 2017. Faculty Publications from a Research University: The Scholarly Impact of Open Access versus Non-Open Access. **Science & Technology Libraries**, Vol. 36(2), p187-199, <https://doi.org/10.1080/0194262X.2016.1273815>

**Lutishoor Salisbury, Abayomi Omotola Omolewu & Jeremy Joseph Smith.** 2017. Identifying “Free” Full-Text Resources in Agriculture, Food and Life Sciences: A Research Study. **Journal of Agricultural & Food Information**, Vol. 18(2), p136-144. <https://doi.org/10.1080/10496505.2017.1300537>

**Qinglei Gan and Chengung Fan.** Increasing the fidelity of non-

canonical amino acid incorporation in cell-free protein synthesis. *Biochim. Biophys. Acta.* 2017; 1861(11 Pt B):3047-3052.

**Sumana Venkat, Caroline Gregory, Qinglei Gan, and Chengung Fan.** Biochemical Characterization of Lysine Acetylation of Tyrosyl-tRNA Synthetase in *Escherichia coli*. *ChemBioChem.* 2017; 18(19):1928-1934.

**Sumana Venkat, Dharma Theja Nannapaneni, Caroline Gregory, Qinglei Gan, Matt McIntosh, and Chengung Fan.** Genetically Encoding Thioacetyl-lysine as a Nondeacetylable Analog of Lysine Acetylation in *Escherichia coli*. *FEBS Open Bio.* 2017; 7(11):1805-1814.

David Bryson, **Chengung Fan**, Li -Tao Guo, Corwin Miller, Dieter Söll, and David Liu. Continuous directed evolution of aminoacyl-tRNA synthetases to alter amino acid specificity and enhance activity. *Nat. Chem. Biol.* 2017; DOI: 10.1038/nchembio.2474. [Epub ahead of print]

**Sumana Venkat, Caroline Gregory, Kexin Meng, Qinglei Gan, and Chengung Fan.** A facile protocol to generate site-specifically acetylated proteins in *Escherichia coli*. *J. Vis. Exp.* 2017; DOI: 10.3791/57061. [Epub ahead of print]

### Honors and Awards

**Feng Wang** is the co-PI on a new Provost’s Grant entitled “Innovative high-throughput computing for predic-

tive modeling in biological and material sciences.” The award funds the collaboration between Dr. Huang’s group in high-performance scalable computing and Dr. Wang’s group in high-accuracy predictive modeling to solve new problems in materials sciences and biophysics. Leveraging the computational power of the state-of-the-art GPUs, the aim of the collaborative research is to speed up predictive modeling in physical chemistry by 100 fold.

**Mahsa Lotfi Marchoubeh** won the analytical division and departmental 3 minute thesis competition. She also won the ECS (Electrochemical Society) chapter at the U of A 3 minute thesis competition. She will compete in the college’s three minute thesis competition January 22-26. The top finisher from each college will advance to a university-wide final on February 2. The competition celebrates discoveries made by graduate students and encourages them to communicate the significance of their research to the broader community in language that is understood by the general public. The competition is sponsored by the Graduate School and International Education and was founded by the University of Queensland in 2008. The event will serve as the capstone to Graduate Education Week, which kicks off January 29. More can be found in the UA Newswire article located at <http://bit.ly/2j32mP9>

## Honors College Reception Awards Distinguished Faculty

The Honors College recognized six faculty members at the annual Honors College Faculty Reception on Tuesday, November 7. The awards are in two categories, the Distinguished Faculty Award and the Distinguished Leadership Award. Paul Adams was a recipient of the Distinguished Faculty Award. Honors College Dean Lynda Coon presented Dr. Adams with a bronze medallion and he will also receive \$1000 in academic funding.

Dr. Adams is an associate professor of chemistry and biochemistry, and cellular and molecular biology. He studies Ras-related proteins, which have been identified in nearly one-third of cancer types. Dr. Adams has mentored more than 50 honors students in his laboratory since 2007, and has had an honors student co-author a paper published in *Biochemistry*, listed among the top 100 most influential journals in biology and medicine over the last 100 years. He estimates that 15 of his students have received SURF and Honors College research grant funding. He has received more than \$1.45 million in funding from NSF, NIH, ABI and the Winthrop P. Rockefeller Cancer Institute at UAMS.

Pictured is Dr. Adams (left) with Chancellor Joseph Steinmetz



## From the Chair ~ *Wesley Stites*

As I write this, the semester is drawing to a close, with Christmas and New Year's just around the corner. This being the season of gift giving, it seems appropriate to thank some people for their gifts which are helping to advance the department and our students. This semester we awarded the first Blyholder Fellowship to grad student Ryan Manso. In the past few weeks, David Shihabi, one of George Blyholder's PhD students, just made another major contribution to the endowment of this award named in honor of George. Similarly, Dr. B.C. Wang just made another contribution to the endowment that his doctoral advisor, Wally Cordes, established to help fund our seminar program. We thank them and all other recent donors.



However, I want to call attention to another recent event. We were recently informed that the Department is the beneficiary, not of a recent donation, but one made many years ago. Back in 1942, K. Louis Mills earned his masters degree in chemistry with us. He moved over the state line and joined Phillips Petroleum in Bartlesville and worked there until he retired. In October, 2000, in honor of his wife, also a graduate of the University, Mr. Mills established the Doris Maurine Walter Mills Memorial Endowment as a bequest in his will. Sadly, Mr. Mills has now passed away, but his kindness and forethought are bearing fruit. We are pleased to announce that the income from this endowment will be used as directed by Mr. Mills to fund an honorarium and travel for an annual talk by a distinguished chemist. The Doris Mills Lectureship will not only honor Mrs. Mills, but will help us bring in renowned chemists to discuss their work with our faculty and students and show our visitors the exciting things going on here. As we look forward to using this gift to advance the field and educate future generations of chemists, we are thankful and proud that our small part in the Mills' successful life was remembered so generously by them.

## Staff Appreciate Banquet Held

More than 300 staff members were recognized for serving 10, 15, 20, 25, 30, 35, 40, or 45 years at the university - a sign of the loyalty and stability of the U of A workforce. Chancellor Joe Steinmetz, who spoke at the banquet, noted that together they represented 5000 years of experience, invaluable to the university.

**Rohana Liyanage** was recognized for 10 years of service. Paul Adams' wife Stephanie and Marti Sharlau's husband Doug Moore were also recognized for 10 years of service, and Matt Gerner's wife Rachel was a staff scholarship recipient.

Matt and Rachel Gerner

Stephanie Adams with her mother



Marti Scharlau and Doug Moore



From the Newswire, November 30, 2017

## First Chancellor's Fund Research Grants Awarded for 10 U of A Faculty Proposals

More than 30 University of Arkansas faculty have been awarded the first 10 research grants from the Chancellor's Discovery, Creativity, Innovation and Collaboration Fund.

The Chancellor's Fund was established last year to promote faculty research that addresses several of the U of A's guiding priorities: to enhance the university's research and discovery mission; build a collaborative and innovative campus; promote innovation in teaching and learning; and strengthen graduate education. The university is investing up to \$1 million a year in the research grants, the bulk of that money coming from SEC Network and television revenues allocated by the Department of Intercollegiate Athletics.

There were 75 proposals submitted to the competition, which were reviewed by a panel of 20 faculty and administrators, chaired by Provost and Executive Vice Chancellor for Academic Affairs Jim Coleman.

The Chancellor's Fund projects that were selected cover a broad range of research: from finding a way to improve Arkansas' rice crop to determining if broccoli can strengthen an infant's immune system; from developing a new way to study the brain to bringing greater public attention to the work of Arkansas architect Fay Jones; from bringing food to those who need it to establishing the link between smartphone use and neck pain. Several of the projects use "big data" analysis or the latest in technological and research developments, but all have practical applications and benefits for people in Arkansas.

"The panelists and I were impressed with the quality of the proposals we received," said Coleman. "Some of these proposals were the crucial first steps for potentially ground-breaking work, others were collaborations that would not happen without this particular funding, and all of them showed the talent and resources of the University of Arkansas and our faculty. It seemed the only real limitation we faced was the amount of money we had available."

The winning grant proposals came from faculty representing 24 academic departments in the J. William Fulbright College of Arts and Sciences, the Dale Bumpers College of Agricultural, Food and Life Sciences, the College of Engineering, the College of Education and Health Professions, the Sam M. Walton College of Business and the Fay Jones School of Architecture and Design. Researchers from the University of Arkansas for Medical Sciences and the Arkansas Children's Research Institute are also collaborating on two of the projects.

These are the research teams that are receiving Chancellor's Fund grants, listed in alphabetical order by the lead investigator's name, with a brief summary of their proposals. The full abstracts for each of the proposals are available online.

Among the 10 recipients was professor Jia Di, 21st Century Research Leadership Chair in computer science and computer engineering. The research team includes: Alan Mantooh, Distinguished Professor and the Twenty-First Century Research Leadership Chair in Engineering in electrical engineering; Simon S. Ang, professor of electrical engineering; **Jie Xiao**, associate professor and Arkansas Research Alliance Scholar in Inorganic Chemistry, in chemistry and biochemistry; Trenton L. Roberts, research assistant professor of soil fertility/soil testing in crop, soil and environmental sciences.

Project summary: The researchers will develop sensors that can be placed inside of plants' stems to determine when they need more, or less, water and fertilizer, to reduce waste and increase crop yield.

## Sakon Secures 3 Patents in 2017

Joshua Sakon has new bling on his wall of fame. Three patents were awarded due to his research.

- ◇ Fusion Proteins of Collagen-Binding Domain and Parathyroid Hormone.
- ◇ Delivery of Therapeutic Agents by a Collagen Binding Protein.
- ◇ Fusion Proteins of Collagen-Binding Domain and Parathyroid Hormone.

A publication also has resulted from a class project in CHEM 5153 - Structural Chemistry.

Hen Egg-White Lysozyme cocrystallized with Cadmium sulphate using CuKalpha source. Authors are Joshua Sakon, Perry Caviness, Taryn Jack, Jessica Pickens, P. Justin Reed, and Christopher Ruth, all graduate students in the department. The Protein Data Bank ID is 6BRE.

Also pictured is the plaque awarded as being the first place finisher in the age 50 and over runners in the 2017 Chile Pepper Open 10K race.



## Researchers Explore How Chewing Affects Teeth on the Nanoscale

Food leaves permanent traces on teeth. Cows chewing on grass, tigers tearing up a piece of raw meat and humans munching on tortilla chips all end up with tiny scratches and nicks on the enamel of their teeth. Examining these marks on the microscale — what researchers call “microwear” — has led to new discoveries about the nature of teeth and the diet of our human ancestors.

Now a team of researchers has taken an even closer look at teeth and documented the effects of chewing on the nano-sized structures that make up tooth enamel. Insights from their research have broad implications. They could lead to better dental care, but they also provide new tools for scientists studying fossil teeth as well as bioengineers building the materials of the future.

Peter Ungar, Distinguished Professor of anthropology, and **Ryan Tian**, associate professor of inorganic chemistry, worked with researchers at the Tribology Research Institute at Southwest Jiaotong University in Chengdu, China, on this project and their results are published in the *Journal of the Royal Society: Interface*.

The researchers used high-powered microscopes to observe the effects of different kinds of wear on the nanostructures that make up tooth enamel. Enamel is composed of ribbon-like strings of nanoparticles called hydroxyapatite crystallites, which are stacked on top of each other and glued together by proteins.

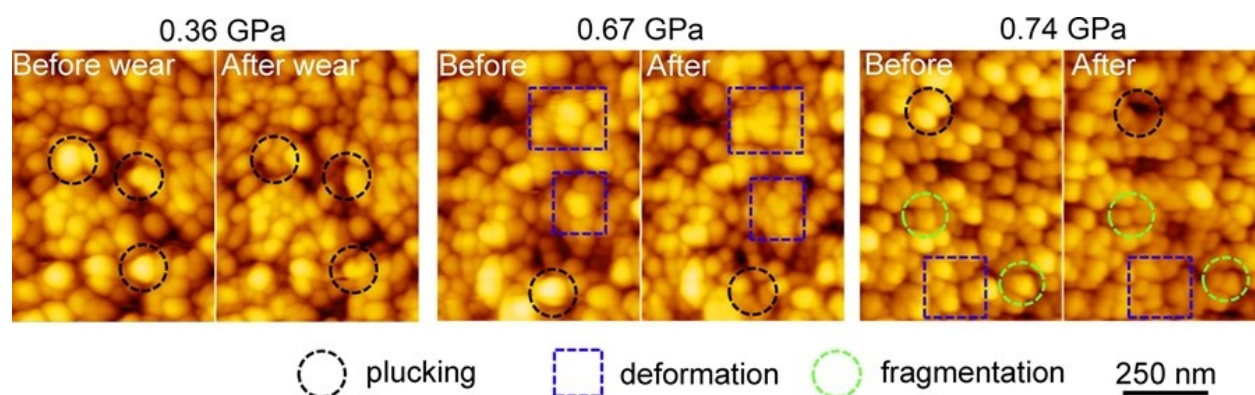
“Hydroxapatite crystallites are the fundamental units of enamel, each less than 1/1000th the thickness of a human hair,” said Ungar. “Most research on tooth wear to date has focused on effects at much larger scales, but we have to study enamel at this finer level to truly understand the nature of how the hardest tissue in our bodies resists wear and tear.”

Using tips made from different types of material, the researchers applied pressure to the surface of human molars, which had been extracted for orthodontic purposes. They scratched the teeth, moving the tip across the surface to simulate the action of teeth moving against each other during chewing. They also indented the surface of the teeth, pressing the tip against the enamel to simulate the pressure caused by crushing food.

The researchers observed that at every level of pressure, scratching led to more damage than indentation, but that both types of stress resulted in three different kinds of damage. “Plucking” occurs when the crystallites are separated from each other. Applying more pressure on the enamel leads to “deformation,” or the bending and squeezing of the crystallites. At even higher levels of pressure, the chemical bonds holding the crystallites together broke. They called this “fragmentation.”

Understanding the effects of chewing on this fundamental level has implications for a wide range of fields, from clinical dentistry to evolutionary biology to biomedicine.

“The findings in the surface tribological chemistry can help us understand the nature of the interfacial chemical bonding between the nanoparticles that Mother Nature uses to make biominerals of all types on demand,” said Tian.



This image shows the nanoscale crystallites that make up tooth enamel before and after researchers applied pressure.

## 2017 Arkansas INBRE Conference

The 2017 Arkansas INBRE Research Conference was hosted October 27-28 by the Departments of Chemistry and Biochemistry, Physics and Biological Sciences, with venues at the Chancellor Hotel, the Fayetteville Town Center and the University of Arkansas campus. The conference had a record number of 530 participants and 185 undergraduate abstracts from 26 institutions. Professor Jun Ye, from the University of Colorado at Boulder, a Fellow of both the National Institutes of Standards and Technology (NIST) and the Joint Institute for Laboratory Astrophysics (JILA), delivered the key-note address on the Optical Atomic Clock and its applications.

Invited faculty speakers included Dr. Argelia Lorence, Professor of Metabolic Engineering, at Arkansas State University, Dr. Mauricio Cafiero, James H. Daughdrill Professor and Chair and Dr. Larry Peterson, Assistant Professor, both from Rhodes College, and Dr. Abdel Bachri, Chair of Engineering and Physics and Interim Dean, College of Science and Engineering, Southern Arkansas University. Invited undergraduate student speakers competed for awards. The full conference program is available at <https://inbre.uark.edu/>. All photos are courtesy of Denise Greathouse.

Congratulations to the undergraduate student award winners who are listed below:

### Biological Sciences

#### Oral Competition

1st Place – Julio Molina-Pineda, U Ozarks

2nd Place – Ethan Chernivec, UCA

Honorable Mention: Daniel Nolan Games (OBU)

#### Poster Competition

1st Place – Erika Levy, Hendrix

2nd Place – Nicole Lacina, Harding

Honorable Mention: Cullen Horstmann (MSU); Kori Maloy (UCA); **Jacey Sites** (UA-Fay); Christopher Godwin (OBU); **Emily Taylor Stone** (Hendrix); Valeria Robleto (U Ozarks); Logan Clay (OBU)



Alison Luscomb from UAFS giving her 1st place oral presentation in the chemistry division. Alison was a summer 2017 INBRE research fellow at the UA under the guidance of Professor Jingyi Chen.



Professor Jun Ye, University of Colorado at Boulder presented the Keynote address at the Friday night banquet.

### Chemistry and Biochemistry

#### Oral Competition

1st Place - **Alison Luscomb**, UA-FS

2nd Place - Jason Lam, UA – Monticello

Honorable Mention – Mallory Bryant (Harding)

#### Poster Competition

1st Place – Emily Sanders, Rhodes College

2nd Place – Shamara Lawrence, UA-PB

Honorable Mention: **Matthew Brownd** (John Brown U) and **Brayley Gattis** (UA-Fay)

### Physics

#### Oral Competition

1st Place – Phoebe Sharp, Rhodes College

2nd Place – Nathan Flood, Pittsburg State

#### Poster Competition

1st Place – Thomas Owens, Hendrix

2nd Place – S.G. Freyaldenhoven, UCA

Honorable Mention – Davis Nossaman (Harding); Matthew Huber (Rhodes); Bria Collier, UA-PB



Leslie Johnson, UA and Diane McKinstry, UAMS are the program coordinators for both campuses.



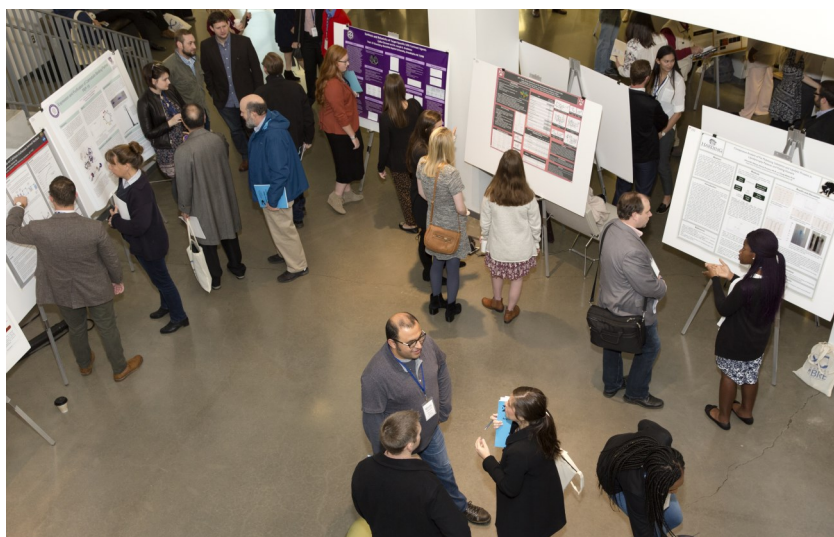
UA Professors Surendra Singh, Reeta Vyas (both Physics dept.) and Jeanne Durdik, Associate Dean of Natural Sciences, on a break between sessions.



Spring Street Grill catered the banquet Friday night at the Fayetteville Town Center, and Eventures provided the table settings.



Matthew Brownd, from John Brown University, won an Honorable Mention in the Chemistry poster competition. Matthew was a 2017 summer INBRE research fellow in Roger Koeppel's lab.



Saturday's poster competition was held in the lower lobby of Hillside Auditorium and the Physics building library.



UA Chemistry major Brayley Gattis received an Honorable Mention in the Chemistry poster competition.



*From the Newswire, December 04, 2017*

## Undergraduate Karli Lipinski Selected as Marshall Finalist

University of Arkansas student Karli Lipinski has been selected as a finalist for the Marshall Scholarship - one of the best-known and most competitive awards for graduate school in the world. Up to 40 scholars are selected each year to study at the graduate level at an institution in the United Kingdom, in any field of study. Lipinski interviewed in Houston, TX in November.

Karli Lipinski is a Chancellor's Scholar and Honors College student majoring in chemistry with a focus in biochemistry in the J. William Fulbright College of Arts and Sciences. She plans to pursue a Master of Science by Research in biochemistry at Oxford University and a Master of research in molecular biophysics for Medical Sciences at King's College London if selected to receive the scholarship. She is from Benton, Arkansas.

The other student from the U of A chosen as a finalist is Victoria Maloch, who majored in agricultural business with a minor in agricultural communications.

"Karli Lipinski and Victoria Maloch are in very different disciplines, but both are exceptional individuals and scholars, and they will represent the University of Arkansas and the state with distinction," said Jim Coleman, provost and executive vice chancellor for academic affairs. "We are delighted that they have been selected and wish them well, but regardless of the outcome of this scholarship, we know we'll be reading about the accomplishments of both in the years ahead."

The Marshall Scholarship is one of the most prestigious postgraduate scholarships available to an American. Recipients are allowed one to three years of graduate level study at the university of their choice in the United Kingdom. The scholarships recognize the work of U.S. Secretary of State George C. Marshall and are an expression of the U.K.'s gratitude for economic assistance received through the Marshall Plan after World War II. Marshall Scholarship winners are selected for their potential to excel as scholars, leaders and contributors to improve understanding between the U.S. and the U.K. More than 1,200 top students apply for the nationally competitive Marshall Scholarship.

University of Arkansas students who are interested in applying for scholarships like the Marshall should contact the Office of Nationally Competitive Awards at [awards@uark.edu](mailto:awards@uark.edu).

The recipient of many campus awards and scholarships, Karli Lipinski spent the summer of 2017 as a student in the University of Kentucky's Engineered Bioactive Interfaces and Devices Research Experience for Undergraduates program, which is funded by the National Science Foundation.

Here at Arkansas, she conducted research on characterizing a nanovesicle drug delivery system for personalized cancer treatment. Additionally, Lipinski has worked alongside her mentor, Roger Koeppel, in his lab since 2015. She has also spent a summer interning and studying at the Arkansas IDeA Network of Biomedical Research Excellence, and a week studying coastal Caribbean biology in Belize.

She plans to eventually pursue a doctorate in biophysics and become a successful self-sustaining researcher.

"Karli Lipinski is very deserving of this recognition. She will have a distinguished career in research," said Koeppel, Distinguished Professor of biochemistry. "She is equal to any student nationally in regards to academic merit and leadership. In addition to her potential in research, teaching and academic science, she has been and will always be an outstanding ambassador for the University of Arkansas and for the state."

Lipinski is an Honors College Ambassador at the University of Arkansas. She works with current and potential U of A students, encouraging them to get involved with research opportunities available to them. She is also involved in Chemists Without Borders and Alpha Chi Sigma, the professional chemistry fraternity, where she serves as treasurer.

**About the Marshall Scholarship:** Beginning with the first twelve Marshall Scholars in 1954, Marshall scholarships were created in order to finance young Americans of high ability to study for a graduate degree in the United Kingdom. Marshall Scholars strengthen the enduring relationship between the British and American peoples, their governments and their institutions. Marshall Scholars are talented, independent and wide-ranging, and their time as Scholars enhances their intellectual and personal growth. The University of Arkansas has had seven Marshall Scholars, including Mike Norton (2014), Ben Hood (2002), Megan Ceronsky (2001), Warwick Sabin (1998), Charles King (1990), Lisa Pruitt (1989), and John Edie (1960).



## Battle Line Tailgate Produces Scholarships

There are currently more than 800 University of Arkansas students from the state of Missouri, as well as from the Kansas City and St. Louis suburbs, which stretch into neighboring states.

Additionally, the NWA Alumni Chapter recently awarded nine student scholarships to deserving students at the U of A.

These chapters of the Arkansas Alumni Association continue to fund scholarships for University of Arkansas students from their areas through proceeds and contributions made as part of the Battle Line Rivalry and sale of Missouri Hog Tags. Participation can make an impact for the University of Arkansas students from the Battle Line states and have fun while doing it. The Kansas City Chapter Alumni Scholarship, Northwest Arkansas Chapter Endowed Scholarship, and the St. Louis Chapter Endowed Award are three opportunities for giving.



**Amanda Hayes**  
Chapter Scholarship Recipient  
Chemistry and Spanish Majors  
Pre-Medical Preparation

*"I am planning on becoming an oncologist, and with the University of Arkansas being a highly respected research community, I felt this was a great fit for my studies."*

## Students Pass 7th Cume Exams

Five students passed their 7th cume during the fall term. They are **Ifedi Orizu, James Lowe, Holly Wallace, Isabelle Niyonshuti**, and **Colin O'Donnell**. Passing the exams and any deficiency courses required admits a student to candidacy.

Ifedi Orizu is a student in the Striegler lab. He completed his B.S. at the University of Ontario Institute of Technology and is from Onitsha, Nigeria.

James Lowe is a student in the Coridan lab. He completed his B.S. at Henderson State University and is from Benton, Arkansas.

Holly Wallace is a student in the McIntosh lab. She completed her B.S. at the University of West Georgia and is from Carrollton, Georgia.

Isabelle Niyonshuti is a student in the Chen lab. She completed her B.S. at Spelman College in Atlanta, Georgia. She is from Rwanda.

Colin O'Donnell is a student in the Stites lab. He completed his B.S. at James Madison University and is from Sterling, Virginia.

## Ischenko Publications

Three articles were recently published by Anatoly A. Ischenko, from Moscow Technological University. He worked with **Lothar Schäfer, John Ewbank, David Paul**, and Walter Faust (a native of Benton AR, PhD Columbia) of the Naval Research labs, to develop this equipment from the mid 1980s to the mid 1990s.

Structural Dynamics of Free Molecules and Condensed Matter. Part I. Theory and Experimental Technique. Anatoly A. Ischenko, Yuriy I. Tarasov, **Lothar Schäfer**, 2017. *Fine Chemical Technologies* TOM 12 No. 2.

Structural Dynamics of Free Molecules and Condensed State of Matter. Part II. Transient Structures in Chemical Reactions. Anatoly A. Ischenko, Yuri I. Tarasov, **Lothar Schäfer**. 2017. *Fine Chemical Technologies* TOM 12 No. 4. This article was dedicated to the memory of John David Ewbank.

Ultrafast Transmission Electron Microscopy. A.A. Ischenko, **L. Schäfer**, Y.I. Tarasov, E.A. Ryabov, S.A. Aseyev. 2017. *Fine Chemical Technologies* TOM 12 No. 1.



Carolyn Joann Millett was born to Paul and Lea Millett 10/14/17. She weighed 7 lbs, 5 oz. Pictured above are Frank Millett, his son Paul Millett, and Paul's family.

## Calendar of Events

### December

- 1 CUME, 5:00-6:00 p.m., CHEM 144
- 1 Final copies of thesis/dissertation must be submitted to the Graduate School for December graduates
- 4 Seminar: Steven Soper, University of Kansas, 3:30, CHEM 144
- 8 Dead Day - Departmental Potluck luncheon, noon. Bring a dish and a smile
- 11-15 Final Exam week
- 16 Fall Commencement, 9:00 a.m., Bud Walton Arena
- 18 Final Grades due
- 20 PhD Defense - Randy Espinal Cabrera, 10:00 a.m. in CHEM 133
- 18-31 Winter Break (Student break, University offices will be open 18-21)

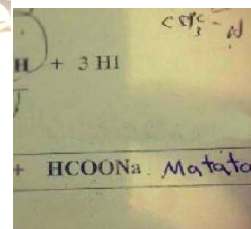
### January

- 1 Holiday - New Year's Day. University Closed
- 15 Holiday - MLK Birthday. University Closed
- 16 Classes Begin
- 26 CUME, 5:00-6:00 p.m., CHEM 144
- 29 Inaugural Mills Seminar: Eric Baker, Pacific Northwest National Laboratory, 3:30, CHEM 144

Our departmental web page is located at [chemistry.uark.edu](http://chemistry.uark.edu). There you will find links to departmental information, news, and people. But best of all, alumni can stay in touch through the Alumni & Friends link. We want our alumni to stay in touch! Please take a few minutes to browse the page and submit any update you'd like published (or not). We welcome pictures, too!



### Joke Time - with Julie



Take finals seriously...but not TOO seriously!

*The department of chemistry and biochemistry at the University of Arkansas strives for excellence in research, teaching and service in chemistry - the central science. We aspire to positions of leadership regarding the discovery of new scientific knowledge, the training of students, and the economic development of the State of Arkansas. We seek to recruit and retain a diverse group of the best faculty, students and staff to address the challenges of the future through interdisciplinary and multi-disciplinary research and education.*

## Library Hours

### Fall Hours: August 20 - December 16

Saturday and Sunday	CLOSED
Monday - Thursday	8:00 am - 9:00 pm
Friday	8:00 am - 6:00 pm

### Exceptions to Regular Fall Hours

Friday	Dec 15	8:00 am - 5:00 pm
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### Interim and Winter Break: December 17-Jan 1

Monday - Thursday	Dec 18-21	8:00 am - 5:00 pm
Friday - Monday	Dec 22-Jan 1	CLOSED

### Interession Hours - January 2-13, 2018

Tuesday-Friday	Jan 2-5	8:00 am - 5:00 pm
Saturday-Sunday	Jan 6-7	CLOSED
Monday-Friday	Jan 8-12	8:00 am - 5:00 pm
Saturday-Sunday	Jan 13-14	CLOSED

The chemistry and biochemistry library resources can be accessed in the following LibGuides: <http://uark.libguides.com/content.php?pid=110953>. Please bookmark for future use.

Theses and dissertation resources can be found on the following LibGuide: <http://uark.libguides.com/content.php?pid=123035&sid=1057466>.

**For more information:** Check the Libraries' web site (<http://libinfo.uark.edu>) for updated information on hours and services. Library hours are also available by dialing 479-575-2557.

CHBC Library (CHEM 225)  
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## Safety Tip:

By Bill Durham

Perchlorate salts in general are potentially explosive. Perchlorate acid when mixed with alcohols forms an explosive, shock sensitive mixture.



Department of Chemistry  
and Biochemistry