

## The Mole Street Journal

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### Department Goldwater Tradition Continues



Whitney Gammill

The tradition continues. Junior chemistry majors **Whitney Gammill** and **Rachel Thomas** are among three University of Arkansas students to be named Goldwater Scholars. The other recipient is Jordan Greenlee, an electrical engineering major.

The department has a strong tradition of producing Goldwater Scholars as half of the 39 awarded to UA students have been chemistry majors.

All three are students in the Honors College and will receive a \$7,500 scholarship. This spring, 321 students nationwide received the prestigious scholarships. Gammill is a Bodenhamer Fellow with a minor in gender studies. Her research is in food science and chemistry and involves how unsaturated fats and fatty acids can be modified to enhance health benefits. Gammill plans to earn a doctorate in chemistry and pursue a career in biomedical research. She is the daughter of Rick and Diane Gammill of Maumelle.

Thomas is an Honors College Fellow pursuing minors in French and philosophy. Her research investigates the structural components of proteins that are able to span a cell membrane. After graduation, she plans to attend medical school and conduct biomedical research in neurodegenerative disorders, particularly Alzheimer's and Parkinson's diseases. She is the daughter of Lawrence and Ramona Thomas of Fort Smith.



Rachel Thomas

Department Goldwater Scholars:

Bao Dang, 1994  
Nam Le, 1994  
Elizabeth Dunn, 1999  
Jimmy McCarley, 1999  
Anna Terry, 2000  
Erin Scherer, 2002  
Matthew Whitley, 2002  
Matt Lohse, 2003  
Leremy Colf, 2003  
David Deitz, 2004  
Joshua Liu, 2005  
Ami SriRamaratnam, 2005  
Rebecca Adair, 2006  
Aireal Haley, 2006  
Natalie Anderson, 2007  
Randy Carney, 2007

The Barry M. Goldwater Scholarship and Excellence in Education Program was established by Congress in 1986 to honor Senator Barry M. Goldwater. The first scholarships were awarded in 1988. The purpose of the program is to provide a continuing source of highly qualified scientists, mathematicians, and engineers by awarding scholarships to college students who intend to pursue careers in these fields. Universities and colleges may nominate up to four students each year.

### Organic Chemist Hired

**Nan Zheng** will join the department faculty in the organic division this fall. Currently he is an NIH Ruth L. Kirschstein NRSA Postdoctoral Fellow at MIT working with Professor Stephen L. Buchwald.

He holds a doctorate in organic chemistry from the University of Michigan, and a masters degree from the University of Rochester. His undergraduate work was in polymer chemistry at the University of Science and Technology of China. He has professional experience at Merck & Co., Inc., where he was an organic chemist in process chemistry.

Zheng's research interests are in the development of transition metal catalyzed methods and their application to the total synthesis of alkaloids with promising biological activity.

## Faculty News

### Notables

The UA Local Section of the American Chemical Society will honor University Emeritus Professor **A. Wallace Cordes** for 50 years of service to the ACS at a dinner April 15. For more information contact cheminfo@uark.edu.

### Research News

An article "Nanotechnology for Improving Bone Implants," appeared in the Spring 2008 edition of *BONEZone*. The article highlights the research of Z. Ryan Tian who is researching new nanobiomaterials for potential applications in orthopaedic and cardiovascular nanomedicine.

"*In situ* and Multi-Substrate Detection of Elastase Enzymatic Activity External to Microdialysis Sampling Probes using LC-ESI-MS," by Y. Wang, D.V. Zagorevski, and **J. A. Stenken** will be published in *Analytical Chemistry*, 2008, 80(6), 2050-2057.

### On the Go

#### 235th ACS National Meeting New Orleans, April 6-10

Faculty attending are **Neil Allison**, **Bob Gawley** and **David Paul**.

**Peter Pulay** will give an invited lecture "Two Applications of Computational Spectroscopy: IR Spectra of Polycyclic Aromatic Hydrocarbons, and Protein Structural Information from NMR Shifts."

The following graduate students will make poster presentations:

**Aaron Beuterbaugh** "Study of the Preparation and Chemistry of Iron Vinylallene Complexes: Precursors toward Functionalized TM Complexed 5-Member Ring Quinone-Methide Analogs."

**Dan Eddings** "New Chiral

Cu(I)-NHC Catalyst for Asymmetric Cyclopropanations."

**Penny Lewis** "Progress Toward a Microelectrochemical Sensor for Saxitoxin using Saxiphilin c-lobe."

**Ryan Farris** "Synthesis of 9,10-disubstituted-anthracene 18-crown-6 chemosensors and Quartz Surface Modification for the Detection of the Paralytic Shellfish Toxins."

**Susan Grisham** "Super-Paramagnetic Nanocrystal with Second Generation Dendron Ligand Suitable for Catalytic Applications."

**Christian Loeschel** "Study of the Synthesis and Chemistry of Manganese and Rhenium Complexed 5-Membered Ring Analogs of ortho-Quinone Methide."

The following undergraduates will make poster presentations.

**Tammy Binz** "Synthesis, Structural Analysis, and Study of the N-Heterocyclic Carbene Character of Di-tert-butylcycloheptatrienyliene when Used as a Ligand or Combined with a Transition Metal."

**Olena Pickett** "A Study of Synthesis and Chemistry of Metallaanthracenes."

**Maria Super** "A Study of an Alternate  $\alpha$ -Elimination Reaction to Form Carbenes."

Former REU student **Adam Ring** will attend.

**Paul Adams** gave an invited talk at the 35th Annual Conference of the National Society of Black Chemists and Chemical Engineers in March. He spoke in the biochemistry and bioapplications sessions.

**Bob Gawley** will lecture at the at the University of Regensburg and Ludwig Maximilian University, Munich in May.

In March, Gawley attended the NSF Small Business Technology Transfer

(STTR) grantees meeting in Washington D.C. regarding White River Bioscience, Inc.

**Matt McIntosh** will give a seminar at NIDDK (National Institute of Diabetes and Digestive and Kidney Diseases) at NIH, April 11.

In March, McIntosh traveled to East Tennessee State University for recruiting.

**Joshua Sakon** presented "Expression and Isolation of Collagenase from *Vibrio*," at the Japanese Microbiology Society, Kyoto, March 23-26.

The Sakon group including Sakon, postdoc **Leena Philominathan** and graduate student **Fei Guo** will make their semi-annual trip to Argonne National labs April 3-7 to look for high resolution data collection of protein crystals.

**Ryan Tian** traveled to UAMS several times this spring for research collaboration. He gave a seminar in the Orthopedic Research Library and made a presentation to the Center for Hip and Knee Surgery in the orthopedic surgery department.

In February, Tian gave a seminar in the chemistry department at UT-Dallas.

Tian also gave two seminars at the University of Oklahoma "New Nanostructures for Nanomedicine and Energy Applications," and "Structural, Interfacial, and Organizational Controls for Developing Solid-State Nanodevices."

Graduate student **Roland Njabon** presented a poster "Kinetically Probing Heterogeneous Nucleation and Hierarchical Growth of ZnO Nanobranches," at the 2008 MRS Spring Meeting in San Francisco in March. He is a graduate student in the Tian lab.

## Surprise



The department and the Geren family gathered to surprise Lois Geren on the occasion of her milestone birthday in March.

Pictured at right: Katrina, Collis and Lois Geren and Arhen and Tanya Johnston.

## Student News

Congratulations to the following graduate students who passed the appropriate number of cumulative exams and are official doctoral candidates — **Timothy Beng**, **Zheng Li**, **Nicole Webb** and **Melissa Weston**.

## Honors Night

The following poster presentations will be presented by undergraduate honors students at Honors Night, Thursday, April 24 at the UARK Ballroom on Dickson Street.

**Maher Abu-Libdeh** "Biophysical Characterization of the Fibroblast growth factor Receptor Interaction(s)" (mentor T.K.S. Kumar)

**Natalie Anderson** "Applications of Fluorescence and Magnetic Resonance Methods to Investigate Lipid/Peptide Interactions" (mentor Roger Koeppel)

**Tammy Binz** "Synthesis, Structural Analysis, and Study of the N-Heterocyclic Carbene Character of Di-tert-butylcycloheptatrienylidene when Used as a Ligand or Combined with a Transition Metal" (mentor Neil Allison)

**Kyle Blair** "Significance of Washing Procedure on Methanogen Growth" (mentors Tim Kral, BIOS and Dan Davis)

**Drew Bockenfeld** "The Effect of Tobacco Smoke on the Oxidation of Methionine in Human Thrombomodulin" (mentor Wes Stites)

**Laura Bradley** "Investigation of Antimicrobial and Lipid Perturbing Properties of Acylated Lactoferrin Peptides" (mentor Denise Greathouse)

**Carter Calef** "The Synthesis of Terminal Allenes with Variable Substituents" (mentor Neil Allison)

**Randy Carney** "Atom Economy Synthesis of High Quality Oxide Nanocrystals" (mentor Xiaogang Peng)

**Christopher Carter** "Development of Oxygen Sensors for In-vivo Sensing" (mentor David Paul)

**Zach Donnell** "Determining the Effects of a Mutated Nup211 on the Heterochromatin Pathway in *Schizosaccharomyces Pombe*" (mentor Denise Greathouse)

**Jacqueline Ryan Duncan** "Expression and Purification of Cdc42 Mutants for Biophysical Studies to Understand Altered Functions Relative to Wild Type Cdc42Hs" (mentor Paul Adams)

**Lauren Edwards** "An Innovative Method for the Purification of Recombinant Proteins" (mentor Paul Adams)

**Rachel Ellis** "Effect of Linker on Transmembrane Peptide-Anchored Lactoferrins in Neutral and Anionic Lipids" (mentor Denise Greathouse)

**Eric Flagg** "Expression of Transmembrane and Cytoplasmic Domains of Anthrax Toxin Receptor" (mentor Roger Koeppel)

**Thomas Fleri** "Life in Outer Space? The Possibility of Life on Enceladus" (mentors Tim Kral, BIOS and Roger Koeppel)

**Whitney Gammill** "A comparative Study of the Use of High-Linoleic Acid Vegetable Oils in Producing Conjugated Linoleic Acid" (mentors Andy Proctor, FDSC and Roger Koeppel)

**Christopher Hall** "Electron Transfer Reactions of Cytochrome C" (mentor Frank Millett)

**Evan Harsh** "Electron Transfer from Cytochrome c to Cytochrome Oxidase" (mentor Frank Millett)

**Khalil Ibrahim** "Understanding the Mechanism of the Anti-angiogenic Activity of Suramin" (mentor T.K.S. Kumar)

**Megan Mainord** "Regulation of the high-affinity iron uptake system of *Candida Albicans*" (mentors David McNabb, BIOS and Dan Davis)

**Zachary Manning** "RDC Modeling of FGF-1" (mentor T.K.S. Kumar)

**Nicole McClellan** "Molecular Interactions of Lactoferrin peptides" (mentor Denise Greathouse)

**Cristina Melean** "Improvement of Microdialysis Techniques for Cytokine Research" (mentor Julie Stenzen)

**Takanori Miyairi** "Expression and Purification of TATA Binding Protein (TBP)" (mentor Joshua Sakon)

**Kristin Nagle** "Study of thrombomodulin Gene Homology" (mentor Wes Stites)

**Caroline Nardi** "Understanding the Molecular Mechanism Underlying the Secretion of Fibroblast Growth Factors" (T.K.S. Kumar)

**Olena Pickett** "A Study of Synthesis and Chemistry of Metallaanthracenes" (mentor Neil Allison)

**Latisha Puckett** "Determining Protein Folding Energies with H/D Exchange Mass Spectrometry" (mentor Wes Stites)

**Miles Ritter** "The Immune Response: Nitric Oxide and Cytokine Expression" (mentor Julie Stenzen)

**John Shellenberger** "Detection of Cytochrome C and Dopamine on a TiO<sub>2</sub> Nanosphere Modified Electrode" (mentor Ryan Tian)

**Chris Sichmeller** "A Study of CdSe-Amine Ligand Kinetics at Room Temperature" (mentor Xiaogang Peng)

**Kent Smith** "Novel Methods for Methionine Alkylation" (mentor Wes Stites)

**Maria Super** "A Study of an Alternate  $\alpha$ -Elimination Reaction to Form Carbenes" (mentor Neil Allison)

**Whitney Tharp** "Stability of Collagen Binding Domain Quantum Dot Conjugate" (mentor Joshua Sakon)

**Rachel Thomas** "Influence of Proline upon the Folding of a Designed Transmembrane Helical Peptide" (mentor Roger Koeppel)

**Nathan Tobey** "Characterizing Changes in the Denatured State Ensemble of Staphylococcal Nuclease" (mentor Wes Stites)

**Trinh Tran** "Overexpression and Biophysical Characteristics of D3 Domain of Fibroblast Growth Factor Receptor" (mentor T.K.S. Kumar)

**Blake Williams** "Examinations into the Utility of the Acyclic Allylic Diazene Rearrangement" (mentor Matt McIntosh)

**Caitlin Williams** "Strategies in Developing Immunoassay Microarrays: Layer-wise Surface Modification, Stability, Signal, and Characterization" (mentor Ingrid Fritsch)

**Adam Zimmerman** "Crystal Structure Analysis of FGFR1 D2 Domain with Sucrose Octasulfate" (mentor Joshua Sakon)

## April Safety Tip

**Keep your valuables secure. There has been a rise of theft in the department and on campus**

## Calendar of Events

### April

- 06-10 ..... ACS Meeting, New Orleans  
 07..... No department seminar  
 11..... Terry Borman lecture (rescheduled)  
 11..... Last day to make up incomplete marks from the fall semester  
 14..... No department seminar  
 18..... CUME  
 21..... Department seminar - Steven Suib, University of Connecticut  
 24..... Honors Night - UARK Ballroom on Dickson Street  
 24..... Special organic seminar - Phil Crews, UC Santa Cruz  
 28..... Department seminar - Jon Sessler, University of Texas (NOTE time at 1:30 p.m.)

### May

- 01..... Last day of classes for spring 2008  
 01..... Last day to officially withdraw from all courses  
 02..... Dead day, NO CLASSES  
 03-09 ..... Final exams  
 10..... Commencement  
 18..... REU students arrive  
 19..... Classes begin for summer session 1  
 19..... REU Welcome reception  
 20..... Last day to register or add a session 1 course  
 22..... Last day to drop a session 1 course without a "W"  
 26..... Memorial Day - U of A CLOSED

### June

- 16..... Last day to add a session 1 course with a "W"  
 27..... Last day of summer session 1  
 30..... Classes begin for summer session 2

### July

- 01..... Last day to register to add a session 2 course  
 03..... Last day to drop a session 2 course without a mark of "W"  
 04..... Independence Day - U of A CLOSED  
 24..... REU poster session  
 28..... Last day to drop a session 2 course with a mark of "W"

### August

- 08..... Last day of session 2  
 08..... Last day to officially withdraw from all session 2 courses  
 25..... First day of fall classes

## Save the Dates

September 13 - Symposium to Honor Charles L. Wilkins  
 November 7-8 - Fall 2008 INBRE Conference

## April Birthdays

- 02..... Timothy Beng  
 05..... Janice Chapman  
 14..... Rodney Rowland  
 21..... Feng Chen  
 24..... Silvana Dormi  
 29..... Fei Guo  
 29..... Jeremy Durchman

*The publishing of birthdays is not intended to invade the privacy of anyone. If you prefer not to be included, please let us know.*

## Library Hours

### Chemistry and Biochemistry

#### Spring Regular Hours

Monday - Thursday.... 8 a.m. to 9 p.m.  
 Friday ..... 8 a.m. to 6 p.m.  
 Sunday..... 2 p.m. to 6 p.m.  
 Saturday ..... CLOSED

<http://libinfo.uark.edu/chemistry/>

## CUME Dates

The last cumulative exam for graduate students will take place April 18 5 p.m. to 6 p.m. in CHEM 144.

## Honors Night

Department honors students will make poster presentations at the UARK Ballroom on Dickson Street, Thursday, April 24 from 3:30 p.m. to 5 p.m. The event is open to the public.

## RecycleMania 2008

Don't forget to keep recycling. RecycleMania 2008 goes through April 5 and you are encouraged to continue sustainability efforts beyond this date as part of the UAs new sustainability initiative. Let's make the Department of Chemistry and Biochemistry number #1. Thanks for your continued effort. Contact Heather Jorgensen for more information.