

January 2010 to April 2010

To share the research and professional development activities of our faculty and students with the College, Utah State Administrators, and the Board of Trustees.

—The Dean’s Corner—

Dear Friends:

To say a lot has happened since the last edition of Science Scene is woefully understating the facts. In both scholarship and research, our faculty and students have been very active and enormously successful. Just look through this issue of Science Scene and you will see awards, research presentations, grants, and publications in significant numbers.

To highlight just a few items, look at page three where we feature three faculty members who received NSF CAREER awards. The College has never received so many of these significant awards at one time. At the overall university level, Steve Scheiner garnered the D. Wynne Thorne Career Research Award, Jim Cangelosi received the Robins Teacher of the Year Award, and Jim Evans received the Outstanding Graduate Mentor Award. Clearly, our faculty are doing yeoman service in their roles as educators and researchers.

Graduation was really fun. Our students were in top form and voice as 145 undergraduates joined us to celebrate their achievements. The total college graduating class contained 179 individuals who are well-prepared to take the next step in their academic or professional lives.

I cannot tell you how proud I am of our faculty and students. It is an honor to serve with you all. Your hard work makes my job easy and pleasurable.

I hope all of you take some time to relax and enjoy the great Utah summer. Patty and I will be trying to sneak in a little fly fishing.

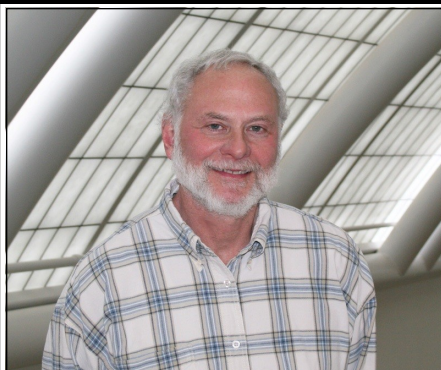
If by chance you are in town, don’t forget to stop by and say Hi!



— College of Science Contract & Grant Activity —

\$ Amounts (# of proposals)	January 2010	February 2010	March 2010	April 2010	Cumulative Totals FY09-10
Proposals Submitted	\$8,062,540 (27)	\$2,829,983 (8)	\$11,966,345 (14)	\$4,650,833 (21)	\$86,857,106 (169)
Awards Received	\$634,169 (9)	\$676,923 (7)	\$757,807 (7)	\$1,179,026 (16)	\$8,427,370 (81)

— Chemist Steve Scheiner Receives USU's Top Research Honor —



2010 recipient of the D. Wynne Thorne Career Research Award: Professor Steve Scheiner, Chemistry & Biochemistry.

Steve Scheiner, professor in the Department of Chemistry and Biochemistry, was named the 2010 recipient of the D. Wynne Thorne Career Research Award, USU's most prestigious faculty research honor.

A New York City native, Steve is a computational chemist who uses quantum mechanics to understand the nature of interactions between molecules. His current research focuses on hydrogen bonds, a chemical phenomenon fundamental to life.

"I consider Scheiner to be the world's expert on the theoretical chemistry of hydrogen bonding, the molecular phenomena that accounts for the double helix of DNA, the activity of enzymes, and that water is a liquid and paper a solid," said Joel Liebman, professor of Chemistry and Biochemistry at the University of Maryland.

USU VP for Research Brent Miller notes that Steve has more than 250 publications, ranging in disciplines from development of theoretical methodology to applications of quantum chemistry, which have been cited more than 7,600 times.

Steve was honored at a March 29 university luncheon during USU Research Week and during spring commencement.

— by Mary-Ann Muffoletto

For the full story, visit <http://www.usu.edu/ust/index.cfm?article=43673>

— Predicting the Unpredictable: NEON Clears Major Hurdle —

Recent developments with NEON, the NSF's National Ecological Observatory Network, have Dean Jim MacMahon feeling optimistic.

"We've successfully completed a NSF Final Design Review and the NSB has authorized the NSF to make an award for construction of NEON," he says.

This action authorizes the NSF Director to provide NEON, Inc. an award not to exceed \$433.7 million over five years to construct the observatory, contingent upon funding from Congress and compliance with the ESA and National Historic Preservation Act for the 106 NEON sites.

Once established, the massive network will allow scientists to continuously monitor thousands of environmental measurements through the nation.

"It's a monumental task – nothing has been attempted on this scale before," MacMahon says. "With the data we collect, we'll be able to understand environmental disturbances in much more detail than ever before."

For more information about the project, visit www.neoninc.org.

— by Mary-Ann Muffoletto



A NEON prototype tower at Colorado's Table Mountain. Similar towers, outfitted with environmental monitoring equipment, will be erected at sites in NEON's 20 eco-domains throughout the United States.

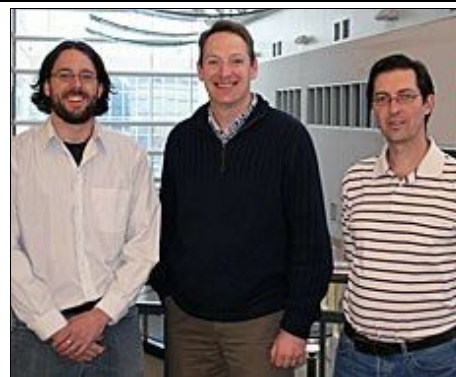
— Three USU Scientists Receive NSF CAREER Awards —

Biochemist Sean Johnson, geophysicist Tony Lowry, and ecologist Ethan White are 2010 recipients of the National Science Foundation's most prestigious grant program for early career development of junior faculty. Each of the three received CAREER Awards in recognition of demonstrated excellence in research, teaching, and the integration of education and research.

CAREER awards provide funding for up to five years to support each recipient's proposed research and teaching projects. For the first year, the college's recipients' combined awards exceed \$1 million.

Johnson, an R. Gaurth Hansen Assistant Professor of Biochemistry, uses X-ray crystallography to study DNA and protein structures. Lowry, assistant professor in the Department of Geology, studies rock flow properties to better understand earthquake physics, seismic hazards, and mountain-building processes. White, an assistant professor in the Department of Biology, is pursuing an interdisciplinary approach using tools from computer science, statistics, and physics, combined with established ecological models, to predict major ecological patterns for diverse datasets.

— by Mary-Ann Muffoletto



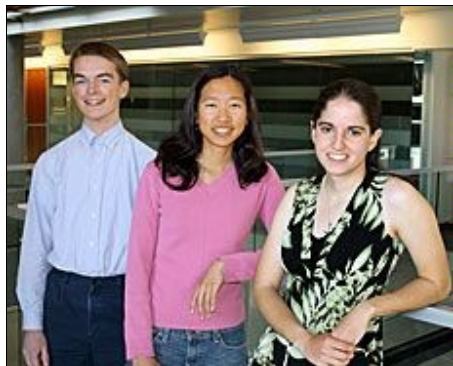
From left, USU scientists Ethan White, Sean Johnson, and Tony Lowry are recipients of the NSF's prestigious CAREER award.

— Aggie Scientists Honored in NSF Grad Research Fellow Search —

Four Aggies received 2010 Graduate Research Fellowships from the National Science Foundation and four more received honorable mentions in the renowned academic competition – the most USU students and alums ever to receive the honor in one year. Five of the honorees are from the College of Science.

Melissa Jackson, who graduated this spring with a bachelor's degree in Geology; USU graduate students Nathan Carruth (Physics) and Joanna Hsu (Ecology); and 2007 USU graduate Jan Marie Andersen, who is pursuing graduate studies in Physics at Boston University, are 2010 NSF Graduate Research Fellows. Eric Addison, a USU graduate student in Physics; Ephraim Hanks, a USU graduate student in Mathematics and Statistics; and 2009 USU Biochemistry graduate Bradley Hintze, who is a graduate student at Duke University, received honorable mentions.

NSF GRFP recipients receive a three-year annual stipend of \$30,000, along with a \$10,500 cost-of-education allowance for tuition and fees, a one-time \$1,000 international travel allowance, and the freedom to conduct their own research at the U.S. or international institution of graduate education of their choice.



From left are fellows Nathan Carruth, Joanna Hsu and Melissa Jackson.

Anderson, who studied at Denmark's Niels Bohr Institute as a Fulbright Student Scholar after graduating from USU, is investigating low-mass stars called M-Dwarfs at BU. Carruth, who will soon complete a master's degree in Physics at USU, is choosing between graduate study offers at UC-Santa Barbara, UC-Berkeley and England's Cambridge University. Jackson, Spring 2010 Science Valetorian, will pursue studies in optically stimulated luminescence dating at Wales' Aberystwyth University this fall.

— by Mary-Ann Muffoletto

For the full story, visit <http://www.usu.edu/ust/index.cfm?article=45433>

— Phi Kappa Phi Graduate Fellowship —



Gary Straquadine, right, dean and executive director of USU Tooele and president of USU's Phi Kappa Phi chapter, formally presents the graduate fellowship to Cody Tramp at the society's annual initiation and awards ceremony April 19 in Logan .

Nearly every weekday for the past four years, Cody Tramp has shown up at a biology lab before 7:30 a.m. to work on varied research projects. And he rarely took a break on weekends, says his faculty mentor Dennis Welker.

“Cody has the drive and intellectual capabilities to become a successful research scientist and he’s a considerate and engaging human being, as well,” says Welker, Biology professor.

Tramp, who graduated this spring capping off a stellar undergrad career, is the recipient of a 2010-11 Phi Kappa Phi Graduate Fellowship. The prestigious national award, given to only 57 grad school-bound seniors each year, includes a \$5,000 award toward the recipient’s first year of graduate study.

The Wyoming native, who completed a bachelor’s degree in Molecular Biology and Biochemistry, is beginning new research in the emerging field of synthetic biology, here at USU, with faculty mentor Charles Miller in the Department of Biological Engineering.

“It’s a different mindset and a very new field – wide open for discovery,” says Tramp, who was named a Utah Governor’s Scholar in 2008 and a Goldwater Scholar in 2009.

– by Mary-Ann Muffoletto

For the full story, visit <http://www.usu.edu/ust/index.cfm?article=45751>

— Goldwater Awards 2010 —

Daniel Fenn (Physics) and Justin Koeln (Mechanical and Aerospace Engineering) were named Goldwater Scholars and Robert Call (Physics) received an honorable mention from the national competition that recognizes outstanding undergraduate achievements in math and science.

A Tremonton, Utah native, Daniel was involved in the Space Dynamics Lab’s testing of the NASA and Naval Research Laboratory-designed Wind and Temperature Sensor. The instrument, which measures thermospheric neutral wind properties, was launched into space on the shuttle Endeavour in 2009.

Justin, a Maryland native, is a member of USU’s Get Away Special team and serves as project leader for the team’s “FUNBOE” nucleate boiling experiment. The project team won a coveted spot with NASA’s 2010 Reduced Gravity Education Flight Program, which will afford them the opportunity to travel to Houston’s Johnson Space Center this summer and fly the experiment on NASA’s “Vomit Comet.”

A native of Batesville, Indiana, Robert studies absorption of radio waves in the upper atmosphere and has researched methods to measure photo luminescence in quantum dots. In 2009, he served as a summer intern in the Condensed Matter and Materials Division at Lawrence Livermore National Laboratory. Robert plans to pursue further research through graduate studies in the materials science aspects of energy studies.

– by Mary-Ann Muffoletto



(L-R) Daniel Fenn (Goldwater Scholar), Robert Call (Honorable Mention) and Justin Koeln (Goldwater Scholar).

— Faculty Research Awards 2010 —

Name	Award	Department
Anne Anderson	Undergraduate Researcher Mentor of the Year	Biology
Tom Chang	Faculty Researcher of the Year	Chemistry & Biochemistry

— College/University Student Research Awards 2010 —

Name	Award	Department
Sherry Baker	Undergraduate Researcher of the Year	Biology
Cody A. Tramp	Scholar of the Year	Biology
Ephraim M. Hanks	Graduate (MS) Researcher of the Year	Mathematics & Statistics
Kelly K. Bradbury	Graduate (PhD) Researcher of the Year	Geology
Carrie Young	USU Undergraduate Researcher of the Year (Robins Award Winner)	Biology, Uintah Basin

— College of Science Minigrant Recipients 2010 —

The College of Science awards minigrant stipends of \$750 to qualified sophomores, juniors, and seniors. These funds are matched by a departmental contribution of \$250. Awards are intended to encourage students to become involved in their first mentored research experience. Minigrant recipients for 2010 are:

Name	Department	Mentor
Kirsten Bahr	Geology	W. David Liddell
Ryan Berry	Chemistry & Biochemistry	Alvan Hengge
Robert Call	Physics	T.C. Shen
Amy Crandall	Chemistry & Biochemistry	Sean Johnson
Rahul Jain	Physics	Timothy Doyle
Sarah Mousley	Mathematics & Statistics	Brynja Kohler
Moon Jiun Ngooi	Biology	Anne Anderson
Gregory Wilson	Physics	J.R. Dennison

— Information and Deadline for Next Round of Seed Grants —

Information on the seed grants programs is available at:

http://research.usu.edu/htm/faculty-funding-and-startup/grants_funding

Fall 2010 Deadline: Submit applications to the College of Science Dean's Office no later than **1 October 2010**.

Questions? Contact Lisa M. Berreau at 797-3509 or lisa.berreau@usu.edu.

— Intermountain Graduate Research Symposium March 31, 2010 —

The Intermountain Graduate Research Symposium had a record number of students participate in the event this year. Over 250 students --double last year's number-- shared their research through oral presentations and posters. Students from five universities participated in the symposium this year. "This symposium is unique in that students from the entire Intermountain region gather as peers and scholars," said Rick Kelly, ASUSU Graduate Student Senate President. "We are proud to host this event and give credit to all those who put this event together."

Presentations were given by the following College of Science graduate students:

Lecture presentation

Name	Title	Department	Mentor
Eric Addison	Busting Up Binaries: Stellar Interactions with Galactic Supermassive Black Holes	Physics	Shane Larson
Marco Alvarez Vega	Exploring Structural Modeling of Proteins for Kernel-based Enzyme Discrimination	Computer Science	Xiaojun Qi
Jessica Anderson	Assessing North American Influenza Dynamics with Hierarchical Spatio-Temporal Models	Mathematics & Statistics	Mevin Hooten
Nicole Boehme	A Comparison of Bee Diversity Across Sand Dune Habitats at Ash Meadows National Wildlife Refuge	Biology	James Pitts
Narayan Chapagain	Dynamics of Ionospheric Plasma Bubbles Measured by Airglow Depletions	Physics	Mike Taylor
Bharatkumar Chatla	A Web-based Multilingual Map Annotation Tool for Blind Travel Support	Computer Science	Vladimir Kulyukin
Catherine Clark	Is the Endangered Plant <i>Astragalus phoenix</i> (Fabaceae) Pollinator Limited?	Biology	James Pitts
Omar U. Florez	Fast Retrieving of Similar Human Motion in Videos	Computer Science	Curtis Dyreson
Brian Gall	Predator Avoidance During Oviposition: Female Newts Avoid Depositing Eggs near Invertebrate Predators	Biology	Edmund Brodie
Vern Hart	The Scattering of Acoustic Waves from Prolate Spheroidal Particles Embedded in an Elastic Matrix	Physics	Timothy Doyle
Anne Hayden	Arroyo Cycles in the Upper Escalante River, Southern Utah: Utilizing Optically Stimulated Luminescence (OSL) Dating to Extend Regional Fluvial Chronologies	Geology	Tammy Rittenour
Dawn Hayes	Stratigraphic Microfossil and Geochemical Analysis of the Analysis of the Neoproterozoic Uintah Mountain Group, Utah: Evidence of a Eutrophication Event?	Geology	Carol Dehler
Jeffrey Hazboun	Quantizing Fields in Biconformal Space	Physics	James Wheeler
Ryan Hoffman	Electron Beam-induced Electroluminescence in Space-based Carbon Fiber Composite Materials	Physics	J.R. Dennison
Ryan Jackson	The Mtr4 Crystal Structure Reveals a Novel Arch Domain Required for 5.8S rRNA Processing	Chemistry & Biochemistry	Sean Johnson
Virginia Jennings-Bolshakova	Niche Partitioning among Major Parasitoids of the Sagebrush Defoliator <i>Aroga Websteri</i>	Biology	Ted Evans
Jay Jones	Predicting Algal Concentrations Using Aerial Imaging and Statistical Analysis	Mathematics & Statistics	Richard Cutler

— Intermountain Graduate Research Symposium March 31, 2010 (cont.) —

Lecture presentation (cont.)

Name	Title	Department	Mentor
Aliasgar Kutiyawala	ShopMobile: Toward a Mobile Accessible Shopping System for the Visually Impaired	Computer Science	Vladimir Kulyukin
Jessica Munns	Using Video Recordings to Collect Data about Student Thinking: Teach by Listening and Learn by Talking	Mathematics & Statistics	Brynja Kohler
Jared Olson	Ab Initio Search for Global Minimum Structures of Novel BxHy (x=3-4, y=4-7) Neutral and Anionic Clusters	Chemistry & Biochemistry	Alex Boldyrev
Michael Olson	Lunar Dependent Electrodynamics and Planetary Wave Propagation during Sudden Stratospheric Warming Events	Physics	Bela Fejer
Jordan Ramilowski	Rotational Dynamics in Small Superfluid He-4 Droplets: Monte Carlo Simulations	Chemistry & Biochemistry	David Farrelly
Michael Rigley	Intermediate Complexity Biological Modeling Framework for Mountain Lakes Based on Physical Structure	Mathematics & Statistics	James Powell
Jared Robertson	Synthesizing Mostly-correct Plans in Incomplete Domains	Computer Science	Daniel Bryce
Juan Shan	Completely Automatic Segmentation for Breast Ultrasound Using Multiple-Domain Features	Computer Science	H. D. Cheng
Pedro Tejada	On a Dispersion Problem in Grid Labeling	Computer Science	Minghui Jiang
Kimberly Thatcher	Solving Equations Java Applet	Mathematics & Statistics	Kady Schneider
Kevin Williams	Mimicry Confuses Taxonomy: Lessons from the <i>Dasyutilla bioculata</i> Species-group (Hymenoptera: Mutillidae)	Biology	James Pitts
Joseph Wilson	How Did California's Geologic History Affect Velvet Ants (Hymenoptera: Mutillidae)?	Biology	James Pitts

Poster presentations

Name	Title	Department	Mentor
Jeremy Bakelar	Expression and Purification Studies of the Poly(A) Polymerase Trf4 and the RNA Binding Protein Air2	Chemistry & Biochemistry	Sean Johnson
Corey Barton	Correlation of Sub-seismic Properties to Determine Top Seal Integrity, with Implications for CO ₂ Sequestration	Geology	James Evans
Yuan Chu	Mechanistic Study of Phosphoryl Transfer Reactions Catalyzed by Protein Phosphatase-1	Chemistry & Biochemistry	Alvan Hengge
Katarzyna Grubel	UV- and Heat-induced O ₂ Reactivity of Divalent Metal Flavonolate Complexes	Chemistry & Biochemistry	Lisa M. Berreau
Shanying Gui	Molecular Dissection of the Active Site of Protein Arginine Methyltransferase 1: Identification of Residues Which Control Substrate Specificity and Activity	Chemistry & Biochemistry	Joan Hevel
Yuho Kim	An Effect of Three Weeks of Voluntary Running Wheel Exercise on UPR Mechanism in Brains of C57BL/6 Mice Preadapted to a High-fat Diet	Biology	David A. York
Vyacheslav Kuznetsov	Kinetic Studies of the Dual-specificity Phosphatase VHZ	Chemistry & Biochemistry	Alvan Hengge

— Intermountain Graduate Research Symposium March 31, 2010 (cont.) —

Poster presentations (cont.)

Name	Title	Department	Mentor
Levan Lomidze	Double Atmospheric Gravity Wave Frequency Oscillations of Sporadic E Formed in a Horizontal Shear Flow	Physics	Ludger Scherliess
Anna Lytle	Expression, Purification, and Formation of the Nuclear TRAMP Complex	Chemistry & Biochemistry	Sean Johnson
Nazneen Malik	A Survey of Student Programming Bugs	Computer Science	Renee Bryce
Yalemi Morales	How Do Monomethylated Substrates Bind PRMT1?	Chemistry & Biochemistry	Joan Hevel Sean Johnson
Jared Mygrant	Event Coverage Studies	Computer Science	Renee Bryce
Hyoungil Oh	Mechanisms for Dietary Fat-induced Insulin Resistance in Brain Cells	Biology	David A. York
Juanita Rodriguez	The Genus <i>Psorthaspis</i> (Hymenoptera:Pompilidae) in Columbia	Biology	James Pitts
Emilee Skyles	Determining Alluvial Chronologies and Erosion Rates of the Golo River, Northern Corsica, France	Geology	Tammy Rittenour
Dariusz Sliwa	Uneven Twins: Molecular Basis for Enantioselectivity in the (<i>R</i>)- and (<i>S</i>)-hydroxypropyl-CoM Dehydrogenases	Chemistry & Biochemistry	Scott Ensign
Audrey Smith	A Deterministic Approach to Modeling the Evolution of Sexual Dimorphism	Mathematics & Statistics	James Powell
Christopher Tressler	Colorado Plateau Rock Strength, Exhumation, and River Knickzones—Spatial Datasets Relating Erodability to Topographic Metrics	Geology	Joel Pederson
Juan Trujillo	Quantum Mechanics in Biconformal Space	Physics	James Wheeler
Almut Vollmer	Membrane Dynamics in <i>sac9</i> , a Putative Phosphoinositide Phosphatase Mutant of <i>Aribidopsis thaliana</i>	Biology	Daryll DeWald
Cecilia Waichert	Primary Sexual Characters as Useful Features to Distinguish Genera of <i>Agenielli</i> (Hymenoptera: Pompilidae)	Biology	James Pitts

— Save the Date: Faculty Retreat —

The College of Science Faculty Retreat will be held on August 18, 2010,
from 1:00 p.m. to 4:00 p.m. in ESLC 046.

For more information, contact Jan Miller at 797-2488 or janice.miller@usu.edu.

— 2010 Undergraduate Research Day on Capitol Hill —

College of Science student researchers ascended Salt Lake City's Capitol Hill on January 28, 2010, to share their efforts and discoveries with Utah legislators and visitors. Stationed with their posters in the Capitol rotunda, Aggies honed their presentation skills and served as ambassadors for the college and the university. Students representing the College of Science were:

Name	Title	Dept	Mentor
Holly Anderson	Remediation of Hydrophobic Soils Imposed by Fire Events	Biology	Anne Anderson
Cortnie Jo Broadus Benjamin Harrison Nicole Rupp Tindall	Assessing the Impact of a Mathematics Placement Program on Student Performance	Mathematics & Statistics	John R. Stevens
Ben Brown	Neuraminidase Activity of Influenza Virus Strains that Differ in the Ability to Cause Disease	Chemistry & Biochemistry	Bart Tarbet
Douglas Holt	The Role of TRPM5 Channels in Fatty Acid Signaling in Enteroendocrine Cells	Biology	Tim Gilbertson
Lance Petersen	Comparison of Sprite-Halo Characteristics Imaged Over the USA and South America	Physics, CASS	Mike Taylor
Jonathan Pugmire	Intra-Annual Comparison of Mesospheric Gravity Waves Over Halley and Rothera Stations, Antarctica	Physics, CASS	Mike Taylor

— — URCO Recipients Spring 2010 —

Utah State encourages undergraduates to explore their scholarly, creative, and research interests through URCO (Undergraduate Research & Creative Opportunities), a grant program that financially supports research—broadly defined—of undergraduates.

Name	Title	Department	Mentor
Garth Hunt	What Signals are Responsible for the Exercise-induced Increase in the Endoplasmic Reticulum Unfolded Protein Response (UPR)?	Biology	MieJung Park
Katie Breivik	Probing General Relativity with Photometric Monitoring of Gas Giant Moons	Physics	Shane Larson
Carlos Read	Study of Labile Vs. Hemilabile Ligand Behavior in Mononuclear Nickel(II) Complexes	Chemistry & Biochemistry	Lisa M. Berreau
Douglas Ball	Electron Induced Luminescence of Carbon Component Materials	Physics	J.R. Dennison
Troy Munro	Follow-Up Nucleate Boiling on Flight Experiment (FUNBOE)	Physics	J.R. Dennison

— Celebrating Undergraduate Research at the Student Showcase —

Student Showcase, a celebration of undergraduate research, scholarship and creative activity, was the highlight of USU's Undergraduate Research Day held on March 30, 2010. Undergraduate researchers from all disciplines presented their research at the Student Showcase and gave one-on-one information to interested observers passing through the TSC International Lounge. In all, 127 students participated in the Student Showcase with oral and poster presentations.

College of Science participants are listed below:

Name of Student	Title of Project	Department	Mentor
Claire Adams	Carbon Sequestration in Archaeal Species <i>Halobacterium salinarum</i>	Biology	Jacob Parnell
Henry Allred	Computational Study of Mono-methyl Cyclohexanecarboxylic Acids	Chemistry & Biochemistry	Charley C. Langley
Brady Ambrose	An Ultrasonic Test System for Researching the Detection of Microscopic Breast Cancer	Physics	Timothy Doyle
Holly Anderson	Remediation of Hydrophobic Soil Sublayers from Forest Fires by Biotic and Abiotic Processes	Biology	Anne Anderson
Tom Apedaile	High Precision Characterization of Diurnal Wind Structure in Canyon Drainage Winds	Physics	Tom Wilkerson
Sherry Baker	Metastatic Melanoma and Carcinoma Analysis	Biology	Daryll DeWald
Ben Brown	Neuraminidase Activity of Influenza Virus Strains that Differ in the Ability to Cause Disease	Chemistry & Biochemistry	Bart Tarbet
Robert Call	Electrons in Matter	Physics	J.R. Dennison
David Clark	Potential Viratherapeutic Lysis of Human Cancer Cells Using Oncolytic Bluetongue Virus	Biology	Joseph Li
Amanda Croasdell	Characterization of Detoxifying GST A1.2 in Wild and Heritage Turkeys	Chemistry & Biochemistry	Roger Coulombe
Lynsie Daley	A Petrographic Analysis of the Bloomington Formation of Northern Utah and Southeastern Idaho	Mathematics & Statistics	W. David Liddell
Jeffrey D. Davis	Effects of Rhes Dopaminergic Inhibition of N-type (CaV2.2) Calcium Channels	Biology	Brett Adams
Joseph R. Eason	Dynamical Behavior of a Model for Mountain Pine Beetle Outbreak	Mathematics & Statistics	James Powell
Amberly Evans	The Effects of Surface Modification on Optical Properties of Spacecraft Materials	Physics	J.R. Dennison
Jason Farnsworth Frank McCown	A Systematic Study of Nucleate Boiling in Microgravity	Chemistry & Biochemistry	J.R. Dennison
Aaron Fronk	Studying the Impact Properties of Reptile Scales Using Man-made Materials	Biology	Edmund Brodie
Elisa George	Molecular Identification of Taste Cell Types	Biology	Tim Gilbertson
Nicole Gines	Determination of Non-steroidal Anti-inflammatory Drugs in the Sewage Effluent of the Water Treatment Plants in the Uintah Basin	Chemistry & Biochemistry	Charley C. Langley
Jeffrey B. Goodrich	Development of Ultrasonic Detection Methods for Cancer Cells <i>In Vivo</i>	Physics	Timothy Doyle

— Undergraduate Research at the Student Showcase (cont.) —

Name of Student	Title of Project	Department	Mentor
Jesse Hayes	Physical Damage Due to Electrostatic Discharge on Insulating Polymers	Physics	J.R. Dennison
Christina Howell	Monte Carlo Simulations of Solvation	Chemistry & Biochemistry	David Farrelly
Damon Nitzel David Ingram	Identification of a Stable Protein Arginine Methyl Transferase 1: Protein Substrate Complex for Use in Crystallography Studies	Chemistry & Biochemistry	Joan Hevel
Melissa Jackson	Bracketing the Age of the Great Gallery Rock Art Panel in Horseshoe Canyon, Utah, by Dating Associated Alluvial Terraces	Geology	Joel Pederson Tammy Rittenour
Brooks Marshall	Synthesis and Characterization of CO-releasing Ruthenium Complexes	Chemistry & Biochemistry	Lisa M. Berreau
Cody Mart	Growth of Carbon Nanotubes on Copper	Physics	T. C. Shen
Taren McKenna Tom Apedaile	Utilizing a Chaotic Oscillator for Precision Measurement of Motion	Physics	J.R. Dennison
B. J. Myers	Error-correction in Distributed Computational Networks Using Self-organized Collective Dynamics	Physics	David Peak
Lance Petersen	Properties of Plasma	Physics	J.R. Dennison
Stephanie Peterson Sara Scott	Improved Methods for Teaching Science	Physics	J.R. Dennison
Jared Romero	Effects of Water Mass on GPS Measurements of Rio Grande Rift Motions	Physics	Tony Lowry
Charles Sim	Evaluation of the Temperature and Time Dependence of Electrostatic Breakdown	Physics	J.R. Dennison
Lynsey Talbot	Use of Algae for Biodiesel and Reclamation of Uintah Basin Produced Water	Chemistry & Biochemistry	Lance Seefeldt
Jonathan Thompson	Optimization of Ionospheric Models using TEC Data	Physics	Vincent Wickwar
Jaimy Tomlinson	An Investigation of Polar Mesospheric Clouds Using Satellite and Ground-based Measurements	Physics	Mike Taylor
Cody Tramp	Construction of a Novel Plasmid Vector for the Probiotic <i>Lactobacillus helveticus</i> and Functional Studies of Its Replication Protein	Biology	Dennis Welker

— Keep in Touch on the Web —

Everyone is encouraged to bookmark and visit the College of Science web site, www.usu.edu/science, frequently for news and information updates, as well as the college's Facebook page, "USU College of Science."



— Utah Conference on Undergraduate Research - UCUR 2010 —

The fourth annual Utah Conference on Undergraduate Research (UCUR), hosted by Southern Utah University this year, was on Friday, February 26, 2010. The schedule of activities included a Thursday evening session for faculty participants, followed by a full day Friday of creative, oral, and poster presentations by students. The purpose of UCUR is to give Utah college and university students the opportunity to share the results of their undergraduate research with students and faculty members in the state, as well as with the community at large. "Undergraduate research" is to be interpreted in the broadest possible sense, to include students from all disciplines, with presentations of all types, from oral presentations, to poster sessions, to performances of creative works. Participants from the College of Science:

Name of Student	Title of Project	Department	Mentor
Henry Allred	A Partial Sentiment/Contaminant Budget for the Pariette Draw, Uintah Basin, UT	Geology	Nicholas Allmendinger
Amanda Croasdell	Characterization of Detoxifying GST A1.2 in Wild and Heritage Turkeys	Biology	Roger Coulombe
Alison Cooley	An Empirical Study of Bugs in Undergraduate Programming Assignments	Computer Science	Renee Bryce
Carrie Young	Determination of White-tailed Prairie Dog (<i>Cynomys leucurus</i>) Population Structure Using Microsatellite Markers	Biology	Lianna Etchberger
Nicole Glines	Determination of Non-steroidal Anti-inflammatory Drugs in the Sewage Effluent of the Water Treatment Plants in the Uintah Basin	Chemistry & Biochemistry	Charley C. Langley
Henry Allred	Computational Study of Mono-methyl Cyclohexanecarboxylic Acids	Chemistry & Biochemistry	Charley C. Langley
Elisa George	Identification of Taste Cell Types using PCR and qPCR	Biology	Tim Gilbertson
Douglas Holt	The Role of TRPM5 Channels in Fatty Acid Signaling in Enteroendocrine Cells	Biology	Tim Gilbertson

— Utah State Students Present Research to Group of 2,800 at NCUR 2010 —

The 24th National Conferences on Undergraduate Research (NCUR), held April 15-17, 2010, brought together undergraduates involved in scholarly and artistic activities representing a range of disciplines, including creative arts, mathematics, business, social science, humanities, physical and life sciences, natural resources and engineering, among others. Established in 1987, NCUR is dedicated to promoting undergraduate research, scholarship, and creative activity in all fields of study by sponsoring an annual conference for students. Unlike meetings of academic professional organizations, this gathering of young scholars welcomes presenters from all institutions of higher learning and from all corners of the academic curriculum. College of Science presenters are listed below:

Name	Title of Project	Department	Mentor
Alyssa J. Anderson-Calder	Nanoparticles and the Environment	Biology	Anne Anderson & David Britt
Elisa A. George	Molecular Identification of Taste Cell Types	Biology	Tim Gilbertson
Douglas Holt	The Role of TRPM5 Channels in Fatty Acid Signaling in Enteroendocrine Cells	Biology	Tim Gilbertson

— STUDENT ACTIVITIES —

Student Awards, Recognition & Grants

undergraduate* graduate**

Biology

A project by graduate students **Ryan O'Donnell**, **Sarah Supp**, and **Stephanie Cobbold** was highlighted in the "Notebook" section of *The Scientist*, volume 24, issue 1, page 17. The online version can be viewed at: <http://www.the-scientist.com/2010/1/1/17/1/>.

Chemistry & Biochemistry

Alina Sergeeva** received the National IBM Zerner Award for Graduate Students at the 50th Sanibel Symposium, Quantum Theory Project, St. Simons Island, GA, 23 February - 2 March 2010. The award was a \$1,000 monetary award and complementary registration fee of \$250. Faculty mentor: **Alexander I. Boldyrev**

Geology

The following awards and recognitions were received during the Graduate Symposium at USU Research Week, Logan, UT, March 31, 2010:

D. Corey Barton** was awarded 2nd place in the Science Division for a poster titled "Correlation of Sub-seismic Properties to Determine Top Seal Integrity, With Implications for CO₂ Sequestration." Faculty mentor: **James Evans**

Anne Hayden** was awarded 2nd place in the Chemistry and Geology oral presentations division for a talk titled "Arroyo Cycles in the Upper Escalante River, Southern Utah: Utilizing Optically Stimulated Luminescence (OSL) Dating to Extend Regional Fluvial Chronologies." Faculty mentor: **Tammy Rittenour**

Christopher Tressler** won 1st place in the Science Division for presenting a poster titled "Colorado Plateau Rock Strength, Exhumation, and River Knickzones—Spatial Datasets Relating Erodability to Topographic Metrics." Faculty mentor: **Joel L. Pederson**

Student Presentations

undergraduate* graduate**

Biology

Joshua P. Der**, Michael S. Barker, Norman Wickett, Claude W. dePamphilis, and **Paul G. Wolf** presented "Functional Genomics of Fern Gametophytes: Transcriptome Sequencing In *Pteridium aquilinum*" at International Plant and Animal Genomes XVIII, San Diego, California, 9-13 January 2010.

Carrie Young* (Uintah Basin Regional Campus) presented a poster titled "Determination of White-tailed Prairie Dog (*Cynomys leucurus*) Population Structure Using Microsatellite Markers" at the 10th Annual Uintah Basin Research Conference in Vernal, UT on April 16, 2010. Faculty mentor: **Lianna Etchberger**

Chemistry & Biochemistry

Alina Sergeeva** presented a poster titled "Towards Unified Chemical Bonding Theory" at the 50th Sanibel Symposium, Quantum Theory Project, St. Simons Island, GA, 23 Feb - 2 Mar 2010. Faculty mentor: **Alexander I. Boldyrev**

The following talks and posters were presented by Uintah Basin Regional Campus students at the 10th Annual Uintah Basin Research Conference in Vernal, UT on April 16, 2010 (with the assistance of faculty mentor **Charley C. Langley**):

C. Dustin Clark*, **Nicole Glines***, and **Chad Magnum***. "Determination of Non-Steroidal Anti-inflammatory Drugs in the Sewage Effluent of the Water Treatment Plants in the Uintah Basin." (talk)

Henry Allred*, **C. Dustin Clark***, **Nicole Glines***, and **Chad Magnum***. "Use of a Model Acid System to Interpret Results from GC/MS Analysis of Environmental Naphthenic Acids." (poster)

C. Dustin Clark* and **Chad Magnum***. "Does Chocolate Contain Caffeine? Settling Online Disputes Using Analytical Chemistry." (poster)

Henry Allred*. "Computational Study of Mono-methyl Cyclohexanecarboxylic Acids." (poster)

Henry Allred*. "Partical Sediment/Contaminant Budget for the Pariette Draw, Uintah Basin, UT." (poster)

The following talks and posters were presented at the 239th American Chemical Society National Meeting and Exposition, San Francisco, CA, 21-25 March 2010:

Brooks C. Marshall*, **Christina M. Howell***, **Heather J. Tarbet***, **David Clark***, **Lydia Howes***, and **Lisa M. Berreau**. "Community Education on Green Chemistry." (poster)

Katarzyna Grubel, Atta M. Arif, and **Lisa M. Berreau**. "UV- and Heat-induced O₂ Reactivity of Divalent Metal Flavonolate Complexes." (poster)

Vyacheslav I. Kuznetsov and **Alvan C. Hengge**. "Kinetic Studies of the Dual-specificity Phosphatase VHZ." (poster)

Yuan Chu, Nicholas H. Williams and **Alvan C. Hengge**. "Mechanistic Study of Phosphoryl Transfer Reactions Catalyzed by Protein Phosphatase-1." (poster)

Geology

Dawn Schmidli Hayes** gave a presentation titled “Stratigraphic, Microfossil, and Geochemical Analysis of the Neoproterozoic Uintah Mountain Group, Utah: Evidence of Biotic Change Driven by Eutrophication?” at the International Conference and Field Meeting on Precambrian Life, Time and Environment: Evolving Concepts and Modern Analogues, Centre of Advanced Study in Geology, Lucknow, India, 2-9 Feb 2010. Faculty mentor: **Carol Dehler**

Student Publications

undergraduate* graduate**

The Center for Atmospheric & Space Sciences

Shim, Ja Soon**, **Ludger Scherliess**, **Robert W. Schunk**, and **Donald C. Thompson**. 2010. Neutral Wind and Plasma Drift Effects on Low and Middle Latitude Total Electron Content. *Geophysical Research Letters* 115:A04307
doi:10.1029/2009JA014488.

— FACULTY ACTIVITIES —

Awards & Recognition

Biology

Dr. Timothy A. Gilbertson served on two NIH study sections in February. He was Chair of the Communication Disorders Review Committee, National Institute on Deafness and other Communication Disorders, National Institutes of Health, Washington DC, February 2010 and served as a Temporary Member of Somatosensory and Chemosensory Sciences Review Committee, National Institute on Deafness and other Communication Disorders, National Institutes of Health, San Diego, CA, Feb 2010.

David Wallace was recognized by the Utah Chapter American Society of Safety Engineers for his January presentation “Globally Harmonized System of Classification and Labeling of Chemicals (GHS)” at the January meeting for the Utah Chapter of the American Society of Safety Engineers, Salt Lake City, UT, 14 Jan 2010.

Chemistry & Biochemistry

Lisa M. Berreau served as a Chemistry Panel reviewer for the Norman Hackerman Advanced Research Program, which is administered by Texas Higher Education Coordinating Board, Oct 2009 – Mar 2010.

Geology

James P. Evans was honored as the Utah State University Graduate Mentor of the Year for 2009-2010.

Faculty Grants

Biology

Diane Alston and **Brent Black** (Dept of Plant, Soil, and Climate) Utah Department of Agriculture and Food (USDA Specialty Crop Block Grant Program)
“Evaluation of Caneberry Varieties for Yield, Quality and Susceptibility to Insect Caneborers in Northern Utah”
1 Mar 2010 – 28 Feb 2011
\$9,512

Diane Alston and **Cory Vorel**
USDA APHIS PPQ (Utah Department of Agriculture and Food)
“Utah Plant Pest Infrastructure Project”
1 Mar 2010 – 31 December 2010
\$114,306

James Pitts and **David Tanner**
Colorado Natural Areas Program
“Impact of the Development on the Pollinators of *Physaria congesta* and *Physaria obcordata* (Brassicaceae) in the Piceance Basin, Colorado”
February 2010 – January 2012
\$56,344

Marion Murray and **Diane Alston**
Utah Department of Agriculture and Food (USDA Specialty Crop Block Grant Program)
“Determining Effectiveness of Currant Borer Mating Disruption in Utah”
March 2010 – February 2011
\$5,909

Cory A. Vorel
USDA-APHIS
“CAPS Exotic Moth Survey”
1 Jan 2010 – 31 Dec 2010
\$29,682

Cory A. Vorel and **Ryan Davis**
USDA-APHIS
“CAPS Wood Borer Bark Beetle Survey”
1 Jan 2010 – 31 Dec 2010
\$12,000

Terry Griswold
National Park Service
“Biodiversity Patterns of Native Bee Pollinators in the Chihuahuan Desert of Carlsbad Caverns National Park”
March 2010 – October 2012
\$50,000

Computer Science

Daniel Bryce
DARPA
“Bootstrapped Learning”
4/1/10—3/31/11
\$154,146

Daniel Bryce

National Science Foundation
To head Doctoral Consortium at ICAPS 10 Conference
Toronto, Canada
\$18,000

Renee Bryce

U.S. National Institute of Standards and Technology
“Combinatorial-based Techniques for Web Application Test Selection”
2/1/2010 – 1/31/2013
\$128,000

Physics

J.R. Dennison

NASA James Webb Space Telescope Project Subcontract by
Goddard Space Flight Center
“Quantitative Assessment of James Webb Space Telescope
Electron-Induced Glow Risk—Phase V of Materials Testing of
Highly Insulating Materials for the James Webb Space Telescope.”
2010
\$170,451

Faculty Presentations & Professional Activities

undergraduate* graduate**

Biology

The following talks were presented at the 3rd Annual Ash Meadows
National Wildlife Refuge Research Symposium held in Pahrump,
NV, 17 February 2010:

David Tanner and **James Pitts**. “Plants that Support Bee
Diversity: A Cornucopia of Conservation Possibilities.”

Catherine Clark**, **David Tanner**, and **James Pitts**.
“Insect Visitors and Possible Pollinators of Ash Meadows
National Wildlife Refuge Plants of Concern.”

Nicole Boehme**, **David Tanner**, and **James Pitts**. “A
Comparison of Bee Diversity across Sand Dune and Non-
sand Dune Habitats at Ash Meadows National Wildlife
Refuge.”

Diane Alston presented a talk titled “Onion Thrips: Targeting
Multiple Life Stages to Reduce Field Populations” at the 50th
Oregon/Idaho Onion Grower Meeting, Ontario, OR, 2 Feb 2010.

The following talks were presented at the Orchard Pest and Disease
Management Conference, Portland, OR, 13-15 January 2010:

Marion Murray and **Diane Alston**. “Analysis of Codling
Moth Mating Disruption Dispensers in a High-Elevation
Northern Utah Apple Orchard.”

Diane Alston and **Marion Murray**. “Action Thresholds
for the DA-Combo Lure in Mating Disrupted Apple
Orchards.”

The following talks were presented at the Utah State Horticultural
Association Annual Convention, Provo, UT, 20-21 January 2010:

Diane Alston. “Codling Moth Thresholds for Monitoring
in Mating Disrupted Orchards and Management of Cherry
Fruit Fly with OP Alternatives.”

Murray, Marion. “Field Longevity of Mating Disruption
Dispensers and Fungicides Demystified.”

Diane Alston presented a talk titled “Current and Emerging Berry
Crop Pests: Raspberry Horntail and Spotted-wing *Drosophila*” at
the Utah Berry Growers Meeting, Provo, UT, 21 January 2010.

Yohichi Kumaki, Miles Wandersee, Kenvin Bailey, Craig Day,
Aaron Smith, Zachary Vest, Jason Madsen, Nathan Nelson,
Michael Morrey, **Joseph K.-K. Li**, **Donald Smee**, and **Dale
Barnard** presented a poster titled “Inhibition of Severe Acute
Respiratory Syndrome Coronavirus Replication in a Lethal SARC-
CoV BALB/C Mouse Model” at the Annual American Society of
Microbiology Intermountain Branch Meeting, Brigham Young
University, Provo, UT, 10 April 2010.

The following presentations were made at the Pacific Branch
Meeting of the Entomological Society of America in Boise, ID, 11-
14 April 2010:

Joe Wilson** and **James Pitts**. “How Did California’s
Geologic History Affect Velvet Ants (Hymenoptera:
Mutillidae)?” Won 1st Place in Ph.D. Oral Competition.

Kevin Williams**, **Carol von Dohlen**, and **James Pitts**.
“Mimicry Confuses Taxonomy: Lessons for the
Dasymutilla bioculata Species-Group (Hymenoptera:
Mutillidae).” (talk)

Nicole Boehme**, **David Tanner**, and **James Pitts**. “A
Comparison of Bee Diversity Across Sand Dune and Non-
sand Dune Habitats at Ash Meadows National Wildlife
Refuge.” (talk)

Catherine Clark** and **James Pitts**. “Is the Endangered
Plant *Astragalus phoenix* (Fabaceae) Pollinator
Limited?” (talk)

David Tanner and **James Pitts**. “Dancing in the Dark:
Does Courtship Complexity Increase with Evolutionary
Time?” (talk)

Theresa Pitts-Singer. “Predicting Pollen Balls in Alfalfa
Leafcutting Bees.” (talk)

Juanita Rodriguez*, **Carol von Dohlen**, and **James
Pitts**. “Historical Biogeography of the *Aporini*
(Hymenoptera: Pompilidae).” Won 2nd Place in Ph.D.
poster competition.

Cecilia Waichert*, **Carol von Dohlen**, and **James Pitts**.
“Primary Sexual Characters as Useful Features to
Distinguish Genera of *Ageniellini* (Hymenoptera:
Pompilidae).” (poster)

Sarah Clark*, **Joe Wilson****, and **James Pitts**. “Is *Sphaerophthalma arota* (Hymenoptera: Mutillidae) a Single Species? Biogeography and Systematics of a Cryptic Species Complex.” (poster)

Clay Gunnell*, **Joe Wilson***, **David Wahl**, and **James Pitts**. “Investigating the Endemicity of *Aphonopelma* Species (Araneae: Theraphosidae) in California’s Southern Coast Ranges.” (poster)

Lincoln Andreasen** and **Diane Alston**. “The Effect of Age on the Egg-laying Capacity of Onion Thrips.” Won 2nd place in undergraduate poster competition.

Andrew Tebeau**, Patricia Zungoli, and Matt Turnbull, “Population Genetics of *Pachycondyla chinensis*.” (poster)

Cory A. Vorel and **Theresa L. Pitts-Singer**. “Odor Discrimination in Two Conditioned Solitary Bees, *Osmia lignaria* and *Megachile rotundata* (Hymenoptera: Megachilidae).” (poster)

Victor Gonzalez, **Terry Griswold**, Molly Rightmyer, and **Camden Hunt***. “Adaptations of Bees and Wasps for Pollen Collecting from Nototribic Flowers.” (poster)

Victor Gonzalez, Kim Huntzinger, Sam Droege, and **Terry Griswold**. “Integrating Classical Taxonomy and Information Technologies in Bee Systematics: The American Species of *Anthidium* (Hymenoptera: Anthidiini).” (poster)

Diane Alston and **Andrew Tebeau****, Jennifer Reeve, Brent Black, Corey Ransom, Marc Rowley, Ruby Ward, and Silvana Martini. “Organic Stone Fruit Orchard Floor Management: Integration of Management of Insects, Weeds, Water Use, and Crop Nutrition and Quality.” (talk)

Diane Alston, Jennifer Reeve, Daniel Drost, Kristie Buckland, and C. Kent Evans. “Suppression of Onion Thrips Egg Load in Plants and Influence of Onion Crop Management Practices on Thrips and IYSV.” (talk)

Terry Griswold, “Sky Island Bees of the Mojave Desert.” (talk)

Timothy Hatten, Chris Looney, **James Strange**, **Terry Griswold**, Sanford Eigenbrode, and Nilsa Bosque-Pérez. “Pollinators of Palouse Prairie: Survey of Native Bee Fauna in a Fragmented Ecosystem.” (talk)

Jonathan B. Koch**, **James P. Strange**, Harold Ikerd, and **Terry Griswold**. “The Importance of Entomological Collections in Assessing the Status of the Western Bumble Bee *Bombus occidentalis*.” (talk)

Chemistry & Biochemistry

Alexander I. Boldyrev presented an invited talk “Adaptive Natural Density Partitioning – New Tool In Deciphering Chemical Bonding In Clusters” at the 4th Jekyll Island International Conference on Clusters and Nanostructures, Jekyll Island, GA, 16-19 Feb 2010.

Alvan C. Hengge presented an invited talk titled “Protein Motions in Catalysis by Protein Tyrosine Phosphatases” at the: Department of Chemistry, Queen's University, Kingston, Ontario, 15 January 2010. Gordon Research Conference on Isotopes in Biological and Chemical Sciences, Galveston, TX, 14-19 Feb 2010.

Katarzyna Grubel**, **Amy L. Fuller****, **Bonnie M. Chambers***, Atta M. Arif, and **Lisa M. Berreau** presented a poster titled “O₂-dependent Aliphatic Carbon-Carbon Bond Cleavage Reactivity in a Ni(II) Enolate Complex having a Hydrogen Bond Donor Microenvironment; Comparison with a Hydrophobic Analog,” Metals in Biology Gordon Research Conference, Ventura, CA, 31 Jan - 5 Feb 2010.

Computer Science

R. Lasisi** and **V. H. Allan**. 2010. False Name Manipulations in Weighted Voting Games: Susceptibility of Power Indices, publication presented during a workshop titled “Trust in Agent Societies” (*Trust-2010*) at Autonomous Agents and Multi Agent Systems 2010 (AAMAS-2010), Toronto, Canada, 10-14 May 2010.

J. Fritzler and **Stephen C. Clyde** presented “EHDI Data Integration across Heterogeneous Systems” at the EHDI Conference, Chicago, IL, Feb 28 – Mar 2, 2010.

Ali Raza and **Stephen C. Clyde** presented “Semantic-based Test Data Extraction for Integrated Systems (iSTDE)” at the Third International Conference on Health Informatics, in Valencia, Spain, 20-23 January 2010.

Nicholas Flann presented the poster, “Isolating Specific Cells in Mixed Population Cultures: A Computational Approach,” at the 9th Annual International Symposium, *Systems Biology & Global Health*, at the Institute for Systems Biology in Seattle, WA 18-19 April 2010.

Mathematics and Statistics

Juergen Symanzik presented the following invited talks at the Statistical Graphics for Spatial and Environmental Research Workshop, Departamento de Estatística, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil, 30 Nov – 2 Dec 2009:

“Interactive and Dynamic Statistical Graphics - An Overview”
“Linked Micromap Plots - In Print and on the Web”
“Interactive and Dynamic Statistical Graphics - Special Applications”

Juergen Symanzik presented an invited talk titled “Statistical Graphics and Visual Data Mining for Biostatistical Research” at the Departamento de Estatística, Universidade de Sao Paulo (USP), Sao Paulo, Brazil, 4 Dec 2009.

Physics

J.R. Dennison presented an invited talk titled “It Glows! A Story of Persistence in Investigations of the Electroluminescence of JWST Composite Materials” at the USU Space Dynamics Laboratory Lunch and Learn Seminar in Logan, UT, 12 Feb 2010.

T. C. Shen presented a talk titled “Nanotechnology in Nature” at the BYU Physics Colloquium, Provo, UT, 24 Feb 2010.

T. C. Shen presented a talk titled “Participating Carbon Nanotubes” at the Space Applications Interchange Meeting at Aerospace Corp, Los Angeles, CA, 16 Mar 2010.

The Center for Atmospheric & Space Sciences

Ludger Scherliess, Donald C. Thompson, and Robert W. Schunk presented an invited talk titled “The USU GAIM Data Assimilation Models: Specification of the Low- and Mid-Latitude Ionosphere” at the National Radio Science (URSI) meeting, Boulder, CO, 6-9 Jan 2010.

The following papers were presented at the 90th American Meteorological Society meeting held in Atlanta, GA, 17-21 Jan 2010:

Robert W. Schunk, Ludger Scherliess, Jan J. Sojka, Donald C Thompson, and Lie Zhu. “Data Assimilation Models for Space Weather Application.”

Jan J. Sojka and Robert W. Schunk. “Practical 27-Day Plus Space Weather Forecasting.”

W. Kent Tobiska, Robert W. Schunk, and Jan J. Sojka. “The USU USTAR Space Weather Center.”

Ludger Scherliess presented a talk titled “Day-to-Day Variability in the Middle and Low Latitude Ionosphere” at the NASA/LWS Workshop on Ionosphere Variability, Fairbanks, AK, 18 Mar 2010.

The following talks were given at the Semi-annual GAIM Summit, held in Omaha, Nebraska, 6 Apr 2010:

Robert W. Schunk, Ludger Scherliess, Donald C. Thompson, Jan J. Sojka, and Lie Zhu. “Global Assimilation of Ionospheric Measurements (USU-GAIM).”

Ludger Scherliess and Donald C. Thompson. “Update on Full Physics GAIM (GAIM-FP).”

The following presentations were given at Space Weather Week, Boulder, CO, 27-30 Apr 2010:

Robert W. Schunk, Ludger Scherliess, Don C. Thompson, Jan J. Sojka, and Lie Zhu. “Operational Data Assimilation Models for Ionospheric Application.” (talk)

W. Kent Tobiska, Herbert C. Carlson, Robert W. Schunk, Jan J. Sojka, Don C. Thompson, Ludger Scherliess, Lie Zhu, and Larry Gardner. “Advanced Commercial Space Weather Products from the USU Space Weather Center.” (poster)

Faculty Publications

undergraduate* graduate**

Biology

Ethan P. White and Allen H. Hurlbert. 2010. The Combined Influence of the Local Environment and Regional Enrichment on Bird Species Richness. *American Naturalist* 172:E35-E43.

Joseph S. Wilson**, **James. P. Pitts**, and **Carol von Dohlen**. 2009. Surprising Lack of Genetic Variation among Isolated Populations of the Sand Dune Restricted Bee *Colletes stephensii* (Hymenoptera: Colletidae). *Journal of the Kansas Entomological Society* 82: 316-320 UAES no. 8012.

Eric M. Pilgrim**, **Kevin A. Williams****, D. G. Manley and **James P. Pitts**. 2009. Addressing the *Dasymutilla quadriguttata* Species-group and Species-complex (Hymenoptera: Mutillidae): Several Distinct Species or a Single, Morphologically Variable Species? *Journal of the Kansas Entomological Society* 82: 231-249 UAES no. 7989.

Mark W. Ellis**, **Jessie M. Roper***, **Rochelle Gainer***, **Joshua P. Der****, and **Paul G. Wolf**. 2009. The Taxonomic Designation of *Eriogonum corymbosum* var. *nilesii* (Polygonaceae) is Supported by AFLP and cpDNA Analyses. *Systematic Botany* 34: 693-703.

Stephane Boghossian, Karalee Lemmon, **MieJung Park**, and **David York**. 2009. High Fat Diets Induce a Rapid Loss of the Insulin Anorectic Response in the Amygdala. *Am J Physiol Regul Integr Comp Physiol* 297: R1302-1311, 2009. doi:10.1152/ajpregu.00252.2009.

Alison G. Scoville** and **Michael E. Pfrender**. 2010. Phenotypic Plasticity Facilitates Recurrent Rapid Adaption to Introduced Predators. *Proc. Natl. Acad. Sci.* 107:4260-4263.

Yuhoo Kim**, **MieJung Park**, **Stephane Boghossian**, and **David York**. 2010. Three Weeks Voluntary Running Wheel Exercise Increases Endoplasmic Reticulum Stress in the Brain of Mice. *Brain Res.* 1317: 13-23.

Cristine Krug, Isabel Alves dos Santos and **James Cane**. 2010. Visiting Bees of *Cucurbita* Flowers (Cucurbitaceae) with Emphasis on the Presence of *Peponapis fervens* Smith (Eucerini Apidae) Santa Catarina, Southern Brasil. *Oecologia Australis* 14(1): 128-139.

James Pitts, **David Tanner**, George Waldren, and Frank Parker. 2010. Facultative Size-dependant Sex Allocation in *Sphaerophthalma pennsylvanica* Lepeletier (Hymenoptera: Mutillidae) with New Host Records. *Journal of the Kansas Entomological Society*, 83: 68-75. UAES no. 8003.

Todd Campbell, Shaing Kwei Wang, Hui-Yin Hsu, **Aaron M. Duffy****, and **Paul G. Wolf**. 2010. Learning with Web Tools, Simulations, and Other Technologies in Science Classrooms. *Journal of Science Education and Technology* DOI 10.1007/s10956-010-9217-8.

David A. Tanner and P. Kirk Visscher. 2010. Does Imprecision in the Waggle Dance Fit Patterns Predicted by the Tuned-error Hypothesis? *Journal of Insect Behavior* 23: 180-188.

Cory A. Vorel and **Theresa L. Pitts-Singer**. 2010. The Proboscis Extension Reflex Not Elicited in Megachilid Bees. *Journal of the Kansas Entomological Society* 83: 80-83.

Chemistry & Biochemistry

Boris B. Averkiev, Leiming Wang, Wei Huang, Lai-Sheng Wang, and **Alexander I. Boldyrev**. 2009. Experimental and Theoretical Investigations of CB_8^- : Towards Rational Design of Hypercoordinated Planar Chemical Species. *Physical Chemistry Chemical Physics* 11:9840-9849.

Wei Huang, **Alina P. Sergeeva****, Hua-Jin Zhai, Boris B. Averkiev, Lai-Sheng Wang, and **Alexander I. Boldyrev**. 2010. A Concentric Planar Doubly Π -Aromatic B_{19}^- Cluster. *Nature Chemistry* 2: 202-206.

Jared K. Olson** and **Alexander I. Boldyrev**. 2009. Ab Initio Search for Global Minimum Structures of the Novel B_3H_y ($y=4-7$) Neutral and Anionic Clusters. *Inorganic Chemistry* 48:10060-10067.

Alina P. Sergeeva**, Boris B. Averkiev, and **Alexander I. Boldyrev**. 2010. All-Transition Metal Aromaticity and Antiaromaticity in *Metal-Metal Bonding*. *Structure and Bonding* book series. G. Parkin, ed.; Springer, Berlin/Heidelberg, 136: 275-306.

Dmitry Yu. Zubarev and **Alexander I. Boldyrev**. 2009. Multiple Aromaticity, Multiple Antiaromaticity, and Conflicting Aromaticity in Inorganic Systems in *Computational Inorganic and Bioinorganic Chemistry*, ed. Edward I. Solomon, Robert A. Scott and R. Bruce King, Chicester, UK: John Wiley & Sons, Ltd, pp. 551-562, ISBN 978-0-470-69997-3.

Katarzyna Grubel**, **Amy L. Fuller****, **Bonnie M. Chambers***, Atta M. Arif, and **Lisa M. Berreau**. 2010. O_2 -dependent Aliphatic Carbon-Carbon Bond Cleavage Reactivity in a Ni(II) Enolate Complex having a Hydrogen Bond Donor Microenvironment; Comparison with a Hydrophobic Analog. *Inorganic Chemistry* 49: 1071-1081.

James J. Danford**, Atta M. Arif, and **Lisa M. Berreau**. 2010. Thioester Hydrolysis Promoted by a Mononuclear Zinc Complex. *Inorganic Chemistry* 49: 778-780.

Katarzyna Grubel**, **Katarzyna Rudzka****, Atta M. Arif, and **Lisa M. Berreau**. 2010. Synthesis, Characterization, and Ligand Exchange Reactivity of a Series of First Row 3-Hydroxyflavonolate Complexes. *Inorganic Chemistry* 49: 82-96.

Tiago A.S. Brandao and **Alvan C. Hengge**. Phosphoryl and Sulfuryl Transfer. A chapter in *Comprehensive Natural Products II: Chemistry and Biology*; Mander, L., Lui, H.-W., Eds.; Elsevier: Oxford, 2010; volume 8, pp. 315-348.

Geology

Marlon M. Jean**, **John W. Shervais**, **Sung Hi Choi** and **Samuel B. Mukasa**. 2010. Melt Extraction and Melt Refertilization in Mantle Peridotite of the Coast Range Ophiolite: An LA-ICP-MS Study. *Mineralogy and Petrology* 159:113-136.

Mathematics and Statistics

J. Symanzik, W. Fischetti, I. Spence. 2009. Editorial: Commemorating William Playfair's 250th Birthday. *Computational Statistics* 24(4):551-566.

W. J. Morphet, **J. Symanzik**. 2010. The Circular Dataimage, a Graph for High-Resolution Circular-Spatial Data. *International Journal of Digital Earth* 3:47-71.

A. M. Dale, J. Strickland, B. Gardner, **J. Symanzik**, B. A. Evanoff. 2010. Assessing Agreement of Self-reported and Observed Physical Exposures of the Upper Extremity. *International Journal of Occupational and Environmental Health* 16(1):1-10.

T. L. Wilson, **J.B. Odei****, **M.B. Hooten**, and T.C. Edwards. 2010. Hierarchical Spatial Models for Predicting Pygmy Rabbit Distribution and Relative Abundance. *Journal of Applied Ecology* 47: 401-409.

R. T. Larsen, J. A. Bissonette, J. T. Flinders, **M. B. Hooten**, and T. L. Wilson. 2010. Summer Spatial Patterning of Chukars in Relation to Free Water in Western Utah. *Landscape Ecology* 25: 135-145.

Physics

Michelle M. Donegan, Jennifer L. Sample, **J.R. Dennison**, and **Ryan Hoffmann****. 2010. Coating-induced Charging of the Solar Probe Spacecraft: A Materials and Modeling Study of Environmental Extremes. *Journal of Spacecraft and Rockets* 47:134-146.

The Center for Atmospheric & Space Sciences

Inga Maslova, **Piotr Kokoszka**, **Jan J. Sojka**, and **Lie Zhu**. 2010. Statistical Significance Testing for the Association of Magnetometer Records at High-, Mid-, and Low Latitudes During Substorm Days. *Planetary and Space Science* 58:437-445.

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Jean Daddow, Geology; Erika Perkins, Mathematics & Statistics; Karalee Ransom, Physics; and
Melanie Oldroyd, The Center for Atmospheric & Space Sciences (CASS).



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also providing a forum for peers to follow one another's careers and professional development.



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