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## Mole Street Journal, August 2013

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

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### Citation

University of Arkansas, Fayetteville. Dept. of Chemistry and Biochemistry. (2013). Mole Street Journal, August 2013. *Mole Street Journal*, 12 (8) Retrieved from <https://scholarworks.uark.edu/mole-street-journal/76>

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## 2nd Annual Meeting of the Central Arkansas Undergraduate Summer Research Symposium

The conclusion of the Arkansas INBRE summer REU program was held in conjunction with the Central Arkansas Undergraduate Summer Research program July 24, 2013 at the William J. Clinton Presidential Center in Little Rock. The INBRE program participants included the five students located on the Fayetteville campus, and 10 students at UAMS, four of which are UAF students. These 15 students were among the 74 Symposium participants, representing 27 institutions. Research was conducted on the campuses of Ouachita Baptist University, Hendrix, UAMS, Henderson, UA Fayetteville, John Brown University, Lyon College, University of Central Arkansas, UA Pine Bluff, NCTR, and Cal Tech.



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The following posters/talks were presented by the five UA Fayetteville campus participants. Jean de Dieu Nubundiho and **Nan Zheng**, "Photocatalysed [4+2] Annulation of N-Cyclobutylanilines with Alkynes."

Kaleb Vaughn, Carlos A. Avila, and Fiona L. Goggin, "Methodology in tracking and isolating fad7-1 allele in the model plant *Arabidopsis thaliana* using allele-specific primers."

Dustin Walter, Yazan Akkam, and David S. McNabb, "Development of an Assay to Explore the Effect of Salts on the Antimicrobial Activity of Peptides."

Zachary Reed and Inés Pinto, "Interaction of histones H2A, H3 and H4 required for proper chromosome segregation during cell division."

Ariel Teague, Dr. Tammy Rechten, and Dr. Christa Hestekin, "Detection of Amyloid- $\beta$  Oligomers using Capillary Electrophoresis."

University of Arkansas students completing research at UAMS presented the following:

Lindsey Prtichett and Daniel E. Voth, "Alteration of Host Cell Ubiquitination by *Coxiella burnetii*." **Kevin Roberts**, Neriman Kockara, and Patricia Wight, "Targeted Deletion of Putative Human Myelin Proteolipid Protein (PLP1) Regulatory Regions."

Julianna Grillot, Archana Kamalakar, Charity L. Washam, Dana Gaddy, and Larry J. Suva, "Biological function of parathyroid hormone related protein fragment 12-48 (PTHrP 12-48)."

Steven Barger, Bounleut Phanavan, and **Jenny Koo**, "Effects of ApoE, Reelin, and IL-4 on Mitochondrial Respiratory Gene Expression as a Model for the Neuropathology of Alzheimer's Disease."

Alumni **Howard Hendrickson**, Associate Professor at UAMS, was the mentor to Greg Phelps, Arkansas State University, who gave a talk, "Biomarker of Radiation Injury I NOS system."

The Arkansas IDeA Network of Biomedical Research Excellence (Arkansas INBRE) is funded by a grant from the National Center for Research Resources (NCRR), under the Institutional Development Award (IDeA) Program of the National Institutes of Health (NIH). The IDeA program was established for the purpose of broadening the geographic distribution of NIH funding for biomedical and behavioral research. Currently NCRR supports INBRE programs in 23 states and Puerto Rico.

### Special points of interest:

- Faculty and Student presentations and publications
- Thurman, Uner, and Rivero-Castro defend research
- Summer graduates
- News from IT

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## Faculty News

### On the Go

Xingeng Yang, Xinsong Zhang, Simon S. Ang and **Z. Ryan Tian**. Nano Material Applications in Solar Cell Packaging. NSF-EPSCoR Yearly Conference, Little Rock, AR, June 25, 2013.

Hulusi Turgut, **Huajun Zhou, Z. Ryan Tian**. High-temperature stable, corrosion resistant, transparent, low cost, freestanding graphene-based films. NSF-EPSCoR Yearly Conference, Little Rock, AR, June 25, 2013.

**Huajun Zhou**, Braden N. Henderson, Tyler F. Chism, Catriona E. Whiteside, and **Z. Ryan Tian**. New nanomaterials and designs for solar-energy conversion and storage. NSF-EPSCoR Yearly Conference, Little Rock, AR, June 25, 2013.

**Huajun Zhou, Z. Ryan Tian**. Function-oriented multistep nanosynthesis of a light-trapping photocatalyst. Symposium, "Nanotechnology and Perspectives in Organometallic, Materials, and Environmental Chemistry." Kansas State University, June 1, 2013.

**Z. Ryan Tian**, Translational and Futuristic Nanomedicine Technologies. Arkansas Stem-cell Conference, UAMS, Little Rock, AR, June 10, 2013.

**Jiang Wang** presented "Photocatalyzed [4+2] annulation of N-cyclobutylanilines with alkynes" at the 43rd National Organic Chemistry Symposium (NOS 2013) at the University of Washington Campus, Seattle, June 23-27, 2013.

**Roger Koeppe and Denise Greathouse** were invited speakers for the 2013 Snowmass Conference on Biological Membranes and Membrane Proteins: Challenges for Theory and Experiment, July 21-26 in Snowmass, Colorado. Dr. Koeppe's topic was "Measuring Single-Residue Ionization Properties in Defined Tilted Transmembrane Peptides." Dr. Greathouse spoke on "Membrane Interactions of Antimicrobial Lactoferricin-like Peptides."

**Alda Diaz-Perez** presented a poster "Collection of prostaglandin E2 and leukotriene B4 from implanted microdialysis probes" at the Society for Biomaterials Meeting, Boston MA, April 2013. Co-

authors are **Geetika Bajpai and Julie A. Stenken**.

**Geetika Bajpai** presented a poster "Directing Macrophage Polarization with Microdialysis Probe Implants: Perfusion Fluid and IL-4 Effects" at the Society for Biomaterials Meeting, Boston MA, April 2013. Co-authors are **Cynthia Sides**, Jeanine M. Durdik, and **Julie A. Stenken**.

**Joshua Sakon** attended a meeting "GRC-collagen in the context of matrix, cells and regenerative medicine" at Colby-Sawyer College, New London, NH July 14-19, 2013. Two papers were presented. "Structural Basis for Clostridial Collagenase Catalyzed Collagenolysis" by **Joshua Sakon, K. Janowska, ST Philominathan, K Taylor, S Gann**, O Matsushita, K Tanaka and **R Bauer**. "Identification of Binding Sequence on Porcine Type I Collagen-binding Domain from Clostridial Collagenase CoLG" by Keisuke Tanaka, **R Liyanage, JO Lay, R Bauer**, T Mima, S Hattori, O Matsushita, and **J Sakon**.

**Paul Adams** attended the 2013 Annual Meeting of the Protein Society in Boston, MA July 20-22. He represented the department in a Graduate Student Recruiting Forum sponsored by the Society, and presented a paper "A Switch I Mutant of Cdc42 Shows Partially Restored GYP Hydrolysis when Bound to a Specific GTPase Inhibitor."

**Matthias McIntosh** and **Susanne Striegler** will be attending the 3rd Telluride meeting on Accelerating Reaction Discovery in Telluride, CO, August 5-9, 2013.

**Julie Stenken** gave an invited oral presentation "In Vivo Microdialysis Sampling of Cytokines in Subcutaneous Tissue and Brain" at the 7th International meeting on Microdialysis Sampling in Poitiers, France, May 2013.

**Samir Jenkins** presented "Manipulating Drug Unloading from Gold Nanocages" at the Cancer Nanotechnology Conference, Mt. Snow, West Dover, VT. July 16, 2013. Au-

thored by **Samir V. Jenkins, Avinash Srivasthan, Ravindra Pandey, Jingyi Chen**.

**Feng Wang** gave two invited talks. "Predicting Ensemble Properties with only Electronic Structure Information" in the workshop: Free energy calculations: Three decades of adventure in chemistry and biophysics. Snowmass, CO, July 15-19, 2013. "Accelerating ab initio free energy perturbation theory calculations with customized force fields" in the workshop Advanced Molecular Simulation Methods in the Physical Sciences, Kavli Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing, China, June 10-July 5, 2013.

**Nan Zheng** presented a poster "[3+2] and [4+2] Annulations of Cycloalkylamines with Alkynes by Photocatalysis" at the Gordon Research Conference on Organic Reactions & Processes, Bryant University, Smithfield, RI, July 14-19, 2013. Co-authors are **Theresa Nguyen, Jiang Want, and Soumitra Maity**.

### Publications

TP Ponnappakkam, R Katikaneni, **J Sakon**, R Stratford, RC Gensure. Treatment and Prevention of Chemotherapy-Induced Alopecia with PTH, CBD, a Collagen-Targeted Parathyroid Hormone Analog, in a Non-Depilated Mouse Model. *Anti-Cancer Drugs*, 2013, accepted.

TP Ponnappakkam, R Katikaneni, **J Sakon**, RC Gensure. Treating Osteoporosis by Targeting Parathyroid Hormone to Bone. *Drug Discovery Today*, 2013, accepted.

Yaping Li, Jicun Li, **Feng Wang**. Liquid-liquid Transition in Supercooled Water Suggested by Microsecond Simulations. *Acad. Sci. USA*, 100, 12209, 2013.

## Graduate Students Defend Research

**Ryan Thurman** successfully defended his Ph.D. dissertation "Structure-function Relationship of the Ligand Binding Domain of the Fibroblast Growth Factor Receptor" June 3, 2013. His research advisor is Dr. **T.K.S. Kumar**. Ryan entered the program in the fall semester of 2006. He attended the College of the Ozarks and the University of Central Arkansas, where he received his B.S. in 2005. Ryan is from Conway, AR.



**Osman Uner** successfully defended his M.S. thesis "Modeling Chemical Reactions in Aqueous Solution" July 19, 2013. His research advisor is **Peter Pulay**. Osman entered the program in the fall semester of 2011. He received his undergraduate Bachelor degree from Karadeniz Technical University, Trabzon, Turkey. He will be returning to his home country to work as a research assistant

at Kirlklareli University. He plans on applying for the Ph.D. program.

**Juliette Rivero-Castro** successfully defended her Ph.D. dissertation "Toward the Total Synthesis of Antascomicin B. Efforts to construct the C1-C21 Fragment" July 25, 2013. Her research advisor is **Matt McIntosh**. She received the M.S. degree under Dr. McIntosh in 2009. Juliette is from Colombia, South America. She received both Master's and Bachelor's degrees from Universidad Industrial de Santander, Bucaramanga, Colombia. Juliette plans to remain in the United States.



## Milestones

**Ryan Thurman** and **Becky Kerr** were married June 29, 2013 in Hampton, New Brunswick, Canada. Both are students in the Kumar lab.



"Sampling the potential energy landscape" of the beautiful mountains at Snowmass, CO are (l to r) Pengyu Ren (U. Texas, Austin), **Feng Wang**, Wei Yang (Florida State U), and Yuko Okamoto (Nagoya U). Feng Wang presented an invited talk (see "On the Go" page 2).

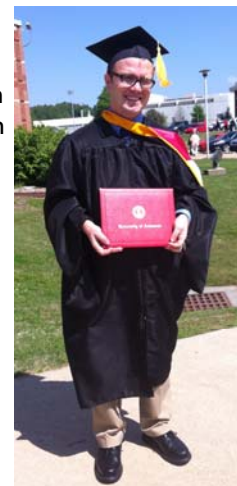
## REU Program to Run Again

Dr. **David Paul** announces that the NSF REU Summer research program will run again in the summers of 2014-2016. Dr. Paul received word last month that his proposal was recommended for an award, and will be funded for a total of \$270,000 for 3 years. Ten students will be selected each summer from applications received from all over the nation. Special consideration is given to students from non-Ph.D. granting institutions. The students will join the 4-5 INBRE students (NIH funded) for 10 weeks of research under selected chemistry faculty. The program will conclude with a meeting in miniature, where students will present their research in a poster competition.

## Summer Graduates

Receiving the M.S. degree are Eric Taylor—pictured (research advisor-Jingyi Chen) and Osman Uner (research advisor-Peter Pulay).

Receiving the Ph.D. degree are Evgenia Akhmetova (research advisor-Charles Wilkins), Ryan Thurman (research advisor-T.K.S. Kumar), and Juliette Rivero-Castro (research advisor-Matt McIntosh).



THE MOLE STREET JOURNAL IS AN  
INTERNAL PUBLICATION OF THE  
CHAIR, DAN DAVIS.  
LESLIE JOHNSON, EDITOR

Mailing Address  
CHEM 119  
University of Arkansas  
Fayetteville, AR 72701

Phone: 479-575-4601  
Fax: 479-575-4049  
E-mail: cheminfo@uark.edu

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## Safety Tip: by Bill Durham

NMR tubes are better  
stored clean than filled  
with last year's samples.

  
Department of Chemistry  
and Biochemistry

## Excellence in the Central Science

### News from Fulbright IT



**Chris Clanton** received his CTS certification on June 11. The CTS, or Certified Technology Specialist, is an internationally recognized certification accredited through the International Organization of Standardization (ISO) the International Electrotechnical Commission (IEC) and administered by the American National Standards Institute (ANSI). Under the definitions outlined by ANSI, "A Certified Technology Specialist (CTS) performs technology solution tasks by creating, operating, and servicing AV solutions, while conducting AV management activities which provide for the best audiovisual resolutions of the client's needs..." Chris received his certification following a self paced online course, a 30 hour classroom program, and through the experience he has garnered as Classroom Technology Coordinator for Fulbright College.

*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 multidisciplinary research and education.*

### Calendar of Events

#### August

- 2 Last day of 10-week summer session classes
- 5 August Intersession classes begin
- 14 Open registration for new students who did not participate in orientation
- 15 Last day of August Intersession classes
- 26 Fall classes begin at 7:30 a.m.
- 30 Deadline for Fall 2013 Fee Payment
- 30 Last day to register or add a full semester fall class



#### Save the Date!

The 2013 INBRE conference will be held October 18-19 in Fayetteville, AR. Registration will open August 1. Please be sure to register for the conference!

### Library Hours

CHBC Library (CHEM 225)  
<http://libinfo.uark.edu/chemistry>  
575-2557

#### Summer Semester Hours, August 2013

Monday—Friday 8 a.m.-5 p.m.  
Saturday—Sunday 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. These and dissertation resources can be found on the following LibGuide: <http://uark.libguides.com/content.php?pid=123035&sid=1057466>.

