



*The Dean's Corner* —

As you will see from the masthead, *Science Scene* has now evolved into *Science Research Scene*, part of our efforts to make this publication a more effective vehicle for reporting the research activities of the faculty and students within the College of Science. Some features we are adding include a table showing data on research proposals submitted and grants received, and monthly highlights on research support services and instrumentation available in various departments and units in the College of Science and elsewhere on campus. If you are aware of instruments and services that other faculty might be interested in, please pass the word on to us so we can present this information in future issues.

As many of you are aware, we are preparing our first annual college research summary for calendar year 2003. This has taken a tremendous amount of time and effort on the part of the department heads and various faculty and staff members from each department, and I would like to thank you for your support. Here in the Dean's office, I would like to acknowledge the hard work of Joel Kincart and Colette Yates, who have been coordinating this effort. Once we get through this the first time, we will have a template and structure that we can readily use next year and we will certainly get our finished product out in a more timely fashion.

Please send any comments or suggestions related to the items above to me via email at <don.fiesinger@usu.edu>. Also, if there are other research-related issues that you would like to see presented in *Science Research Scene*, contact me as well.

*Don Fiesinger*

— COLLEGE OF SCIENCE CONTRACT AND GRANT ACTIVITY —

Dollar Amounts (# of proposals)	Feb 04	Mar 04	Totals for FY 04
Proposals Submitted	\$7,939,310 (16)	\$6,749,818 (20)	\$40,463,729 (167)
Awards Received	\$2,066,123 (12)	\$1,086,444 (11)	\$9,323,768 (108)

**Focus on Facilities—**

**USU's Electron Microscope Center Relocated and in Operation**

Last year, there was a major restructuring of the Electron Microscope Center and it was relocated from the Department of Biology to its new location in the Utah Veterinary Diagnostics Lab. The new center, now in operation for over six months, houses three operating instruments: a Zeiss Transmission Electron Microscope (TEM) and two Scanning Electron Microscopes (SEMs). Technical assistance is available. The EM Center is located in the Utah Veterinary Diagnostic Laboratory, 950 East 1400 North (immediately east of the Motor Pool). For more information about the equipment and services available, please contact Beverly Wareham at 797-1895.

<i>Contents</i>	
Dean's Corner .....	1
College Business & News .....	2
Department Business & News .....	4
Presentations at Meetings .....	5
Publications .....	7
Grants .....	9
Awards & Honors .....	9

### Technology Commercialization Office

Has your research lead to a product that is ready to license, or a technology that you would like to test for commercial appeal? The University's Technology Commercialization Office (formerly the Office of Technology Management and Commercialization) provides all aspects of commercial development and licensing of your creative work, beginning with the potential of an idea and assisting you through marketing of the invention or technology, contract negotiation, and even business formation. The TCO offers a list of marketable technologies that are available to license. Visit their website ([www.usu.edu/techcomm](http://www.usu.edu/techcomm)) to see how USU faculty members and students turned non-patented technology into successful companies.

<p>Contacts:</p> <p><i>Life Sciences Commercialization</i> Carole Golden, Manager On-campus office: Center for Integrated BioSystems, Room 307 (Tuesdays only) Office: 797-9603 Email: <a href="mailto:carole.golden@usurf.usu.edu">carole.golden@usurf.usu.edu</a></p> <p><i>Physical Sciences Commercialization</i> Raymond DeVito, Manager On-campus office: EN 413N Office: 797-9615 Cell: 881-3689 Email: <a href="mailto:ray.devito@usurf.usu.edu">ray.devito@usurf.usu.edu</a></p>
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Both can be contacted at the Technology Commercialization Office, USU Research Foundation, 570 Research Park Way, Suite 101, North Logan, UT 84341.

### College of Science Technician Services

For assistance with a broad range of technical services, electronics troubleshooting, and repairs of scientific instrumentation, contact **Buckley Banham**, Electronic Technician in the Department of Chemistry and Biochemistry. The Electronics Shop is capable of designing and building custom circuits and programs, and working with

temperature controllers, autosampler controllers, Matlab programs, power line monitors, amplifiers, dataloggers, autoclaves, centrifuges, spectrometers, balances, thermocyclers, power supplies, pH meters, and multimeters, among other things. The shop can also assist with networking problems and install, configure, and maintain instrumentation software or operating systems. "We're available for technical questions, recommendations on companies with good reputations, advice on economical methods, and training on equipment," Banham says. Labor is free for any department within the College of Science. Contact Banham at 797-1614 or [beb@cc.usu.edu](mailto:beb@cc.usu.edu).

### USU to Host Regional ACS Meeting

The USU Department of Chemistry & Biochemistry will be hosting a joint regional American Chemical Society (ACS) Meeting 6-9 June 2004. This meeting is expected to bring some 500 chemistry faculty, students, and industrial researchers to campus. The meeting will include 116 posters and 160 oral presentations in a number of different symposia and an industrial exposition.

Symposia will include topics such as: New Frontiers in Chemical Bonding in the 21<sup>st</sup> Century, Advanced Methods for Monitoring Air Pollutants, Protein-Nucleic Acid Interactions, Recent Advances in the Development and Synthesis of Bioactive Compounds, and Analytical Chemistry at the Interface with Biology. Workshops will include a hands-on program for high school teachers and an Infrared and Raman Spectroscopy Seminar. For job seekers, there will be several professional development workshops sponsored by the ACS Career Resource Center. The plenary session, Chemistry at the Intersection of Microelectronics, Biology, and Nanotechnology, will be given by Dr. Robert Hamers, Helfaer Professor of Chemistry at the University of Wisconsin, Madison, on Sunday, 6 June 2004, at 7:00 PM.

Industrial Innovation Awards will be presented to research groups from PNNL and ATK Thiokol.

The General Chair for the meeting is **Steve Scheiner** and the Program Chair is **Alex Boldyrev**. Exhibit Chairs are **Dennis Fife** and **Glen Thornley**, and Abstract Management is **Anastassia Alexandrova**. For information and to register, visit [www.chem.usu.edu/~alexandrova/ACS.php](http://www.chem.usu.edu/~alexandrova/ACS.php).

### Visiting Scholar Profile: Dr. Wopke van der Werf

**Dr. Wopke van der Werf** is a visiting international scholar from Wageningen University, The Netherlands, where he is an associate professor in plant sciences in the Crop and Weed Ecology Group. He is working with **Dr. James Powell**, Department of Mathematics and Statistics, and **Dr. Ted Evans**, Department of Biology, on research pertaining to the biological control of insects in an agricultural environment.

This ongoing collaboration began in the mid-90s, and after van der Werf spent time here at USU on a sabbatical, the work continued when Dr. Powell visited Wageningen University on a sabbatical in 1999.

"Our shared interest is in the spatial dynamics of pests, diseases, and their natural enemies in agro-ecosystems," says van der Werf. "Jim is very strong in mathematical modeling of spatial dynamics, while my expertise is more at the experimental side and the crop protection issues involved." Ted Evans, in turn, is a ladybeetle expert, and these are important natural enemies of aphids, for instance, in the alfalfa growing in Cache Valley.



### Various Campus Grants Announced

The College of Science would like to acknowledge and congratulate the following recipients of various on-campus research grants:

#### Community/University Research Initiative (CURI)

**Michelle A. Baker (Biology)**

Effect of Reservoirs on Nutrient Uptake and Surface-Groundwater Exchange in Utah Streams

**Vladimir A. Kulyukin (Computer Science)**

A Robotic Guide for the Visually Impaired in Dynamic and Complex Indoor Environments

**Donald W. Roberts and Ted Evans (Biology)**

Biological Control of Mormon Crickets and Grasshoppers in Utah

**Randall Martin (CEE) and Philip J. Silva (Chem & Biochem)**

Emissions of Particulate and Particulate-Forming Gaseous Species in Cache Valley

**Jon Y. Takemoto and Bradley R. Kropp (Biology)**

Man-Made Snow: Biological Impact at Utah Ski Venues

#### Water Initiative Grants

**David Chandler (PSB), Michelle Baker (Biology), Janis Boettinger (PSB), and Helga Van Miegroet (AWER):**

A Preliminary Investigation of Climate Change Impacts on Soil Water and Carbon Dynamics

**Michael Gooseff (AWER), James Evans, Pete Kolesar, and Tom Lachmar (Geology)**

Hydrologic Contributions from Springs on the Logan River, Utah

#### Center for Integrated Biosystems (CIB) Seed Grants

**Ann Aust and David Farrelly (Chem & Biochem)**

Metabolomic Analysis of Asbestos Treated and Untreated Human Lung Epithelial Cells

**Charlie Miller and Anne Anderson (Biology)**

Genomic Size and Plasmid Analysis of Mycobacteria Isolates with Bioremediation Potential

**Ron Sims (CEE), Jon Takemoto, Joanne Hughes, Michael Pfrender (Biology) and Adele Cutler (Math & Stat)**

Developing Approaches to Study Genomic Variation in Natural Populations

**Karen Mock (FRWS), Jon Takemoto (Biology), and Dong Chen (CIB)**

Membrane Raft Proteomics: The Influence of Lipid Structure

**Michelle Grilley (Biology), Marie Walsh (NFS), and Emily Stone (Math & Stat)**

Capture and Realtime Detection of Food Pathogens

#### New Faculty Research Grants

**Robert F. Erbacher (Computer Science)**

Scalable Intrusion Detection and Analysis Techniques

**Joan M. Hevel (Chem & Biochem)**

Profiling Protein Arginine Methylation in Mammalian Cells

**SeungJim Lim (Computer Science)**

Discovering Highly Authoritative Knowledge Services for the Web

**M. K. Stephen Yeung (Math & Stat)**

Reverse Engineering Gene Networks for Efficient Drug Development

## Department of Biology

Utah Public Radio aired the following "Quick Fact" ~ "Our tongues have taste receptors for sweet, sour, salty, and bitter. But Utah State's **Tim Gilbertson** has now discovered a taste receptor for fat. When we foraged for wild plants and animals, our fat taste buds led us to the most energy dense food available, he says. Now that we forage through grocery aisles for food, fat substitutes haven't become more popular because they don't fool our tongues. They imitate the texture of fat, but not the taste."

**Mary Barkworth** and **Michael Piep** offered a beginners' workshop on grasses at the Intermountain Herbarium on Saturday, 31 January 2004; nineteen people participated. The workshop was co-sponsored by The Intermountain Herbarium and the Cache Chapter of the Utah Native Plants Society. Several workshops are planned in upcoming months; the complete schedule is available at <http://herbarium.usu.edu>.

**Andy Anderson** was honored with a "Top Professor" award from the Mortar Board National Honor Society on 23 March 2004. He was nominated by **Aaron Brown** who states that Andy "stands alone as the best teacher I have had in four years of college."

**Joe Li** was an invited participant at the 2004 NATURE Forum on "A Biomedical Alliance: China and CA/US" sponsored by Nature at the Price Center, University of California-San Diego, 30 March 2004. He participated in the discussion on Biotechnology and Medicine in China; development and strategies of US/China partnership; and perspectives to forge a Pacific Rim biomedical alliance. The publisher of Nature has asked Joe to assist in the distribution of Nature to various investigators in this region. Nature will also send two of its senior editors to the two international symposia in Beijing and Shanghai that Joe is helping to organize.

### *Student Activities*

Two USU students (all from the College of Science) presented their research at Posters on the Hill in Washington, DC, 20 April 2004. **Glen de Guzman**, an undergraduate researcher in **Michelle Baker's** lab, presented a poster as well as **Colin Clark** (not a Biology major) who is working with **Kim Sullivan** on the NSF ADVANCE grant.

**Megan George**, an undergraduate researcher in the **Tim Gilbertson** lab, received a travel award from the USU Academic Opportunity Fund to attend the annual meeting of the Association for Chemoreception Sciences in Sarasota, Florida, 21-25 April 2004. She is a co-author on a presentation titled "Fatty Acids Inhibit Delayed Rectifying K Channels in Isolated Trigeminal Neurons" with **Tim Gilbertson**, **Jeff Klein**, and **Jeremy Guenter**.

**Stephanie Chambers** received an URCO grant for her proposal "Unknown Transcription Factor 'Protein II' Plays Unique Role in Cardiovascular Disease." Stephanie is doing research in the lab

of **Dr. Joan Hevel**, Assistant Professor in the Department of Chemistry and Biochemistry.

Biology senior **Stephanie Chambers** has been awarded a Goldwater Scholarship for the 2004-2005 academic year. Stephanie is a pre-med student who plans on pursuing an MD/PhD. The scholarship is awarded to highly qualified students who want a career in science, mathematics, and engineering. Scholars were chosen on academic merit from a national field of 1,113 students; 310 students received the scholarship.

**Glen de Guzman** won first prize for his poster at the 1st Annual Spring Runoff Conference sponsored by the Water Initiative at Utah State University, Logan, Utah, 25-26 March 2004.

Public Health undergraduate **John Wennergren** received the "Outstanding Student" award from the Utah Section of the American Industrial Hygiene Association (AIHA). John accepted a certificate and a check for \$200 at AIHA's luncheon in Salt Lake City, 31 March 2004. The award is given annually to the top industrial hygiene students in Utah graduate and undergraduate programs.

## Department of Computer Science

### *Student Activities*

**Pankaj Gupta** and **Vicki H. Allan** prepared two papers for the Indian International Conference on Artificial Intelligence (IICAL-03) held in Hyderabad, India, 18-20-December 2003. Pankaj Gupta gave the presentations titled "Performance Analysis of an Acyclic Genetic approach to Learn Bayesian Network Structure" and "The Acyclic Bayesian Net Generator."

## Department of Geology

### *Student Activities*

**Angela Isaacs** was awarded a 2004 Internship in Scientific Drilling by DOSECC (Drilling, Observation, Sampling of the Earth's Continental Crust). \$5,000. April 2004.

**Angela Issacs** received a graduate fellowship from the National Science Foundation East Asia & Pacific Summer Institutes (EAPSI). International airfare, living expenses in the host location, and a summer stipend are provided. April 2004.

**Benjamin Kessel** was awarded a grant from the Evolving Earth Foundation in the amount of \$3,000 for his research on "Sequence Stratigraphy of Lower Paleozoic Facies, Ordos Basin, North China."

**Alex Steely** received a grant from the Geological Society of America in the amount of \$900 to support his MS thesis research.

## — Presentations at Meetings —

### Department of Biology

**Timothy A. Gilbertson** presented a seminar titled “Taste Transduction and Its Regulation” to the Neuroscience and Obesity/Endocrine Divisions of Eli Lilly Corporation, Indianapolis, Indiana, 14-15 April 2004.

**Christelle N. Guedot** presented a talk titled “Vertical Versus Horizontal Proximal Landmarks in Nest Location by the Solitary Bee *Magachile rotundata* (Hymenoptera: Megachilidae)” at the Sixth Annual Intermountain Paper and Poster Symposium, Logan, Utah, 4 March 2004. Christelle also won second place in the College of Science paper competition.

**Joseph R. Mendelson III** gave an invited seminar titled “Historia Natural Evolutiva de los Sapos de Mesoamérica” at the Departamento de Ciencias Biológicas, Pontificia Universidad Católica del Ecuador, Quito, Ecuador, 9 March 2004. This is the first seminar Joe has given entirely in Spanish!

**Charles D. Miller, Ronald C. Sims, and Anne J. Anderson** presented a paper titled “Are Plant Root-Mycobacterium Interactions Beneficial in Remediation of Polyaromatic Hydrocarbons?” at the Joint Interagency Phytoremediation Research Program Principal Investigators Workshop, Arlington, Virginia, 20-21 January 2004.

**Scott T. A. Newbold and James A. MacMahon** presented a poster titled “Invertebrate Conservation and Cows: The Influence of Livestock Grazing on Ant Community Structure in a Shrub-Steppe Ecosystem” at the Ninth Annual Spring Symposium titled “Expanding the Ark: The Emerging Science and Practice of Invertebrate Conservation,” New York, New York, 25-26 March 2004.

**Theresa L. Pitts-Singer** gave an invited talk titled “New Researcher Overview and A New View of Pollen Balls” at the Pioneer HiBred International Seed Growers Meeting, Caldwell, Idaho, 30 April 2003.

**Theresa L. Pitts-Singer** gave an invited talk titled “Studies of Cavity-nesting Bees Managed for Crop Pollinations” to the Department of Entomology, University of Georgia, Athens, Georgia, 1 December 2003.

**Vijendra K. Singh** gave an invited talk titled “Autism, Vaccines, and Immune Reactions” at a special conference on Immunization Safety Review Committee on Vaccines and Autism sponsored by the Institute of Medicine of the National Academy of Sciences, Washington, DC, 9 February 2004.

**Paul G. Wolf** gave an invited talk titled “Using Complete Genome Data to Infer Phylogeny and Patterns of Genome Evolution in Plants” to the Utah State University Center for Integrated Biosystems and the Department of Biology, Logan, Utah, 8 September 2003.

**Paul G. Wolf** gave an invited talk titled “RNA Editing in a Fern Chloroplast Genome” to The National Institute for Basic Biology in Okazaki, Japan, 21 December 2003.

The following presentations were made at the 10<sup>th</sup> Annual Whirling Disease Symposium, Salt Lake City, Utah, 2-3 March 2004:

**Valerie Hubbard and Nabil Youssef** presented a poster titled “Detection of *Myxobolus cerebralis* Myxospores in Fish Tissue Homogenate by ELISA.”

**Carey Wicks and Nabil Youssef** gave a talk titled “Detection of *Myxobolus cerebralis* Myxospores and Trophozoites in Fish Tissue Using Monoclonal Antibodies.”

The following presentations were made at the 1<sup>st</sup> Annual Spring Runoff Conference sponsored by the Water Initiative at Utah State University (<http://www.usu.edu/water/conference>), Logan, Utah, 25-26 March 2004:

**Michelle Baker** gave a talk titled “Nutrient Spiraling: A Useful Concept That Provides Important Tools for Aquatic Ecologists and Water Quality Managers.”

**Chris Arp** gave a talk titled “Using Hydrogeomorphic Templates in Aquatic Ecosystem Science and Management: Examples from the Rocky Mountain West.”

**Glen de Guzman and Michelle Baker** presented a poster titled “The Effects of Benthic Algae Communities on Nutrient Uptake in a Mountain Stream.”

The following presentations were given at the 26<sup>th</sup> Annual Meeting of the Association for Chemoreception Sciences in Sarasota, Florida, 21-26 April 2004:

**Catherine A. Burks, Dane R. Hansen, and Timothy A. Gilbertson.** “Quantitative PCR Analysis of the Aldosterone-Regulated Salt Transduction Pathway in Taste Cells.”

**Timothy A. Gilbertson, Jeffrey T. Klein, Megan Farmer-George\*, Dane R. Hansen, and Sidney A. Simon.** “Free Fatty Acids Inhibit Delayed Rectifying K Channels in Isolated Trigeminal Neurons.” (\*undergraduate researcher)

**Dane R. Hansen and Timothy A. Gilbertson.** “Expression of Delayed Rectifying K Channels in Taste Cells of Obesity-Prone and -Resistant Rats.”

**Jeffrey T. Klein, Jeremy Guenter\*, Allison Rosenthal\*, and Timothy A. Gilbertson.** “The Pore-Forming Antibiotic Nystatin Inhibits Taste Cell K Currents in Perforated Patch Recordings.” (\*undergraduate researchers)

**Kristina J. Spray, Arian Baquero, and Timothy A. Gilbertson.** “The Cellular and Molecular Basis for Water Taste in Mice.”

### Center for Atmospheric & Space Sciences

**Robert W. Schunk, Ludger Scherliess, Jan J. Sojka, Don C. Thompson, David N. Anderson, Mihail Codrescu, Cliff Minter, Timothy J. Fuller-Rowell, Rod A. Heelis, Marc Hairston, and Bruce M. Howe** presented a paper titled “Global Assimilation of Ionospheric Measurements (GAIM)” at the 2004 National Radio Science Meeting, Boulder, Colorado, 5-8 January 2004.

## — Presentations at Meetings, Continued —

**Thomas Wilkerson** gave a talk titled “Particle and Gas Clouds: Automated Analysis of Visible and Infrared Imagery” at Dugway Proving Ground, Tooele, Utah, 12 February 2004.

### Department of Chemistry & Biochemistry

The following talks were presented at the Hawaii International Conference on Sciences, Honolulu, Hawaii, 15-18 January 2004:

**Tapas Kar and Steve Scheiner.** “Effect of Solvents on C-H···O Hydrogen Bond: A Theoretical Study.”

**Tapas Kar, Brahim Akdim, Xiaofeng F. Duan and Ruth Pachter.** “Gas-phase acidity of Carboxylated Single-wall Carbon Nanotubes.”

**Jayasree Pattanayak, Tapas Kar and Steve Scheiner.** “Theoretical investigation of mono BN-substituted lower fullerenes  $C_n$ , where  $n = 20, 24, 28, 32, 36$  and  $40$ .”

### Department of Computer Science

**SeungJin Lim and Yiu-Kai Ng** presented a paper titled “Change Discovery of Hierarchically Structured, Order-Sensitive Data in HTML/XML Documents” at the International Symposium on Applications and the Internet (SAINT2004), Tokyo, Japan, 29 January 2004. (This paper was published in the Conference Proceedings for the International Symposium on Applications and the Internet (SAINT 2004): pp 178-187.)

**Sreeknth S. Nemani and Vicki H. Allan** presented a paper titled “Agents and the Algebra of Emotion” at the Second International Joint Conference on Autonomous Agents and Multitagent Systems (AAMAS 2003), Melbourne, Australia, 14-18 July 2003. (Presented by Vicki H. Allan)

### Department of Geology

**Allen J. Dennis and John W. Shervais** presented a talk titled “Ca. 626 Ma To 619 Ma Pen Branch/Deep Rock Volcanic Arc Terrane Underlying the U.S. D.O.E. Savannah River Site, South Carolina” at the Geological Society of America Southeastern-Northeastern Section Meeting, Tysons Corner, Virginia, 25-27 March 2004. *Geological Society of America Abstracts with Programs*, v. 36/3, Abstract No. 70963.

The following talk, posters, and papers were presented at the Geological Society of America, Rocky Mountain and Cordilleran Combined Section Meeting, Boise, Idaho, 3-5 May 2004:

**Matthew F. Cooke and John W. Shervais.** Poster. “Geologic Map of the Dietrich, Dietrich Butte, and Owinza 7.5' Quadrangles, Twin Falls Urban Area, Idaho: EDMAP.” *Geological Society of America Abstracts with Programs*, v. 36/4, 20.

**W. Scott Cragun and Joel L. Pederson.** Poster. “Linking Gully Erosion to Precipitation Intensity and Magnitude—a Two Year Record at Lees Ferry, Arizona.”

**Robert D. Mackley and Joel L. Pederson.** Poster. “Large-scale Geologic Control of the Colorado River’s Profile Through Glen and Grand Canyons, Utah and Arizona—Testing J.W. Powell’s Hypothesis.”

**Scott H. Matthews and John W. Shervais.** Poster. Volcanic Stratigraphy of the Central Snake River Plain Near Shoshone, Idaho: The Owinza Butte, Star Lake, and Shoshone Southeast 7.5' Quadrangles: EDMAP.” *Geological Society of America Abstracts with Programs*, v. 36/4, 20.

**Prosper M. Nube and John W. Shervais.** Paper. “Petrology and Geochemistry of Deformed Carbonatite and Nepheline-Syenite Gneiss in the Pan-African Dahomeyide of Southeastern Ghana, West Africa.” *Geological Society of America Abstracts with Programs*, v. 36/4, 8.

**Joel L. Pederson and Ronald C. Counts.** Poster. “Paleoflooding and Integration of the Green River over the Uinta Mountains—Information from New Surficial Mapping.”

**John W. Shervais, Dennis Geist, Scott S. Hughes, Scott K. Vetter, and Barry B. Hanan.** Paper. “Intermediate Depth Drilling of the Snake River Plain: Tracking the Yellowstone Hotspot (?) Through Space and Time: A Call to Action.” *Geological Society of America Abstracts with Programs*, v. 36/4, 99.

**John W. Shervais, Scott K. Vetter, and Barry B. Hanan.** Paper. “Basaltic Volcanism of the Central Snake River Plain, Idaho.” *Geological Society of America Abstracts with Programs*, v. 36/4, 98.

**Scott K. Vetter, John W. Shervais, and Barry B. Hanan.** Paper. “Evidence for Mixed Asthenosphere-Lithosphere Sources for Basalts of the Eastern Snake River Plain, Idaho.” *Geological Society of America Abstracts with Programs*, v. 36/4, 98.

**Scott K. Vetter, John W. Shervais, and Barry B. Hanan.** Poster. “Geochemical Variations in the Basaltic Volcanism of the Bruneau-Jarbidge Eruptive Center and Its Surroundings, Southwest, Idaho.” *Geological Society of America Abstracts with Programs*, v. 36/4, 95.

**Meghan L. Zarnetske and John W. Shervais.** Poster. “Plagioclase Flotation Cumulate in Ferrobasalts of the Western Snake River Plain: Implications for Evolution of Planetary Magma Oceans.” *Geological Society of America Abstracts with Programs*, v. 36/4, 95.

### Department of Mathematics & Statistics

**LeRoy B. Beasley** gave a talk titled “Tournaments, Primitivity, and Preservers” at the 35<sup>th</sup> Southeastern International Conference on Combinatorics, Graph Theory and Computing, at Florida Atlantic University, Boca Raton, Florida, 3 March 2004.

## — Presentations at Meetings, Continued —

7

**Juergen Symanzik** gave a talk titled “Visualizing the Spread of West Nile Virus” Invited Poster at the 2003 Joint Statistical Meetings (ASA), San Francisco, California, 3 August 2003.

**Francois van Heerden** gave an invited talk titled “Some Multiplicity Results for Asymptotically Linear Problems in  $\mathbb{R}^N$ ” at a special session on Nonlinear Partial Differential Equations and Variational Problems of the Joint Meeting of AMS-MAA, Phoenix, 22 January 2004.

### Department of Physics

**T. C. Shen** presented a colloquium titled “Surface Science, Quantum Transport and Stom-Scale Electronics” at Idaho State University, Pocatello, Idaho, 9 February 2004.

**Sterling Smith with J. R. Dennison.** “The Embedded Ring Approach Applied to Graphitic Amorphous Carbon,” Utah Posters on the Hill: Undergraduate Research at the State Capitol, Salt Lake City, Utah, 22 January 2004.

## — Publications —

### Department of Biology

**Michelle A. Baker and Philippe Vervier.** 2004. Hydrological Variability, Organic Matter Supply, and Denitrification in the Garonne River Ecosystem. *Freshwater Biology* 49:181-190.

**Roger A. Bannister, Karim Melliti, and Brett A. Adams.** 2004. Differential Modulation of Cav2.3 Ca<sup>2+</sup> Channels by Gq/11-Coupled Muscarinic Receptors. *Molecular Pharmacology* 65:381-388.

**Mary S. Booth, Martyn M. Caldwell, and John M. Stark.** 2003. Overlapping Resource Use in Three Great Basin Species: Implications for Community Invasibility and Vegetation Dynamics. *Journal of Ecology* 91:36-48.

**Mary S. Booth, John M. Stark, and Martyn M. Caldwell.** 2003. Inorganic N Turnover and Availability in Annual- and Perennial-dominated Soils in Northern Utah Shrub-Steppe Ecosystem. *Biogeochemistry* 66:311-330.

**Thomas N. Buckley, Keith A. Mott, and Graham D. Farquhar.** 2003. A Hydromechanical and Biochemical Model of Stomatal Conductance. *Plant, Cell and Environment* 26:1767-1786.

**Luis Canseco-Márquez, Guadalupe Gutiérrez-Máyen, and Joseph R. Mendelson III.** 2003. Distribution and Natural History of the Hylid Frog *Hyla xera* in the Tehuacan-Cuicatlan Valley, Mexico, with a Description of the Tadpole. *The Southwestern Naturalist* 48:670-675.

**Chris R. Feldman and James F. Parham.** 2004. Molecular Systematics of Old World Stripe-Necked Turtles (Testudines: *Muaremys*). *Asiatic Herpetological Research* 10:28-27.

**Stephanie A. Gardner and Joseph R. Mendelson III.** 2003. The Diet of the Leaf-nosed Snakes, *Phyllorhynchus* (Squamata: Colubridae): Squamate-egg Specialists. *The Southwestern Naturalist* 48:550-556.

**Charles T. Hanifin, Edmund D. Brodie III, and Edmund D. Brodie, Jr.** 2004. A Predictive Model to Estimate Total Skin Tetrodotoxin in the Newt *Taricha granulosa*. *Toxicol* 43(3):243-249.

**Caroline Y. Ivans, A. Joshua Leffler, Usha Spaulding, John M. Stark, Ron J. Ryel, and Martyn M. Caldwell.** 2003. Root Responses and Nitrogen Acquisition by *Artemisia tridentata* and *Agropyron desertorum* Following Small Summer Rainfall Events. *Oecologia* 134:317-324.

**William P. Kemp, Jordi Bosch, and Brian Dennis.** 2004. Oxygen Consumption During the Life Cycles of the Prepupa-Wintering Bee *Megachile rotundata* and the Adult-Wintering Bee *Osmia lingnaria* (Hymenoptera: Megachilidae). *Annals of Entomology Society of America* 97(1):161-170.

**Frank J. Messina and Ashley J. Bloxham.** 2004. Plant Resistance to the Russian Wheat Aphid: Effects on a Non-target Aphid and the Role of Induction. *Canadian Entomologist* 136:129-137.

**David Peak, Jevin D. West, Susanna M. Messinger, Keith A. Mott.** 2004. Evidence for Complex, Collective Dynamics and Emergent, Distributed Computation in Plants. *Proceedings of the National Academy of Sciences* 101:918-922. (This article was also featured in the News section of *Nature*, <http://www.nature.com/nsu/040119/040119-5.html>. It will also be covered in an upcoming issue of *Science News*.)

**Michael E. Pfrender, Justin Hicks, and Michael Lynch.** 2004. Biogeographic Patterns and Current Distribution of Molecular-genetic Variation Among Populations of Speckled Dace, *Rhinichthys osculus* (Girard). *Molecular Phylogenetics and Evolution* 30:490-502.

**Jennifer B. Pramuk and Joseph R. Mendelson III.** 2003. *Anaxyrus melancholicus* Tschudi: A Synonym of the Mexican Taxon *Bufo compactilis* Wiegmann. *The Southwestern Naturalist* 48:676-680.

**Joseph C. Shope, Daryll B. DeWald, and Keith A. Mott.** 2003. Changes in Surface Area of Intact Guard Cells Are Correlated with Membrane Internalization. *Plant Physiology* 133:1314-1321.

# — Publications, Continued —

**Vijendra K. Singh and Wyatt H. Rivas.** 2004. Prevalence of Serum Antibodies to Caudate Nucleus in Autistic Children. *Neuroscience Letters* 355:53-56.

**John M. Stark and Stephen C. Hart.** 2003. UV-B Radiation and Soil Microbial Communities. *Nature* 423:137-138.

**Kevin V. Young, Edmund D. Brodie, Jr., and Edmund D. Brodie III.** 2004. How the Horned Lizard Got Its Horns. *Science* 304:65. This paper has also caught the attention of the media and has been reported on by *Science News*, *Science Online*, and the *Canadian Broadcasting Co.* (CBC) interviewed E.D. Brodie III on 5 April 2004.

## Department of Chemistry & Biochemistry

**Alex I. Boldyrev, Lai-Shen Wang, Hua-Jin Zhai, Anastassia N. Alexandrova, Kelly Alex Birch.** 2003. Hepta- and Octacoordinated Boron in Molecular Wheels of Eight- and Nine-Atom Boron Clusters: Observation and Conformation. *Angewandte Chemie International Edition* 42:6004-6008.

## Department of Geology

**John W. Shervais, David L. Kimbrough, Paul Renne, Bonita Murchey, and Barry B. Hanan.** 2004. Multi-stage Origin of the Coast Range Ophiolite, California and Oregon: Implications for the Life Cycle of Supra-subduction Zone Ophiolites. *International Geology Review*, v. 46/4, p. 289-315.

**John W. Shervais, Gaurav Shroff, Scott K. Vetter, Scott K. Matthews, Barry B. Hanan, and James J. McGee.** 2002. Origin of the Western Snake River Plain: Implications from Stratigraphy, Faulting, and the Geochemistry of Basalts near Mountain Home, Idaho. in Bill Bonnicksen, C.M. White, & Michael McCurry (eds) *Tectonic and Magmatic Evolution of the Snake River Plain Volcanic Province*, Idaho Geological Survey Bulletin 30, Moscow, Idaho, 343-361. [Note: Paper above dated 2002, but actually published April 2004.]

## Department of Mathematics & Statistics

**LeRoy B. Beasley and Cora L. Neal.** 2004. A Note on the Distribution of Cycles in Random  $r$ -Regular Directed Graphs. *Congressus Numerantium* 163:141-143.

**LeRoy B. Beasley and Cora L. Neal.** 2004. Properties of 2-Primitive Tournament Digraphs. *Congressus Numerantium* 163:33-40.

**Jayne Brim-Box, Robert R. Gillies, Eli J. Rodemaker, Juergen Symanzik.** 2003. Effects of Urbanization on the Aquatic Fauna of the Line Creek Watershed, Atlanta - A Satellite Perspective. *Remote Sensing of Environment* 86:3, 411-422.

**Agnieszka Jach and Piotr Kokoszka.** 2004. Subsampling Unit Root Tests for Heavy-tailed Observations. *Methodology and Computing in Applied Probability* 6:73-97.

**Piotr Kokoszka, Istvan Berkes, and Lajos Horvath.** 2004. Weighted Goodness-of-Fit Test for GARCH(1,1) Specification. *Lithuanian Mathematical Journal* 44:1-17.

**Piotr Kokoszka, Gilles Teyssiere and Aonan Zhang.** 2004. Confidence Intervals for the Autocorrelations of the Squares of GARCH Sequences. *Lecture Notes in Computer Science* 3039:837-844.

**Piotr Kokoszka and Michael Wolf.** 2004. Subsampling the Mean of Heavy-tailed Dependent Observations. *Journal of Time Series Analysis* 24:217-134.

**James A. Powell and Niklaus E. Zimmermann.** 2004. Multi-Scale Analysis of Seed Dispersal Contributes to the Resolution of Reid's Paradox, *Ecology* 85(2):490-506.

**Xiaofeng Ren and Juncheng Wei.** 2004. Chiral Symmetry Breaking and the Soliton-stripe Pattern in Langmuir Monolayers and Smectic Films. *Nonlinearity* 17:617-632.

**Xiaofeng Ren and Juncheng Wei.** 2004. The Soliton-Stripe Pattern in the Seul-Andelman Membrane. *Physica D* 188:277-291.

**Zhi-Qiang Wang and Chang-Shou Lin.** 2004. Symmetry of Extremal Functions for the Caffarelli-Kohn-Nirenberg Inequalities. *Proceedings of the American Mathematical Society* 132:1685-1691.

## Department of Physics

**Charles Torre.** 2003. The Helically-Reduced Wave Equation as a Symmetric Positive System. *Journal of Mathematical Physics* 44:6223-6232.

## — Grants —

### Department of Biology

#### **Terry Griswold**

The Yosemite Fund

1 January 2004 to 31 March 2007, \$172,036

“The Native Bees of Yosemite National Park.”

#### **Terry Griswold**

Clark County, Nevada, Desert Conservation Program

1 February 2004 – 31 March 2006, \$208,611

“Biogeography and Pollination Biology of Native Bees in the Eastern Mojave Desert.”

#### **Carol D. von Dohlen and D.A.J. Teulon**

National Science Foundation

1 December 2003 – 31 December 2004, \$48,000

“Evolution of Life Cycles and Host Associations and the Historical Biogeography of Aphids (subfamily Aphidinae).”

#### **Carol D. von Dohlen**

USDA Forest Service

1 July 2003 – 30 September 2004, \$40,000

“Molecular Characterization of Bacterial Endosymbiont Diversity in Hemlock Woolly Adelgid (*Adelges tsugae*).”

### Department of Chemistry & Biochemistry

#### **Lance C. Seefeldt**

National Institutes of Health

1 April 2004 to 31 March 2008, \$1.1 Million

“Nitrogenase Mechanism.”

### Department of Computer Science

#### **Heng-Da Cheng**

Utah Department of Transportation (UDOT)

1 March 2004 to 1 June 2005, \$75,650

“Automated Real-Time Pavement Crack Detection/Classification System.”

### Department of Geology

#### **Joel Pederson**

National Science Foundation, Geology and Paleontology

1 January 2004 to 31 December 2006, \$248,913

“Geomorphic and Geochronologic Study in and near Grand Canyon-Testing Landscape Responses to Climate Change and Exploring the Paleo-longitudinal Profile of the Colorado River.”

#### **Joel Pederson**

U. S. Geological Survey EDMAP

1 May 2004 to 30 April 2005 \$14,500

“Surficial Geologic Mapping in Central Browns Park, Utah and Colorado-Building Upon Previous EDMAP Results.”

### Department of Physics

#### **Charles Torre**

National Science Foundation

1 August 2003 to 1 August 2006, \$90,000

“Research in Classical and Quantum Gravitation.”

## — Awards & Honors —

### Department of Biology

The 27 April 2004 Science Section of *The New York Times* ran an article on the evolution of horns that featured the research done by **Kevin Young and Butch Brodie, Jr.** (Utah State University) and **Butch Brodie III** (Indiana University) (<http://www.nytimes.com/2004/04/27/science/27LIZA.html>) and posted on the news board outside BNR 123). The article references the paper published by Young et al. in the 2 April 2004 *Science* that discusses the evolution of the horns of a horned lizard. This paper has received quite a bit of attention and has also been featured on Canada’s Discover Channel, as well as the Canadian Broadcasting Company (CBC) Radio. Kevin is a USU graduate student in the lab of Butch Brodie, Jr.

**Carol von Dohlen** received a \$2,000 Gardner Junior Faculty Travel Fellowship for travel to New Zealand.

### Department of Chemistry & Biochemistry

**Alex Boldyrev** was highlighted in an article titled “Deciphering Metal Antiaromaticity” by Stephen K. Ritter in *Chemical & Engineering News*, 15 December 2003, pp. 23-26.

**Alex Boldyrev** was highlighted in an article titled “Chemistry Highlights 2003, Inorganic Chemistry” by Stu Borman in *Chemical & Engineering News* 22 December 2003, p. 45.

### Department of Computer Science

**Vicki H. Allan** was selected to serve as the director of the Women’s and Gender Research Institute (WGRI) at USU.

Editor & Layout—Collette Yates (797-3515), College Publications Writer—Mark Johnson (792-4030).  
A special thanks to our departmental newsletter representatives—  
Liz Allred, Biology; Geri Child, Chemistry and Biochemistry; Tracy Pace, Computer Science;  
Lori Hirschi, Geology; Linda Blauer, Mathematics & Statistics; Karalee Ransom, Physics; and  
Melanie Oldroyd, Center for Atmospheric & Space Sciences.



*Science Scene* is an internal newsletter sent to  
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Its purpose is to inform the College of current events and the activities of our faculty,  
providing a forum for peers to follow one another's careers and professional development.

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