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DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY

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\$1.5 Million in Stimulus Funds Flu and Protein Research

This summer the COBRE Center for Protein Structure and Function received over \$1.5 million in two Recovery Act Administrative Supplements by the National Institutes of Health (NIH). Supplement 1, "Summer Research Experiences for Students and Science Educators," for \$656,040 and supplement 2, "Exploring Novel Strategies to Prevent and Treat Viral Infection," for \$854,803.

Supplement 1 - co-directors **Frank Millett** and **David Paul**

The purpose of this supplement is to provide undergraduate students and high school and small college teachers with a research experience working with investigators during the summers of 2009 and 2010. The research is consistent with the goals of the COBRE grant 1 20 RR15569-05 funded 9/30/2005.

Protein structure and function is a central biomedical research area that has great potential for leading to improvements in human health. The center supports five thematically-linked multi-disciplinary research projects involving junior faculty who receive direct NIH COBRE grant support, and senior faculty who provide expertise in a broad range of techniques needed to study protein structure and function. All five research projects involve a collaborative approach to obtaining a better understanding of the structure and function of biomedically important proteins.

This supplement presents a direct research experience for undergraduate students to encourage them to pursue research careers in the health-related sciences. It also provides high school and small college teachers with knowledge that will enrich their teaching of biomedical science, and better prepare them to mentor their students to pursue health-related scientific careers. The research carried out by the participants also substantially advances the overall goals of the center. The university has a strong record of involving undergraduate students in the research efforts of the center, and publishing their results in major biomedical journals.

Supplement 2 - **Suresh Kumar**, and **Ralph Henry**, **Robyn Goforth** and **Yu-Chun Du** of biological sciences.

Genetic diversity of the influenza virus along with its ability to rapidly alter its genomic composition has allowed this virus to remain a worldwide health threat. Despite the development of four FDA approved antiviral medications, only two remain effective, owing to viral mutations.

Center researchers are taking an innovative approach toward the development of new antiviral medications — an approach that considers the opposing actions of virus-specific proteins expressed in the host cell and host proteins that function as part of the body's own viral defense mechanism.

Whereas viral infection stimulates an antiviral response in the host by triggering expression of the interferon (IFN) family of cytokines, IFN-mediated defense mechanisms are held in check owing to the action of viral NS1 proteins in infected cells, which represses host IFN expression.

This seeks to address two major gaps in knowledge that prohibit the design of new antiviral medications suitable to directly or indirectly overcoming viral NS1 activity in patients infected with influenza. First is the identity of host proteins bound by NS1 that limit IFN production in the host.

Second is the identity of IFN receptor interactions that specifically propagate an antiviral response in host cells. IFN receptor stimulation can differentially stimulate other cellular responses including an anti-proliferative response, which serves as the basis for IFN therapy in the treatment of specific types of cancer.

Successful completion of the specific aims will address these gaps in knowledge and will provide information needed to translate mechanistic details of viral NS1 function and host IFN receptor activity toward the design of new antivirals for the treatment of influenza.

Support for these supplements was provided through funds through the American Recovery and Reinvestment Act of 2009 ("Recovery Act" or "ARRA"), Public Law 111-5. The Recovery Act offered active grant holders the opportunity to apply for additional funds to accelerate the pace and achievement of scientific research while promoting job creation and economic development.

The projects described were supported by Award Numbered P20RR015569 and from the National Center For Research Resources. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NCRR or NIH.

Student Defends

Ryan Farris defended his dissertation "Development of an Optical Sensor for Paralytic Shellfish Toxins," July 23 under the direction of **Bob Gawley**.



Farris has a bachelor's degree from Arkansas Tech and is a native of Ozark. He is enrolled in the UAMS pharmacy school this fall.

Faculty News

100 Years of Service

The Fulbright College will honor faculty for years of service at the Fulbright College Faculty Convocation Sept. 3.

Four department faculty will be among those honored for a combined 100 years of service to the University of Arkansas. Professor **Dan Davis**, Professor **Bill Durham** and University Professor **Roger Koeppe** have contributed 30 years each. Professor **Xiaogang Peng** has been on campus for 10 years.

On the Go

Suresh Kumar will give an invited lecture entitled "Characterization of the Molecular Forces Underlying Angiogenesis mediated by Fibroblast Growth Factors," at the 2009 GRASP NMR Symposium Sept. 25-26 in Manhattan, Kan.

Charles Wilkins and graduate student **Coy Batoy** will attend the 18th International Mass Spectrometry Conference in Bremen, Germany Aug. 29 to Sept. 4. Batoy will present a poster "Use of MALDI FTMS for Characterization of Plant Populations."

Research Departures

Former postdoc **Kathir Karuppanan** has accepted a scientist position at Regeneron in New York.

His wife **Leena Philominathan** and family will join him later this fall.

Karuppanan was a postdoc in the Kumar lab and Philominathan is a postdoc in the Kumar lab.

Huimin Liu, former postdoc in the Adams lab, has accepted a position in Tulsa.

Alumni News

Good Named Inaugural ACS Fellow

Mary L. Good, M.S. '53, Ph.D. '55, is one of 162 inaugural Fellows named by the American Chemical Society (ACS). The



Mary L. Good

Fellow designation honors those who have distinguished themselves in multiple areas, including promoting the science, the profession, and service to the ACS.

She is founding and standing dean of the College of Engineering and Information Technology at UALR and is Donaghey University Professor.

Her many honors include being an elected member of the National Academy of Engineering, past president and Fellow of the American

Association for the Advancement of Science, and a member of the American Institute of Chemists and the Royal Society of Chemistry.

Her service and award record is long and she has received honorary degrees from 25 institutions of higher learning. She served on the National Science Board as a member and board chairman under Presidents Carter and Reagan and on President Bush's Council of Advisors on Science and Technology.

Good has been a member of the ACS since 1951, serving as president and the board of directors where she also served a board chairman.

Home Notes

Gayatri Suresh Kumar, daughter of **Suresh Kumar**, was named a Honors College Fellow at the University of Arkansas.

Graduate student **Bill Tyree** welcomed the birth of his son William Singh Tyree, born August 26. Baby Bill weighed 7 pounds and 8 ounces and was 21 inches long.

Former Undergrad Joins Department

Candace Zieleniuk Rainwater, B.S. '03, is the undergraduate lab supervisor and instructor in the department. She is originally from Mt. Home and completed her Ph.D. in inorganic chemistry at the University of Florida this summer.

Her husband, Chase Rainwater, is also on campus as an assistant professor in industrial engineering.

During her undergraduate career she received the Harold D. Hantz Four Year Honors Scholar Award and graduated Summa Cum Laude.



Candace Rainwater

Alumnus Kentucky Bound

Rajalingham Dakshinamurthy, Ph.D. '05, has accepted an assistant professor position at Western Kentucky University.

His dissertation was "The Investigation of the Mechanisms of the Non-Classical Release of the Fibroblast Growth Factor," under the direction of former faculty member Chin Yu. Most recently he was a postdoc in the Kumar lab.

Dakshinamurthy's wife, graduate student **Tamil Marutharaj**, will join him this fall.



Raja Dakshinamurthy

Eddings Back on Campus

Dan Eddings, Ph.D. '08, is a postdoc in the Gawley lab. Eddings finished his doctorate last fall under the direction of Gawley.

Student News

Clements Passes Cumes



Mack Clements passed the appropriate number of cumulative exams in the spring to be admitted to candidacy. **Nan Zheng** is Clements' doctoral advisor.

Travel Award for Bauer

Undergraduate **Ryan Bauer** received a Gordon Research Conference travel award. Bauer is a student in the Sakon lab.

Correction

David Bateman, who defended his dissertation in July 2009, was a student of **Matt McIntosh** and not **Bob Gawley**, as noted in the August issue.

Honors College Fellows

Three freshman chemistry majors are among 75 university freshmen to be named Honors College Fellows.

Each student will receive a total of \$50,000 over four years to cover tuition, room and board, as well as the cost of books and a computer.

The funds can also be combined with Honors College research and study abroad grants to broaden educational opportunities. The 2012 class of fellows has an average GPA of 4.17 and an average ACT score of 33.

- **Emily Hoover** - graduate of Conway High School, and a native of Conway, Ark.
- **Kaila Pinalto** - graduate of Har-Ber High School, and a native of Springdale, Ark.
- **Andrew Price** - graduate of Whitehall High School, and a native of Redfield, Ark.

New Graduate Students



Kolawole Ayinuola
Hometown: Idanre, Ondo State
Nigeria
Education: Obafemi Awolowo
University, Ile-Ife Osun State Nigeria



Ben Farmer
Hometown: Benton
Education: chemistry and biology
major with minors in physics and
math, Ouachita Baptist University



Ashley Ramsey
Hometown: Columbia, La.
Education: chemistry major and math
minor, University of Arkansas at
Monticello. * Former REU student



Sun Waldron
Hometown: Nashville, Tenn.
Education: chemistry major and
biology minor, Austin Peay State
University



Barry Sharp
Hometown: Jonesboro
Education: chemistry major,
University of Arkansas

Safety Tip

**An accident
that affects the
rest of your
life can occur
in less than a
second**

Calendar of Events

September

- 04..... Last day to drop a full semester course without a "W"
 07..... Labor Day holiday, university closed
 14..... Department seminar
 17..... Organic seminar guest speaker
 18..... Analytical seminar guest speaker
 18..... CUME
 21..... Department seminar
 22..... First day of the fall season
 25..... Analytical seminar guest speaker
 28..... Department seminar

Fall At-A-Glance

October

- 01..... Arkansas INBRE registration deadline
 02..... CUME
 02..... Application deadline for graduation at the end of fall 2009
 07..... Early progress grades e-mailed for 1000 and 2000 level courses
 08..... Department picnic, Agri Park
 16..... CUME
 23-24 Arkansas INBRE Research Conference
 30..... Last day to drop a full semester course with a "W"

November

- 01..... Daylight time ends
 02..... Priority registration for spring 2010
 20..... CUME
 25..... Fall break, no classes, university is open
 26-27 Thanksgiving holiday, university is closed

December

- 04..... CUME
 08..... Last day of fall classes
 08..... Last day to officially withdraw from all courses
 09..... Dead day, no classes
 09..... Department potluck
 09..... Final copies of thesis/dissertations must be submitted to the Graduate School for December graduation
 10-16 Final exams
 21..... First day of the winter season
 24-31 University closed

The above dates and campus and area events are listed on the department Blackboard site <https://courses.uark.edu/>

Academic Honesty TA Workshop

The university Teaching Assistant Effectiveness Advisory Committee will sponsor a workshop for TA's Sept. 9 from 3 p.m. to 5 p.m. RSVP to Diane Cook dlcook@uark.edu

September Birthdays

- 01..... Wes Stites
 03..... Becky Kerr
 07..... Jeff Havens
 08..... Denise Greathouse
 10..... Marti Scharlau
 13..... Bill Tyree
 16..... Ryan Tian
 20..... Peter Pulay
 23..... Andrew Zhou
 26..... Judy Sluppick
 29..... Heather Jorgensen
 30..... Roland Njabon

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

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

Regular fall hours (begin August 24)

Monday-Thursday8 a.m. to 9 p.m.
 Friday8 a.m. to 6 p.m.
 SaturdayCLOSED
 Sunday.....2 p.m. to 6 p.m.

Exceptions to fall hours

September 6-7CLOSED
 November 24-258 a.m. to 5 p.m.
 November 26-29CLOSED

CUMES

The cumulative exams for graduate students will be the following Fridays from 5 p.m. to 6 p.m. in CHEM 144

Fall

- September 18 (*note date change*)
- October 2 (*note date change*)
- October 16
- November 20
- December 4

Spring

- January 22
- February 5
- March 5
- April 9
- April 23

The University of Arkansas will be CLOSED for Labor Day Monday, September 7