



Science Scene

Research Report

January to March 2006

A Publication of the College of Science, Utah State University

—The Dean's Corner—

Winter/Spring semester is rapidly coming to a close, with only four weeks remaining before graduation. It is also the time of year when we pause to recognize the achievements of our students and faculty. Please put our college awards ceremony on your calendar: April 20, 3:30 pm, at the Eccles Conference Center Auditorium. And remember that we will be having a College of Science graduation ceremony immediately following the University commencement ceremony. This will be at noon on Saturday, May 6, in the TSC Ballroom. There will be a reception in the International Lounge immediately following our program. As in previous years, large signs will be posted for each department, providing a gathering spot to meet students, families, and friends. Please plan on attending both events as a sign of your support for our students.

In the last issue of *Science Scene*, we announced that the stipends for the Willard L. Eccles Graduate Fellowship and the Science & Engineering Diversity Fellowship would be increased to \$22,000 per year. We're not sure if there is a correlation, but this year, we were successful in obtaining our first and second ranked applicants, respectively. We hope this bodes well for successful graduate student recruiting this year.

On a more serious note, the Environmental Health & Safety Office recently shut down the research labs of one of our science faculty because of a number of safety violations. This should serve as a wake-up call to all of us to review current lab practices and procedures to ensure a safe work environment. If you have questions about current practices and procedures, or if you would like a voluntary lab inspection to ensure that you are following appropriate protocols, please contact the EHS office (ph: 7-2892).

Please send any comments or suggestions for research-related issues that you would like to see presented in *Science Scene* to me via email at <don.fiesinger@usu.edu>.

Don Fiesinger

— COLLEGE OF SCIENCE CONTRACT & GRANT ACTIVITY —

Amounts (# of proposals)	January 2006	February 2006	Cumulative Totals for FY05-06
Proposals Submitted	\$7,069,237.00 (19)	\$2,335,670.00 (13)	\$30,941,568.00 (103)
Awards Received	\$ 941,116.00 (14)	\$ 102,500.00 (2)	\$ 5,113,372.51 (70)



— New Faculty Research Grants —

— CURI Grants —

Biology

Paul Cliften—Comparative Genomic Analysis of the *Candida* Phylogeny (\$15,000)

James Pitts—Historical Biogeography of the North American Deserts (\$15,000)

Katarina Stroffekova—C-terminus Mutations in Na⁺ Channels and their Effect on Protein-Protein Interaction with CaM (\$15,000)

Computer Science

Minghui Jiang—Subsequence Packing and its Applications in DNA Sequencing and Job Shop Scheduling (\$15,000)

Jerry James—A Common Framework for Software Static Checkers (\$14,920)

Changhui Yan—Identification of Functionally Important Sites on Proteins using Bioinformatics Approaches (\$14,417)

Mathematics & Statistics

Peg Howland—Exploiting Factor Analysis Approximations in Dimension Reduction (\$12,615)

Brynja Kohler—Clonal Expansion and Differentiation of T Cells in Immune Responses (\$14,832)

Chemistry & Biochemistry

Joan Hevel—Defining the Functional Role of PRMT6 in Asbestos-induced Apoptosis of Human Lung Cells and the Substrate Recognition Parameters of PRMT1 and PRMT6 (\$33,840)

Computer Science

Xiaojun Qi—An Inexpensive Assistive Eyeglaze Communication System for Physically Disabled Individuals (\$32,406)

Vladimir Kulyukin—A Wearable Multi-sensor Navigation Device for the Visually Impaired (\$29,722)

Geology

Tom Lachmar—Suitability of the Navajo Sandstone for CO₂ Sequestration in Central Utah (\$6,655)

Physics

Tim Doyle—A Computer Simulation Program for the Development of Imaging Systems in Nuclear Medicine (\$26,980)

UTAH STATE UNIVERSITY
COLLEGE OF SCIENCE

Williard L. Eccles Undergraduate Research Fellowship
Recipients 2006-07

Name and Major	Project Title	Research Mentor/Dept
Melody Anderson Biology	Enhanced Biological Control of the Cereal Leaf Beetle	Ted Evans Biology
Daniel Housley Biology	An Interdisciplinary Systematic and Toxicological Study of Four Toxic Lupines (<i>Lupinus</i> , Fabaceae)	Mary Barkworth Biology
Amanda Mortensen Biology	Neurotoxin Resistance in Garter Snakes	Edmund Brodie Biology
AmberLeigh Stayner Biology	Population Genetics in Seed Beetles	Frank Messina Biology
Matthew Jorgensen Chemistry	Photothermal Spectrometric Method for Detection of Environmental Pollutants	Stephen Bialkowski Chemistry & Biochemistry
Elizabeth Smith Chemistry	Mechanistic Study of PP-1, a Catalytically Promiscuous Enzyme	Alvan Hengge Chemistry & Biochemistry
Keith Rimington Computer Science	What are Agent Systems? Can Software Agents be Programmed to Mimic Human Behavior?	Vicki Allan Computer Science
Kristi Rider Geology	Basalt Flow Dynamics, Composition, and Caldera Formation of the Black Ridge Butte Flows, Eastern Snake River Plain, Idaho	John Shervais Geology
Kellen Springer Geology	Can Stable Isotopes in Spring Water be used to Determine the Elevation of the Water Source?	Jim Evans Geology
Brittany Webb Physics & Chemistry	Study of the Differential Membership of Men and Women in Professional Scientific Societies.	Kim Sullivan Biology

“Thank You” to those who participated in the Sponsored Programs Office Day of USU Research Week, Monday April 3rd. Successful workshops were held in “Research Funding,” “Proposal Preparation,” and “What's New in Research Administration.”

To share some of the highlights:

SPIN Plus is a Web-based, funding opportunity-locating program. By creating a user profile, you can receive daily emails listing funding opportunities available for your personal field of study and interests. Search results are tied to the profile you create. You may also find prospective partners/ collaborators with similar interests. This site lists RFP's for all federal agencies, thousands of foundations, and several state and local sponsors. *For assistance with this program, please contact S. Corey Burger at 797-1661 or Corey.Burger@usu.edu.*

Please note that numerous policies, passed by the USU Research Council, are now found on the Sponsored Programs Office Website. The Cost Share Policy reinforces not providing cost share *unless it is a mandatory requirement from the sponsor*. Please remember that any voluntary cost share provided in a proposal that becomes incorporated into the award becomes committed cost share and must be documented and reported.

The F&A Policy has had a few significant changes. **Vice President for Research Brent Miller** has emphasized collecting all F&A. These dollars cover real operating costs incurred by the University in operating. If a waiver is to be granted, it must fit into one of three categories:

- 1) Sponsoring agency limits F&A recovery. This will be accepted with documentation from the agency;
- 2) \$50,000 or less to support graduate or undergraduate student research. 8% will be collected.
This is a change from the 0% allowed before; and
- 3) An exception granted by the Vice President for Research.

To read these and other policies in their entirety please go to <http://www.usu.edu/research/programs/spopolicies.cfm>.

The Sponsored Programs Office is currently setting up a new system to aid in the move to electronic research administration. SPO will be implementing GAMS (Grant Administration & Management System) over the next year. This will work as an enhancement to Banner and will become the system for pre-award preparation and submission. GAMS will reduce the amount of administrative burden so time and energy can be focused on the technical portion of the proposal. PI's will set up user profiles to aid in the completion of proposals by populating common fields of administrative data. Forms will be routed electronically. Please watch for updates on training. *If you have questions contact Jerilyn Hansen 797-3437.*

Kellie Hedlin

Biotechnology Roundtable II

College of Science faculty and students joined with prominent USU alumni in the biotechnology field for Biotechnology Roundtable II March 16-17. Together, the group addressed a number of questions: Where is the biotechnology industry headed? How can USU and industry work together to enhance research and economic opportunities? What knowledge, skill sets, and experience will students need to succeed in biotechnology careers?

Alumni panelists were **Don deBethizy**, president and CEO, Targacept Corporation; **Ned Israelsen**, managing partner, Knobbe, Martens, Olsen & Bear Patent Attorneys; **Henry Nowak**, executive-in-residence, management and human resources department, USU College of Business, and manager, Small Business Accelerator, USU Technology Commercialization Office; **Alan Smith**, chief operating officer Cognate Therapeutics; **Richard Thomas**, president and CEO, Intercet Limited; **Bill Barnett**, Director R&D, HyClone; **Vernon R. Rice**, **Workman Nydegger**; and **James Thompson**, Director of R&D, Spendlove Foundation.

Over a day and a half, USU faculty members shared information about current research in genomics and bioinformatics, along with industry collaborations; alumni panelists discussed areas in which biotechnological skills are in highest demand, including bioterror defense, medical research, and agricultural applications; and student researchers presented their work in a poster session. Vice President for Research **Brent Miller** presented an overview of USTAR, and **Tim Gilbertson** and **Jeff Broadbent** summarized the USTAR-related advanced nutritional research and microbe biotechnology initiatives, respectively.

Panelists advised students to pursue a solid core of classes in chemistry, physics, math, computer science, and related fields, as well as courses in business and management. Critical thinking and problem solving skills and management experience were cited as sought-after attributes in job candidates.

“We convened Biotechnology Roundtable I back in 2003, which provided an opportunity for our alumni, faculty and students to become acquainted with one another,” said Dean Fiesinger. “Biotechnology Roundtable II provided the opportunity to strengthen these collaborations and position ourselves for the future. We were pleased to hear our alumni praise the many changes and accomplishments at USU since their previous visit.”



The College of Science
Honors Top Students & Faculty

Awards Program & Reception

April 20, 2006

3:30 - 5:30 pm

Eccles Conference Center Auditorium, ECC 216

Reception following in ECC 205-207



Fall 2005 Valedictorian—**Maria E. Horrocks**—Mathematics & Statistics

Spring 2006 Valedictorian—**Julie Crockett**—Biology

Scholar of the Year & Undergraduate Student Researcher of the Year—**Glendell S. de Guzman**—Biology

Graduate Student Researcher PhD—**Chris R. Feldman**—Biology

Graduate Student Teacher—**Martha J. Garlick**—Mathematics and Statistics

College of Science Undergraduate Research Mentor of the Year—**Lisa M. Berreau**—Chemistry & Biochemistry

College of Science Researcher of the Year—**Alvan C. Hengge**—Chemistry and Biochemistry

College of Science Teacher of the Year—**Gregory D. Podgorski**—Biology

— STUDENT ACTIVITIES —

Student Awards, Recognition & Grants

Biology

On Saturday, 4 March 2006, Undergraduates **Uyen Lam** and **Janette Starks** (students in **Joe Li's** lab) gave an invited presentation at a basketball game reception hosted by the VP Research Office. Guests included **President and Mrs. Albrecht**, Utah legislators, and business leaders.

The following undergraduates received URCO grants for Spring 2006:

Chad Coombs. "Fatty-Acid Sensitivity of Delayed Rectifying Potassium Channels," \$500. Advisor: **Tim Gilbertson**.

Glen de Guzman. "Regulation of Cardiac Fibroblast Metalloproteinase Secretion," \$422. Advisor: **Daryll DeWald**.

PhD student **Drauzio Rangel** is featured in the February 2006 newsletter of the Society for Invertebrate Pathology. He received a travel award for his presentation titled "Environmental Adaptation of *Metarhizium anisopliae* conidia: Cross Protection to UV-B Radiation and Heat, and Virulence Plasticity." Drauzio works with **Don Roberts** and **Anne Anderson**.

The following graduate students received scholarships offered by the Department of Biology:

Greaves Fellowship (\$15,000) – **Mekki Bensaci** (PhD)
MacMahon Scholarship (\$1,000) – **Yukie Kajita** (PhD)

Physics and The Center for Atmospheric & Space Sciences

Graduate Students

Larry Gardner

AFOSR—Air Force Office of Scientific Research
1 April 2006 to 30 November 2006—\$49,106

"Development of an Inosphere-Plasmasphere-Polar Wind Model and Studies of Storms and Substorms."

Kim Nielsen received the Outstanding Student Paper Award from the Space Physics and Aeronomy Section of the American Geophysical Union for his presentation titled, "Coordinated Imaging and Lidar Measurements of Noctilucent Cloud Dynamics over Poker Flat, Alaska, August 2005," at the annual Fall 2005 American Geophysical Union Meeting, certificate of achievement and the honor was published in *EOS, Transactions, American Geophysical Union*, the weekly newspaper of AGU.

Student Presentations

Chemistry & Biochemistry

The following presentations were made at the Graduate Research Seminar: Bioinorganic Chemistry, Ventura, California, 2-5 February 2006:

Ewa Szajna-Fuller. (Talk). "Aliphatic Carbon-Carbon Bond Cleavage Reactivity of a Mononuclear Ni(II) Cis- β -Keto-Enolate Complex in the Presence of Base and O₂: A Model Reaction for Acireductone Dioxygenase (ARD)." Advisor: **Lisa M. Berreau.**

Katarzyna Rudzka. (Poster). "Chemistry of a Ni(II) Acetohydroxamic Acid Complex: Formation, Reactivity with Water, and Attempted Preparation of a Zinc Analogue." Advisor: **Lisa M. Berreau.**

Student Publications

Biology

M. R. Cummer, D. E. Green, and E. M. O'Neill. 2005. "Aquatic Chytrid Pathogen Detected in Terrestrial Plethodontid Salamander." *Herpetological Review* 36:248-249.

J. F. Parham, C. R. Feldman, and J. L. Boore. 2006. "The Complete Mitochondrial Genome of the Enigmatic Bigheaded Turtle (*Platysternon*): Description of Unusual Genomic Features and the Reconciliation of Phylogenetic Hypotheses Based on Mitochondrial and Nuclear DNA." *BMC Evolutionary Biology* 6:11.

J. F. Parham, J. R. Macey, T. J. Papenfuss, C. R. Feldman, O. Türkozan, R. Polymeni, and J. L. Boore. 2006. "The Phylogeny of Mediterranean Tortoises and Their Close Relatives (*Testudona* tax. nov.) Based on Complete Mitochondrial Genome Sequences from Museum Specimens: With Comments on Mitochondrial Genomic Features, Phylogenetic Taxonomy, and Paleobiogeography." *Molecular Phylogenetics and Evolution* 38:50-64.

Buckley Banham, Electronics Technician

Buck is housed in the Department of Chemistry & Biochemistry, although his primary responsibilities lie within that department, he is available for general assistance and trouble-shooting problems with lab equipment and instrumentation throughout the College of Science.

The Electronics Shop has recently been relocated from Widtsoe Hall to Maeser Lab, the adjoining building.

Contact:
797-1614, ML 290, beb@cc.usu.edu.

Awards & Recognition

Biology

Research being conducted by **Timothy A. Gilbertson** and his graduate student, **Bhavik Shah**, was featured in the 7 February 2006 edition of *The Herald Journal* (page C1).

Timothy A. Gilbertson has been named to the Board of Directors and Chair of the Health and Scientific Advisory Board of the Institute for Public Health and Water Research (IPWR). IPWR provides scientific direction, funds, and other support to investigators to encourage research, publications, and meetings to expand knowledge on water and health and produce technical and non-technical information on water consumption and health.

The magazine, *Nature: The Magazine for Nature Authors*, reports that during the months of September – November 2005, the paper authored by **Shana Geffaney (PhD, USU Biology 2005)**, **Esther Fujimoto, Edmund D. Brodie III, Edmund D. Brodie, Jr., and Peter C. Ruben** titled "Evolutionary Diversification of TTX-Resistant Sodium Channels in a Predator-Prey Interaction" (437:69-87, 2005) was *third* in the list of "The Top Ten Most Downloaded *Nature* Papers." It was downloaded 25,165 times!

Can The Frogs Be Saved? That is what **Joseph R. Mendelson III**, curator of herpetology at Zoo Atlanta and adjunct associate professor of biology, is attempting to do. Throughout Latin America frog populations are dying at an accelerated rate from the chytrid fungus. Joe's colleague, **Karen Lips** of Southern Illinois University and former seminar speaker here in the department, has been researching this fungus and the declining frog populations. CNN has the story: <http://www.cnn.com/2006/TECH/science/02/21/frog.fungus/index.html>.

The research paper of **Peter C. Ruben** and **Jennifer Abbrusese** was featured with an editorial titled "Tunicates Set Trend for Potassium Channel" in *The Journal of Experimental Biology* (2006 209:ii). See coverage at <http://jeb.biologists.org/cgi/reprint/209/4/ii>.

One of **Peter C. Ruben's** collaborative research efforts is featured at www.worldhealth.net/p/cloning-could-fix-hearing-problems-2005-09-15.html. The research focuses on sensory cells in the ear.

John Stark gave an inaugural Professor Lecture at the residence of USU President **Stan Albrecht** on 28 February 2006. His was the 12th talk given during this year's lecture series which features faculty who were promoted to full professor in the past year. Complete coverage is available at <http://www.usu.edu/ust/index.cfm?article=7478>.

Chemistry & Biochemistry

Alexander Boldyrev gave an Inaugural Professor Lecture at the residence of USU President Stan Albrecht on 7 March 2006. His was the 13th talk given during this year's lecture series, which features faculty who were promoted to full professor in the past year. Complete coverage is available at <http://www.usu.edu/ust/index.cfm?article=7493>.

Lisa M. Berreau served as a session chair at the Graduate Research Seminar: Bioinorganic Chemistry, Ventura, California, 2-5 February 2006.

Lisa M. Berreau served as a panel member on the F04 Chemical and Bioanalytical Sciences Fellowship Review Panel at the National Institutes of Health, Washington, DC, 9-10 March 2006.

Lisa M. Berreau was named an Expert Analyst for *Chemtracts-Inorganic Chemistry*.

Physics and The Center for Atmospheric & Space Sciences

Jan Sojka was featured in the Aggie Parents and Family Newsletter for March 2006. The article can be found at: <http://www.usu.edu/parents/newsletter/newsletter-3-06.html>.

Faculty Grants

Biology

Brett Adams

Whitehall Foundation

1 January 2006 to 31 December 2008—\$224,660

“Modulation of Neuronal Calcium Channels by Monomeric G Proteins.”

Siranush Nanagulyan and Bradley R. Kropp

US Civilian Research and Development Foundation and

National Foundation for Science and Technology

1 January 2006 to 31 December 2008—\$30,000

“Phylogeographical and Systematic Investigations of Ectomycorrhizal Fungi in Armenian Forests.”

Donald W. Roberts

Utah Department of Agriculture & Food

1 January 2006 to 31 December 2006—\$100,000 (2nd Year funding)

“Biological Control of Mormon Crickets in Utah.”

Peter C. Ruben

Schwarz Biosciences, GMBH

1 March 2006 to 1 October 2006—\$29,500

“Effects of Lacosamide on Slow Inactivation in Sodium Channels.”

Chemistry & Biochemistry

Richard C. Holz

Air Force Office of Scientific Research (AFOSR)

1 November 2005 to 31 October 2006—\$90,000

“Design and Development of Nanoscale Biomotor Power Units.”

Richard C. Holz

National Science Foundation

1 March 2006 to 30 April 2009—\$395,000

“Mechanistic Studies on Dinuclear Metallohydrolases that are Novel Antibacterial Targets.”

Computer Science

Robert F. Erbacher

Intellivis, Inc.

15 January 2006 to 15 July 2006—\$12,500

“Student Support for Research and Development of visAware Project.”

Mathematics & Statistics

James A. Powell

Idaho Technology, Inc.

25 January 2006 to 24 January 2007—\$12,000

“PCR Thermal Protocol Optimization.”

Physics and The Center for Atmospheric & Space Sciences

JR Dennison

Subcontract for NASA Solar Probe Project by Johns Hopkins

University Applied Physics Lab

March 2006 to September 2007—\$112,000

“Electron Emission and Resistivity of Materials for the NASA Solar Probe Mission in Extreme Thermal and Radiation Environments.”

JR Dennison

Subcontract for NASA James Webb Space Telescope Project by

Goddard Space Flight Center

March 2006 to September 2007—\$315,903

“Effects of Cryogenic Temperatures, High Electrostatic Fields and Radiation on the Resistivity of Highly Insulating Materials for the James Webb Space Telescope.”

Bela G. Fejer

National Science Foundation

1 April 2006 to 31 March 2007—\$121,001

“Radar Studies of the Low Latitude Disturbed Ionosphere.”

Eric D. Held

Department of Energy

1 March 2006 to 28 February 2007—\$55,000 (2nd Year funding)

“Plasma Center for Computational Predictability.”

Michael J. Taylor

SETI Institute

1 November 1005 to September 30, 2006—\$20,000

“Hyperseed MAC Project – Stardust SRC Re-entry.”

Michael J. Taylor and Timothy E. Doyle.

National Science Foundation

1 January 2006 to 31 December 2010—\$494,148

“Development and Optimization of Tomographic Imaging Methods for Advanced Gravity Wave Studies in the MLT Region.”

Presentations & Related Professional Activities

Biology

Mark P. Miller, Eric Wagner, Chris Wilson, and Richard Vincent gave a presentation titled “Genetic Analysis of a Parasite-resistant Rainbow Trout Population over Time: Results of a Cohort-based Analysis of Harrison Lake Rainbow Trout” at the 12th Annual Whirling Disease Symposium, Denver, Colorado, 9-10 February 2006.

Peter C. Ruben made a presentation titled “A Mutation Underlying Inheritable Epilepsy Affects Sodium Channel Slow Inactivation” at the Winter Conference on Brain Research on 8 February 2006 in Steamboat Springs, Colorado. Coauthors were **Jennifer Abbruzzese** and **Margaret Dice**.

Carol von Dohlen gave a seminar titled “Origins of Host Alternation in Aphids: One Ancient, Many Derived, or Something in Between?” to the Department of Entomology, University of California-Riverside, 27 February 2006, Riverside, California.

The following posters were presented at the 50th Annual Meeting of the Biophysical Society, Salt Lake City, Utah, 18-22 February 2006:

Margaret S. Dice, Jennifer Abbruzzese, Peter Ruben, William Israelsen, EmmaLee Ball, Khrista Papenfuss, and David Jones. “GEFS+ Mutation C121W in the Sodium Channel Beta1-subunit Alters Slow Inactivation of NaV1.2a.”

Jonathon N. Hurst and **Peter C. Ruben**. "Creating Mechanistic Ion Channel Models Using Genetic Algorithms."

Tyce J. Kearl and **Peter C. Ruben**. "Modulation of Slow Inactivation Via PKA-dependent Phosphorylation in Human Cardiac Voltage-gated Sodium Channels."

Ulises Mesa, Roger Bannister, Ashish Thapliyal, and Brett Adams. "Neurokinin 1 Receptors Modulate CaV2.3 (R-type) Calcium Channels Using Three Different Signaling Mechanisms."

Chemistry & Biochemistry

Richard C. Holz presented an invited lecture titled "Design and Development of Nanoscale Biomotor Power Units" at the AFOSR Scientific Program Review at Duck Key, Florida, 4 January 2006.

Richard C. Holz presented an invited lecture titled "Co-Catalytic Metalloproteases as Pharmaceutical Targets" at Loyola University, Chicago, Illinois, 21 February 2006 and at University of Texas-Arlington, Arlington, Texas, 20 March 2006.

Amit Kumar, Beena Narayanan, Andrea Funk, Krzysztof P. Bzymek, Richard C. Holz, Jung-Ja Kim and **Brian Bennett** presented a poster titled "Determinants of Substrate Binding in Leucine Aminopeptidase" at the Gordon Research Conference on Metals in Biology, Ventura, California, 29 January - 3 February 2006.

The following presentations were made at the Gordon Conference on Isotopes in Biological and Chemical Sciences, Ventura, California, 12-17 February 2006:

Robynn Cox and **Alvan C. Hengge** presented a poster titled "Kinetic Isotope Effects on the Reactions of Purple Acid Phosphatases."

Alvan Hengge presented a talk titled "Mechanism of Phosphotriester Hydrolysis by Pyrazolylborate Zinc Hydroxide Complex."

Physics and The Center for Atmospheric & Space Sciences

JR Dennison presented a talk titled "Electron Emission and Resistivity of Materials for the NASA Solar Probe Mission in Extreme Thermal and Radiation Environments," at an *Invited Seminar*, Johns Hopkins Applied Physics Laboratory, Laurel, Maryland, 22 March 2006.

JR Dennison presented a talk titled "Study of High Resistivity Materials Used for JWST at Low Temperature," at an *Invited Seminar*, NASA Goddard Space Flight Center, Greenbelt, Maryland, 21 March 2006.

The following papers were presented at the American Physical Society Meeting, Baltimore, Maryland on 13-17 March 2006:

JR Dennison, Jonathan Abbott, Ryan Hoffman, and Sarah Barton. "Determination of Electron Emission Crossover Energies in Insulators," *Bulletin of the American Physics Society* 51, U41-10.

JR Dennison and **Jerilyn Brunson**. "Resistivity Measurement Methods of Extreme Insulators," *Bulletin of the American Physics Society* 51, K25-11.

JR Dennison, Ryan Hoffman, and Jonathon Abbot. "Critical Electron Dose Threshold for Measuring the Electron Yield of Unbiased Highly Insulating Materials," *Bulletin of the American Physics Society* 51, U41-9.

The collaborative research of **David Peak**, Physics, and **Keith Mott**, Biology, was the subject of the January entry, "Are Plants Computing," in the 2006 Mathematics Calendar, by Theoni Pappas.

T.-C. Shen presented a talk titled "Electron Transport of Nanoscale P-Donor Wires in Silicon" at the American Physical Society, Baltimore, Maryland, 15 March 2006.

Michael Taylor presented a talk titled "Image Measurements of Upper Atmospheric Phenomena" as part of the Inaugural Lecture Series on February 7, 2006 at President Albrecht's residence. Recently promoted full professors have the opportunity to lecture concerning a discipline in which they are involved and tell how they got to this point in their careers. The purpose of the lectures is to promote a sense of identification among those who are involved in significant academic work, and also to focus on the achievement of advancing to the rank of full professor.. More at <http://www.usu.edu/ust/index.cfm?article=7229>.

Tom Wilkerson (Physics, CASS and SDL) participated in a 21 February 2006 presentation during the USU visit by Utah's Senator Robert Bennett, on the AGLITE lidar developed by SDL for the study of agricultural aerosols.

Faculty Publications

Biology

Timothy A. Gilbertson, Arian F. Baquero, and Kristina J. Spray-Watson. 2006. Water Taste: The Importance of Osmotic Sensing in the Oral Cavity. *Journal of Water and Health* 4:35-40.

James R. Groome, Esther Fujimoto, and Peter C. Ruben. 2006. K-Aggravated Myotonia Mutations at Residue G1306 Differentially Alter Deactivation Gating of Human Skeletal Muscle Sodium Channels. *Cellular and Molecular Neurobiology* 27(7):1075-1092.

Bradley R. Kropp and **H. Darrow**. 2006. The Effect of Surfactants and Some Herbicides on Teliospore Viability in *Puccinia thlaspeos* (Schub.). *Crop Protection* 25:369-374.

Richard J. Mueller. 2006. Ask the Plant: Investigating and Teaching Plant Structure. *Botanical Journal of the Linnean Society* 150:73-78.

James P. Pitts, Marius S. Wasbauer, and Carol D. von Dohlen. 2006. Preliminary Morphological Analysis of Relationships between the Spider Wasp Subfamilies (Hymenoptera: Pompilidae): Revisiting an Old Problem. *Zoologica Scripta* 35:63-84.

V. Salvador-Recatala, W. J. Gallin, Jennifer Abbruzzese, Peter C. Ruben and **A. N. Spencer**. 2006. A Potassium Channel (Kv4) Cloned from the Heart of the Tunicate *Ciona intestinalis* and Its Modulation by a KChIP Subunit. *Journal of Experimental Biology* 209:731-747.

Carol von Dohlen, Carol A. Rowe, and O. E. Heie. 2006. A Test of Morphological Hypotheses for Tribal and Subtribal Relationships of Aphidinae (Insecta: Hemiptera: Aphididae) Using DNA Sequences. *Molecular Phylogenetics and Evolution* 38:316-329.

R. Steven Wagner, Mark P. Miller, and Susan M. Haig. 2006. Phylo-geography and Genetic Identification of Newly-discovered Populations of Torrent Salamanders (*Rhyacotriton cascadae* and *R. variegatus*) in the Central Cascades (USA). *Herpetologica* 62:63-70.

Ethan P. White, Peter B. Adler, William K. Lauenroth, Richard A. Gill, David Greenberg, Dawn M. Kaufman, Andrew Rassweiler, James A. Rusak, Melinda D. Smith, John R. Steinbeck, Robert B. Waide and Jin Yao. 2006. A Comparison of the Species-time Relationship across Ecosystems and Taxonomic Groups. *Oikos* 112:185-195. (An interesting note related to this paper is that the authors used some data that our very own **Ted Evans** had collected almost 20 years ago!)

Ethan P. White and James H. Brown. 2005. The Template: Patterns and Processes of Spatial Variation. *Ecosystem Function in Heterogeneous Landscapes*, pp. 31-47.

Chemistry & Biochemistry

Lisa M. Berreau. 2006. Bioinorganic Chemistry of Group 12 Complexes Supported by Tetradentate Tripodal Ligands Having Internal Hydrogen Bond Donors. *European Journal of Inorganic Chemistry* 2006(2):273-283.

Krzysztof P. Bzymek, Sabina I. Swierczek, Brian Bennett and Richard C. Holz. 2005. Spectroscopic Characterization of the E151D and E151A Altered Aminopeptidases from *Aremonas Proteolytica*. *Inorganic Chemistry* 44:8574-8580.

Ryan Davis, David Bienvenue, Sabina I. Swierczek, Danuta Gilner, Lakshman Rajagopal, and Richard C. Holz. 2006. Kinetic and Spectroscopic Characterization of the E134 Altered *dapE*-encoded N-succinyl-L, L-Diaminopimelic Acid Desuccinylase from *Haemophilus influenzae*. *Journal of Biological Inorganic Chemistry* 11:206-216.

K. M. Dorgan, W. L. Wooderchak, D. P. Wynn, E. L. Karschner, J. F. Alfaro, Y. Cuig, Z. S. Zhou and Joan M. Hevel. 2006. An Enzyme-Coupled Continuous Spectrophotometric Assay for S-Adenosylmethionine-Dependent Methyltransferases. *Analytical Biochemistry* 350:249-255.

Amy L. Fuller, Rex W. Watkins, Atta M. Arif, and Lisa M. Berreau. 2006. Synthesis and Characterization of a Series of N₃O-ligated Mononuclear Mn(II) Halide Complexes. *Inorganica Chimica Acta* 359:1282-1290.

Tapas Kar and Steve Scheiner. 2006. Cooperativity of Conventional and Unconventional Hydrogen Bonds Involving Imidazole. *International Journal of Quantum Chemistry* 106(4): 843-851.

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