

3-2012

## Mole Street Journal, February 2012

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

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### Citation

University of Arkansas, Fayetteville. Dept. of Chemistry and Biochemistry. (2012). Mole Street Journal, February 2012. *Mole Street Journal*, 11 (2) Retrieved from <https://scholarworks.uark.edu/mole-street-journal/58>

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## Special points of interest:

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## Science Building Labs Renovated

Renovations to labs 302 and 303 are now complete. Replacing the old standard 3 bulb fluorescent lights are more energy efficient “green” lights which utilize one bulb each. A new air distribution system and sprinkler system are hidden behind new ceiling tiles, and new eyewash stations have been installed. These rooms are used for Physical Chemistry labs, Biochemical Techniques, Honors Chemistry, some Analytical Chemistry and possibly Honors/Majors Organic labs. Approximately one hundred students will use the labs each semester. The storage room on the first floor also received new flooring and ceiling tiles. Lab 315 was also renovated for Biology labs.



At left: one of two new pull-down eyewash stations in 302 and 303. Water automatically turns on when station is lowered from the wall.

At right: Lab 303 ready for use.



## NMR Upgrades

Recently, all of the 7 NMR spectrometers in the Center for Protein Structure and Function were upgraded. New software, monitors and amplifiers were installed. Also, a 1.7mm Cryoprobe was installed in one of the 500 MHz NMR spectrometers. Since one normally works with very small

amounts of a given protein, the 1.7mm Cryoprobe allows one to maximize the amount of protein in the probe by not having to “dilute” the sample to place it in a 5mm tube. This can be illustrated from the comparison of a 20mm, 10mm, 5mm and the 1.7mm NMR sample tubes shown at right. There are other advantages of using the 1.7mm Cryo-

probe, such as the ability to study biomolecules in solutions of very high salt concentrations.



## Faculty News

### Research News

“On the combined analysis of  $^2\text{H}$  and  $^{15}\text{N}/^1\text{H}$  solid-state NMR data for determination of transmembrane peptide orientation and dynamics,” authored by **V. Vostrikov**, C. Grant, S.J. Opella, **R.E. Koeppe II** was published in *Biophys J.* (2011) 101, 2939-2947.

“Catalytic dynamic resolution applied to the synthesis of 2,6-disubstituted piperidines: Preparation of (+)-Lupetidine and (-)-Epidihydro-pipidine,” authored by **Timothy K. Beng** and **Robert E. Gawley**, was published in *Heterocycles* (2012) 84 (2), 697-718.

“Application of a  $C_2$ -Symmetric copper carbenoid in the enantioselective hydrosilylation of dialkyl and aryl-alkyl ketones,” authored by **Abigail Albright** and **Robert E. Gawley** was published in *JACS* (2011) 133, 19680-19683.

### On the Go

The Biophysical Society Annual Meeting will take place February 25-29, 2012 in San Diego, CA.

The following poster presentations will be made.

**Feng Gao**, a post doc in the Heyes lab, will present “Structural Dynamics in Chloroplast Signal Recognition Particle (CPSRP) Pro-

teins Studied with Single Molecule Fluorescence.” Other authors of the work are **Chase M. Ross**, **Jasmine Brown** (2011 REU), **Ralph L. Henry**, **Robyn Goforth** and **Colin D. Heyes**.

**Ryan Bauer** will present “The Crystal Structure of the Polycystic Kidney Disease (PKD) Domain from *Clostridium histolyticum* Collagenase: Insight into the Biophysical Role of the PKD Domain in Collagenase.”

**Nick Gleason** will present “Response of GWALP Transmembrane Peptides to Titration of a Buried Lysine.” Other authors are **Vitaly V. Vostrikov**, **Denise Greathouse** and **Roger Koeppe**.

**Rory Henderson** will present “Mapping the Inositol Hexakisphosphate Binding Sites on the Human Fibroblast Growth Factor.” Other authors are **T.K.S. Kumar** and **Anna Daily**.

**Ashlee J. Bell-Cohn** will present “Characterization of Antimicrobial Peptides Relating to Shortened RWALP Model Peptides.” Other authors are **Nick Gleason**, **Roger Koeppe** & **Denise Greathouse**.

**Shaun Adams** will present “Prediction and Characterization of the Structure of Juxtamembrane Domains of Transmembrane Tyro-

sine Kinases.”

**Denise Greathouse** will present “Membrane Interactions of an Acylated and Non-acylated Lactoferricin Peptide by Solid-State NMR and Fluorescence Spectroscopy and Molecular Dynamics Simulations.” Other authors are T. Romo and A. Grossfield.

**Roger Koeppe** will present “Importance of Aromatic Anchor Residue Identity and Location for the Tilt and Dynamics of Transmembrane Peptides.” Other authors are R. Gist, **Nick Gleason**, **Rebekah Langston**, **Kelsey Sparks** and **D. Greathouse**.

“Characterization of Membrane Interactions with Lactoferricin Peptides by both All-atom and Coarse-grained Molecular Dynamics Simulations, Solid-state NMR, and Fluorescence Spectroscopy,” authored by T.D. Romo, J. Horn, **D.V. Greathouse**, and A. Grossfield; “Statins Modify Lipid Bilayer Properties,” authored by R. Sanford, S.J. Al'Aref, **Roger Koeppe** and O.S. Andersen; “Origins of Non-selective Ion Transport across Lipid Bilayers,” authored by I. Vorobyov, **Roger Koeppe**, O.S. Andersen and T.W. Allen will also be presented.

## Staff Highlight



**David Hayes** was involved in the first fully computer-controlled paper machines. The story of the International Paper Company commitment to the first fully computer-controlled pulp & paper mill in the world was recently published ([Computer History Museum](#), Mountain View, CA, accession# 102716416-05-

01.pdf). This project cost \$650 million (1981), equivalent to \$1.8 billion (2010). David Hayes was a process control engineer assigned responsibility for the configuration, check-out, training, and start up of both paper machines. The publication acknowledges David as developing an inspired teaching methodology that convinced

papermakers the system would work. Payback came at actual start up as the paper machine systems had no internal issues.

David Hayes is the Undergraduate Laboratory Coordinator/Instructor for the Department of Chemistry and Biochemistry.

## Student News



Randy Espinal Cabrera successfully defended his M.S. thesis "Development of a Microfluidic Device Coupled to Microdialysis Sampling for the Pre-concentration of Cytokines" January 9, 2012.



Alda Diaz Perez joined the department in January as a LASPAU sponsored M.S. student from the Dominican Republic. She received her B.Sc. from Autonoma University de Santo Domingo and is interested in analytical chemistry.



### Save the Date!

The department is again co-hosting the INBRE conference October 5-6, 2012 with the departments of biological sciences and physics. Events include faculty talks, student oral presentations, workshops, and a poster session. More information to come soon!

## Okayama Students to do Internships

The department of chemistry and biochemistry will host two medical research interns from Okayama University. The Okayama Medical School, founded in 1870, enjoys a sterling reputation as one of the leading universities in Japan. Two Okayama student interns arrive in September of 2012 and will work for one semester in the laboratory of Professor Joshua Sakon. As many of us are making successful transitions from bench top to bedside, the link with hospitals is essential.

## Fry Memorial Service

The memorial service for University Professor Emeritus Art Fry will take place on February 19, 2012 at 2:00 p.m., in the Convocation Room at Butterfield Trail Village. Butterfield Trail is located at 1923 E. Joyce

Boulevard, Fayetteville, Arkansas 72703. There will be a buffet reception to follow, in the lobby. Dr. Fry passed away on August 23, 2011. He was 90 years old. Dr. Fry's last graduate student,

Dr. Rabi Musah from the Univ. at Albany, plans on attending and will possibly present a department seminar while here.

## News from Fulbright IT

Effective Monday, January 23, the IT Services Help Desk, located in the Administrative Services Building, will close at 5 p.m. Hours for phone support will not change. In person assistance is available at the Arkansas

Union Help Desk from 5 to 6 p.m. Monday through Thursday. The Union Help Desk, located in the Arkansas Union Fireplace Lounge outside the General Access Computing

Lab, is open from 8 a.m. to 6 p.m., Monday through Thursday, and 8 a.m. to 3 p.m. Friday.

THE MOLE STREET JOURNAL IS AN  
INTERNAL PUBLICATION OF THE  
CHAIR, BOB GAWLEY.  
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## Safety Tip: by Bill Durham

Small mistakes  
can have serious  
consequences  
when working  
with hazardous  
materials, espe-  
cially if you are  
alone.

  
Department of Chemistry  
and Biochemistry

## Excellence in the Central Science

*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.*

## CUME Dates 2011-2012

Fall	Spring
September 9	January 27
September 30	February 17
October 14	March 2
November 4	April 6
December 2	April 27

## Calendar of Events

### February

- 6 Dept. Seminar—Masaru Kuno, Univ. of Notre Dame
- 10 5th Annual Grad Student Research Symposium & Career Networking Event (contact Diane Cook [dlcook@uark.edu](mailto:dlcook@uark.edu))
- 13 Dept. Seminar—Jiali Gao, Univ. of Minnesota
- 15 Defense deadline/turn in Dissertation to grad school to avoid having to register for spring classes
- 17 CUME
- 19 Art Fry Memorial Service, Butterfield Trail Village, Fayetteville
- 25-29 Biophysical Society meeting, San Diego

### March

- 1 Deadline to apply for Spring graduation through ISIS
- 2 CUME
- 5 Dept. Seminar—Byron Gates, Simon Fraser Univ.
- 19-23 SPRING BREAK
- 25-29 ACS meeting, San Diego

## Library Hours

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

January 17—May 13	
Monday-Thursday	8:00 a.m.—9:00 p.m.
Friday	8:00 a.m.—6:00 p.m.
Saturday and Sunday	CLOSED
Spring Break	
Monday-Thursday (3/19-22)	8:00 a.m.—5:00 p.m.
Friday (3/23)	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>.

