

## 2008 a Busy Year at Adams Institute

This year has been one of growth for the Adams Institute. The current membership consists of almost thirty faculty and staff from the departments of Chemistry, Pharmaceutical Chemistry, Medicinal Chemistry, and Engineering as well as the directors of many of the instrumentation labs on campus. We also continue our outreach to investigators outside of the KU community, including scientists in Europe, South America, Asia, and nearby Kansas City. A full list of associated faculty and staff can be seen on our website: [www.adamsinstitute.ku.edu](http://www.adamsinstitute.ku.edu).

Education is an important goal of the Institute. Toward this end, the Institute co-sponsored two highly successful short courses—one on sample preparation and one on statistics. In the fall, Professor Henk Lingeman gave a week-long short course on sample preparation, especially as it relates to Mass Spectrometry. This short course was co-sponsored by the Adams Institute and the International Association for Pharmaceutical & Biomedical Analysis (IAPBA). This fall, Sitta Sittapam organized a shortcourse on biostatistics that was co-sponsored by the Office of Therapeutics, Discovery, and Development. In addition to the short courses, several seminars were organized by the Institute along with the Department of Chemistry on current topics in bioanalytical chemistry. These included presentations by Professors George Rebec from Indiana University and Emmanuel Carrilho from the University of Sao Paulo. The Institute also made it possible for students from the Lawrence campus to participate in a class on Neurodegeneration that is normally held only at the Medical Center. Two Chemistry and three Pharmacology students from the Lawrence campus were enrolled in the class and participated via teleconferencing.

Last May we submitted a proposal for a Graduate Training Program in

Analytical Neuroscience to the National Institutes of Health. We are still awaiting the results. We intend to submit another training grant and at least one programmatic research proposal in 2009. The focus of these proposals will be applications of new bioanalytical technologies to obtain a better understanding of cancer and neurodegenerative diseases.

This year, Dr. Heather Desaire moved to MRB from Malott, a much-needed move from a problematic lab space. The Microfabrication Facility became an official Cost Center at KU, making work-for-fee possible for the first time, and immediately began manufacturing micro-scale devices for KU and outside researchers.

Several of our colleagues and students have received awards for their work during the past year. Craig Lunte received the AAPS APQ Research Achievement Award. Support for students increased, with the announcement of the Pfizer Scholars program which funds graduate students in Chemistry and Pharmaceutical Chemistry. In addition, longtime KU friends Eddie and Alice Seo established an annual Seo Research Scholarship to fund undergraduate research each year. Eddie was a postdoctoral researcher with the Ralph Adams group. There are many undergraduate researchers in the Institute, and we feel that getting students involved in research early in their career is important for their ultimate success.

These and other news items are covered in greater depth in the articles that follow. I am confident I will have much more to share with you when we publish a summary of year three activities in 2009.

Sue Lunte  
Director

### Craig Lunte Receives Research Award



Dr. Craig Lunte is the 2008 recipient of the American Association of Pharmaceutical Scientists (AAPS) Research Achievement Award in Analysis and Pharmaceutical Quality.

Dr. Lunte received this award, among the highest conferred by the AAPS, at the Opening Session of the 2008 AAPS Annual Meeting and Exposition, November 16-20, 2008, at the Georgia World Congress Center in Atlanta, GA. In her letter announcing the award, Dr. Karen Habucky, President of AAPS, stated "The continuing high quality of your work and its impact was the basis upon which you were selected as this year's recipient".

Sixteen friends and former students joined Dr. Lunte for a celebration dinner at the Restaurant Eugene in Atlanta following the presentation. Congratulations to Dr. Lunte for this well-earned recognition of his many years of distinguished research and valuable contributions to analytical chemistry and pharmaceutical research.

## Former Ralph Adams Postdoc Establishes Undergraduate Research Scholarship

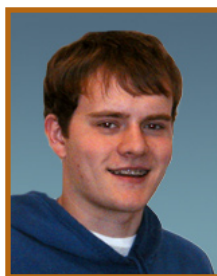
The KU Endowment Association announced in October, 2008 that KU friends, Eddie Tatsu Seo and Alice Yoshiko Seo have decided to continue their much appreciated support for the Adams Institute by establishing an annual donation of \$2,000 to support undergraduate research. This donation will be used to fund the Seo Research Scholarships.

These scholarships will be awarded each year at the Chemistry Honors Banquet to undergraduates who demonstrate dedication to exemplary scholarship and research in Analytical Chemistry. The two Seo Scholars for 2008 were Casey Gee, a member of Mario Rivera's Research Group, and Jamie Wenke, a member of Heather Desaire's Research Group.

Dr. Seo was a postdoctoral researcher in Ralph Adams'

research group, and went on to a successful career as an electrochemist in aerospace and automotive industries. He configured the engine start battery for the AV-8B Harrier II aircraft and established the electrochemical (nipple-air cell) failure mode of automotive coolant hose.

Ralph Adams considered mentoring, encouraging, and supporting his students, especially undergraduates, a top priority. He demonstrated a great compassion for his students, and worked unselfishly to their benefit throughout his life. This commitment by the Seos is a very real expression of that philosophy, and a continuation of his legacy. The faculty, students, and research scientists at the Adams Institute would like to express their sincere gratitude to Dr. and Mrs. Seo for their generous support of the Institute.



Casey Evan Gee, junior in chemistry, whose research is titled "Purification and Characterization of Bacterioferritin B from *Pseudomonas Aeruginosa*". Mario Rivera is his faculty advisor.

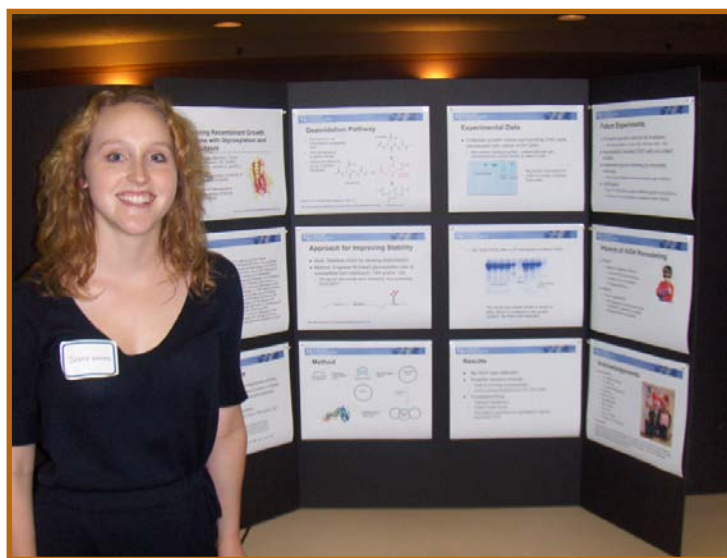


Alan J. Schurle, junior in liberal arts and sciences, studying "Dewetting: Methods for Controlling the Phenomenon in Langmuir-Blodgett Films", a member of the Bob Dunn group.

## Adams Students Among Winners of Fall 2008 Undergraduate Research Award

Three undergraduates working in Adams Institute labs were among 35 KU students who received Undergraduate Research Awards for summer and fall 2008 semesters. The awards support original, independent research by undergraduates enrolled on the

Lawrence campus. Selection criteria included the quality of the proposal, the student's academic record and ability to complete the proposed research project, and the project's potential contribution to knowledge. The three Adams students include (at right):



Jamie Lyn Wenke, junior in chemistry, project title "Recombinant Growth Hormone: The Effects of Forced Glycosylation & Endoglycosidase H on the Protein's Stability & Function", and a member of the Heather Desaire group.







## First Cadre of Pfizer Scholars Selected

Three graduate students affiliated with the Adams Institute have been selected to join the first cadre of Pfizer Scholars at KU. Courtney Kuhnline, Pharmaceutical Chemistry; Eric Gorman, Pharmaceutical Chemistry and Carrie Woodin, Chemistry will join Taryn Bagby, Pharmaceutical Chemistry in the first group of KU students to receive this fellowship.

Courtney (left) is in Sue Lunte's group and her research involves peptide analysis and blood brain barrier transport. Courtney is currently an intern in Dr. Terry Phillips' lab at the National Institute of Biomedical Imaging and Bioengineering at the NIH. Eric Gorman (center) is in Eric Munson's group, and is working on char-

acterizing solid dosage forms of pharmaceuticals using various analytical techniques, with a focus on solid-state NMR spectroscopy.

Carrie (right) is in Mario Rivera's group, and is currently studying iron acquisition and transport proteins required for the successful invasion of the *pseudomonas* organism. Taryn (not pictured) is a student in Laird Forrest's group, and is investigating prodrug and nanocarrier design for treatment of melanoma

The Pfizer Scholars will receive full tuition and a partial stipend from Pfizer to support their research. Congratulations to all four students for their success in earning this fellowship!

## Students Present Papers at Pittcon 2008

Pittcon, the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, is the most comprehensive annual meeting on laboratory science in the world. Each year the Adams Institute sends its best and brightest to present, and 2008 was no exception. A number of graduate students travelled to New Orleans in March to present talks related to their research. These included:

Jenny Fulks (left), Mike Johnson Group, "The Use of Electroanalytical Methods in Understanding Developmental Disorders", Fulks, J., Ortiz, A., Hartnett, B., Brisbois, E., Fowler, S., Vorontsova, E.,

Pinkston, J. and Johnson, M. Katie Rebecchi (center), Heather Desaire Group, "Development of a Quantitative, Label-Free Approach for Glycopeptide Analysis", Rebecchi, K., Wenke, J., Toumi, M. and Desaire, H.

Melinda Toumi (right), Heather Desaire Group, "Glycoprotein Design: Carbohydrate Remodeling", Toumi, M., Go, E. and Desaire, H.

Dave Fischer (not pictured), Sue Lunte Group, "Development of a Calmodulin-Binding Protein Assay for Cancer Screening", Fischer, D., Nandi, P., Liyanage, R., Johnson, C. and Lunte, S.



## Getting Acquainted

### Greg Osterhaus, Research Scientist Mike Johnson Group



In each issue we will introduce a Postdoctoral Research Scientist in one of the lab groups. This

first profile features Greg Osterhaus, a member of the Mike Johnson Group.

Greg received a Bachelor of Science degree at Kansas State University in 1997. He decided not to go to graduate school immediately because later that year his son was born. Greg found a job at a plant that produced phosphorus chemicals, shipping samples to prospective customers. After a few months his job changed to conducting quality control using wet

chemistry methods, and after two years in the lab he was promoted to lab coordinator.

Greg's interest in brain research and problem solving motivated him to return to graduate school in neuroscience after the birth of his daughter in 2000. Since the neuroscience program at KU was not fully functional, Greg began his studies in molecular biosciences. After two years, Greg's faculty advisor, Dr. Jang Yen Wu, moved his lab to Florida Atlantic University. Greg decided to remain in Lawrence and transferred into the neuroscience program

where he finished his Ph.D. with Dr. Stephen C. Fowler in the Pharmacology and Toxicology department. He joined the Mike Johnson group as a research scientist in 2007.

Greg is currently working on developing new technologies to link brain neurochemistry with behavior. His most recent project is modifying a cyclic voltammetry system to link high resolution dopamine release to specific behaviors in Huntington Disease model rats. Greg enjoys mountain biking and running, and has completed a marathon and several half-marathons.

## Guest Researcher Presents Workshop and Seminar



Pharmaceutical Sciences at the Free University of Amsterdam, The Netherlands.

Dr. Lingeman's research mainly concerns the development of automated procedures for the determination of all kinds of analytes, especially drugs, peptides and proteins, in biological and pharmaceutical samples. His emphasis is on sample preparation methods and procedures. He has presented over 100 workshops, courses, tutorials and industry training sessions, all over the world, about these topics.

Dr. Lingeman also presented a seminar titled "Selective (online) sample preparation for LC-MS analysis of biologically active compounds".

Over 30 people attended a workshop in October sponsored by the Adams Institute and the International Association for Pharmaceutical & Biomedical Analysis (IAPBA) titled "Bioanalytical Sample Preparation: From Introductory to Automated Systems". The workshop was presented by Henk Lingeman, Associate Professor in the section of Analytical Chemistry and Applied Spectroscopy within the Department of Chemistry and

## News in Brief

- In March 2008, the Weis group moved into newly renovated labs in Malott Hall (3072, 3074, 3076), space formerly occupied by Craig Lunte's group. The smaller lab houses the time-of-flight mass spectrometer and other protein analysis tools while the larger lab has facilities for cell culture and protein purification.
- Courtney Kuhnline, graduate student in Sue Lunte's group, won first place in the advanced graduate student division of the Sigma Xi Research Paper Competition held on April 12, 2008.
- Six graduate students from Chemistry and Pharmaceutical Chemistry on the KU campus participated with an equal number at the Medical Center in an innovative distance learning class taught by Dr. Steve Levine. The class, "Molecular Mechanisms of Neurological Disorders", featured lectures by guest presenters and by the students, which were broadcast to both campuses via videoconferencing technology.
- Melinda Toumi, Heather Desaire Group, presented a poster titled "Structural and Functional Analysis of Glycoproteins with Modified Glycosylation" at the 14th Annual Dynamic Aspects of Chemical Biology Symposium.

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## Institute Sponsors Drug Discovery Short Course

In a cooperative effort that attracted a large and diverse group of participants, the Adams Institute and the Office of Therapeutics, Discovery and Development sponsored a short course in October 2008. The course, "Statistical Methods for in Vitro Assays in Drug Discovery", was taught by Joseph Haas of Eli Lilly and Company; Rathnam Chaguturu, Director of the High Throughput Screening Laboratory at KU; and Sitta Sittampalam, Deputy Director of the Office of Therapeutics, Discovery, and Development (OTDD) at the University of Kansas Cancer Center.

Over fifty students, faculty, staff, and corporate scientists attended the two-day short course, held at Simons Auditorium on West Campus. Participants came from KU, the KU Medical Center, private laboratories and Kansas State University. Topics covered included;

- assay performance measures,
- dose response analysis,
- assay correlation, and
- assay optimization.

The success of this effort was very encouraging to the organizers and ensures that more short courses will follow in the future.

## Middle School Teachers Join Adams Research Teams

Four Kansas middle school science teachers joined Adams Institute research teams during the month of June in a professional development program funded by the Kansas Board of Regents.

The Middle School Science Academy (MSSA), developed and run by the Center for Science Education at KU, has been working with Kansas middle school science teachers since the summer of 2005 to improve their content knowledge and teaching skills. This summer, 18 teachers from six Kansas school districts were hosted by faculty research mentors for a 4 week research experience in the departments of Chemistry, Ecology & Evolutionary Biology, and Geography.

Esther Abellon and Todd Haag, science teachers at Jardine Middle School in Topeka, worked with the Sue Lunte research group. Dr. Lunte's

group focuses on the development of sensitive and selective analytical methods for the detection of peptides, amino acids, neurotransmitters, and drugs in biological fluids.

Sharon Betzen joined Bob Dunn's research group, where high resolution techniques were used to probe the structure and dynamics of cell membranes. Sharon teaches earth science, biology, and physical science in the 6th 7th and 8th grades at Colwich Elementary School near Wichita.

Sue Hicks, a seventh grade teacher at Eisenhower Middle School in Topeka, used microdialysis to study chemotherapeutic drug delivery with the researchers in Craig Lunte's group. Next summer, the teachers will return to KU to incorporate their research experiences into activities that they and other teachers can use in their classrooms.