

**The Dean’s Corner—**

This is the first (somewhat tardy) issue of *Science Scene* for fall semester, in part reflecting our move to the Eccles Science Learning Center. Please remember to report your various professional activities on a regular basis to your department so that *Science Scene* accurately reflects what is occurring within our college.

I am pleased to report that our college development director search has concluded successfully and that our dean’s search is gearing up. Joel Kincart will join us in early January as the new college development director. He is presently employed in development at George Washington University in Washington, DC. We are looking forward to Joel’s arrival, as he will fill a critical void in our dean’s office staff. With respect to the dean’s search, Noelle Cockett, who chairs the committee, is asking all faculty to consider nominating candidates for our dean’s position and to distribute the position announcement at professional meetings or to colleagues at other universities.

We have not yet set a date for the dedication of the Eccles Science Learning Center. There are still a few difficulties to be addressed within the building, but none that affect its overall use. Many of you have visited our office and the building to see what a beautiful, functional facility it is. Most of the credit for this goes to our former dean, Jim MacMahon. If you haven’t seen it yet, we would welcome a visit. For those who teach here in the ESLC, we will soon have the “smart boards” up and running. These look like conventional white boards, but they are interfaced with a computer, so that anything written on the board will project overhead (in four exciting colors too!). We will be arranging some training sessions for faculty once the balance of this learning technology equipment is installed.

Fall semester is passing quickly and finals will soon be here. Don’t forget to put the College Christmas party on your holiday calendar (Friday, December 14). This year, our party will be at the Logan Country Club.

I hope that you all enjoy the holiday season.

**College of Science  
Christmas  
Open House**

*Friday  
14 December 2001  
7:00 - 10:00 pm*

*Logan Golf & Country Club\**

*~ Catering by Culinary Concepts ~*

*For  
Administration,  
Faculty & Staff  
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**Interim Dean Don Fiesinger’s  
Office Hours**

Wednesdays & Fridays

10:00 am to Noon

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### Department of Biology

The Bee Lab has a new web site. Check this out ~  
<http://www.LoganBeeLab.usu.edu>

Some of the things found there are a pictorial guide to identifying bumble bees of Cache Valley and surrounding mountains, and an extensive list of North American garden plants that can be grown to feed our native bees.

### Student Activities

**Roger Bannister and Brett A. Adams** presented a poster titled “Are AKAPs Required for PKC-Dependent Stimulation of Neuronal (1E) Ca Channels?” at the Intermountain Graduate Student Paper/Poster Symposium at Utah State University, Logan, Utah, 30 March 2001.

**Gina Glenne** and her graduate research (“Two-toned Beard-tongue [*Penstemon bicolor*] and it’s Two-timed Pollinator Dilemma”) were featured in the Winter 2000/2001 issue of *Plant Conservation*.

**Julie Johnson** has been awarded a NASA Fellowship for the 2001-2002 academic year. Julie is a graduate student in the lab of Daryll DeWald. Her research is focused on hypoxia in plants. The fellowship can be renewed for up to three years.

The following biology undergraduates received URCO grants this year:

**Ryan Jensen (Dennis Welker)** - “Identifying Genes Needed to Make Bacterial Capsules.”

**Andrea Linton (Brad Kropp)** - “The Effect of Wildfire on Mycorrhizal Fungal Populations.”

**Kelly Manabe (Daryll DeWald)** - “Expression, Purification, and Binding Analysis of PLC’s PH-Domain.”

**Wes Mortensen (Anne Anderson)** - “Cell Mortality Caused by Near-UV Irradiation in Sunlight.”

The following students were awarded Biology Department Scholarships:

**Thomas L. Bahler Scholarship** ~ Richard Bart Williams, Alfred M. Burns, Shannell Pery, Barry C. Beutler.

**Christenson Memorial Scholarship** ~ Michael LaGrande Larsen, Jeffrey Mark Healey, Chris Bryner Pobanz.

**Eldon J. Gardner Undergraduate Research Award** ~ Kelly Manabe, Wes Mortensen, Chad Bingham, Ryan Jensen.

**Datus M. Hammond Memorial Scholarship** ~ Nathan Welch.

**Richard and Marion Shaw Scholarship** ~ David Auston Johnson, Nathan Dwight Whittaker.

**John R. Simmons Scholarship** ~ Ryan Neal Jackson.

### Department of Chemistry & Biochemistry

#### Upcoming Seminar

5 December      Dr. Weiming Wu, Department of Chemistry, San Francisco State University, “Mechanistic Studies on Orotidine 5’-Monophosphate Decarboxylase,” 4:00 pm, WIDTSOE 007.  
Host—Dr. Tom Chang

### Department of Physics

**Robert T. Franckowiak** in collaboration with **Neal D. Shinn, Bongsoo Kim, Ki-Jeong Kim, Tai-Hee Kang, and D. Mark Riffe** gave a presentation titled “Core Level Shifts and Stress at the Ni/W(110) Interface” at the 15th International Vacuum Conference, AVS 48th International Symposium, 11th International Conference on Solid Surfaces, San Francisco, California, 28 October 2001.

**Department of Biology**

**Daryll B. DeWald** gave a talk titled “The Direct Involvement of Pik1p-Synthesized Phosphatidylinositol 4-phosphate in Yeast Protein Secretion” at a meeting on Phosphoinositides and the Golgi at the National Institutes of Health, Bethesda, Maryland, 13-14 March 2001.

**Timothy A. Gilbertson, Dane R. Hansen, Christine E. Foley, Larisa Nikonova, and Insook Kim** presented a paper titled “Is ROMK1 (Kir 1.1) the Elusive Apical K<sup>+</sup> Channel in Mammalian Taste Cells?” at the 23rd Annual Meeting of the Association for Chemoreception Sciences, Sarasota, Florida, 25-29 April 2001.

**Hiroko Hama, Doreen Ma, Julia Tang, and Jon Y. Takemoto** presented a poster titled “Saccharomyces cerevisiae YTP1 Gene Is Involved in the Hydroxylation of Sphingolipid-associated Fatty Acids” at the Annual Meeting of the American Society of Biochemistry and Molecular Biology, Orlando, Florida, 30 March - 4 April 2001.

**Teresa Koper, Jeanette Norton, Amal El-Sheikh, and Martin Klotz** presented a poster titled “Urease Genes in Autotrophic Ammonia Oxidizing Bacteria” at the International Symposium of Microbial Ecology, Amsterdam, The Netherlands, 26-31 August 2001.

**Joseph K. Li, Sara Crane, Michael Hans, and James Liang-Yen Lee** attended the Annual Meeting of the Intermountain Branch of the American Society for Microbiology at Idaho State University, Pocatello, Idaho, 28 April 2001. Dr. Li also served as one of the student paper judges. USU will host this meeting in 2002.

**Joseph K. K. Li and G. Chris Fillmore** gave two presentations titled “Mapping and Identification of Three BTX NS-2 Domains That Exhibit Differential But Sequence-Independent Binding Only Towards ss-RNAs” and “Inhibition and Enhancement of Infectious Blue-tongue Virion Production in Transfected Host Cells Over-Expressing BTV Non-Structural Protein NS-2 and NS-1” at the 7th International Symposium on Double-Stranded RNA Viruses, Palm Beach, Florida, 2-7 December 2000.

**Larisa Nikonova, Insook Kim, Dane R. Hansen, and Timothy A. Gilbertson** presented a paper titled “Relative Expression of Delayed Rectifying K<sup>+</sup> Channel Subtypes Differs in the Three Types of Lingual Taste Buds” at the 23rd Annual Meeting of the Association for Chemo-reception Sciences, Sarasota, Florida. 25-29 April 2001.

**Jeanette Norton, Teresa Koper, and Wei Shi** presented a poster titled “Ammonia Oxidizing Communities and Nitrification Kinetics in Soils Treated with Dairy Wastes” at the International Symposium of Microbial Ecology, Amsterdam, The Netherlands, 26-31 August 2001.

**Peter C. Ruben** gave a seminar titled “Slow Inactivation in Cardiac Sodium Channels: Molecular Substrates, Diseases Involvement, and Modulation” at the Institut de Cardiologie de Montreal, Montreal, Quebec, Canada, 11 May 2001.

**Vijendra K. Singh** gave a presentation titled “Viral-Autoimmunity and Immunotherapy in Autism” at the State Medical Conference on Autism, San Antonio, Texas, 24 February 2001.

**Vijendra K. Singh** gave an invited talk titled “Targeting Autoimmunity in Autism” at the Homestead Conference “Medical Issues in Autism: Charting New Territories” Des Moines, Iowa, 16-17 March 2001.

The following papers were presented at the 9th International Symposium of the Society of Chinese Bioscientists in America (SCBA) at the Academia Sinica, Taipei, Taiwan, 5-11 August 2001:

**Canhua Huang and Joseph K.-K. Li.** “Isolation, Purification and Partial Characterization of White Spot Syndrome Virus (WSSV) Produced in Freshwater Crayfish, *Cambarus Clarkii*, an Alternate Host Instead of Its Natural Host, the Penaeid Shrimp.”

**Joseph K.-K. Li.** “Success and Challenges in Agricultural Biotechnology, Y2K and Beyond.”

The following papers were presented at the Annual Conference of the Botanical Society of America in Albuquerque, New Mexico, 12-17 August 2001:

**William D. Speer, Elizabeth Sheffield, and Paul G. Wolf.** “Relationships Among Northern Hemisphere Pteridium: Some New Perspectives.”

**Paul G. Wolf, Bernard Doche, Ludovic Gielly, and Pierre Taberle.** “Genetic Structure of Alpine Rhododendron Across a Wide Range of Spatial Scales.”

**Department of Chemistry & Biochemistry**

**Alex I. Boldyrev** presented a talk titled “Beyond Classical Stoichiometry” at the 14th Canadian Symposium on Theoretical Chemistry at Carleton University in Ottawa, Canada, 4-9 August 2001.

**Alex I. Boldyrev** presented the Distinguished Lecture titled “Towards Nonstoichiometric Chemistry” at University of Ottawa, Canada, 6 August 2001.

**Alex I. Boldyrev** was invited to speak at the panel discussion titled “View on the Future Development in Science” at the Canadian National Research Center, Ottawa, Canada, 7 August 2001.

**Alex I. Boldyrev** presented a seminar titled “Towards Nonstoichiometric Chemistry” at Kansas State University in Manhattan, Kansas, 30 August 2001.

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**Alex I. Boldyrev and Lai-Sheng Wang** presented a talk titled “Aromaticity in All-Metal Systems” at the 56th Northwest Regional American Chemical Society Meeting in Seattle, Washington, 14-17 June 2001.

**Alvan C. Hengge** presented a talk titled “Transition States for Phosphoryl Transfer Reactions of Phosphatases and Their Application to Inhibitor Design” at the Metals in Medicine Symposium at the American Chemical Society 222nd National Meeting, Chicago, Illinois 26-30 August 2001.

Posters presented at the American Chemical Society 222nd National Meeting, Chicago, Illinois, 26-30 August 2001:

**Piotr Grzyska, Przemyslaw G. Czyryca, Justin Golightly, Kelli Small, Paul Larsen, Richard H. Hoff, and Alvan C. Hengge.** “Medium Effects on Phosphoryl Transfer Reactions and Their Possible Applicability to Enzymatic Phosphoryl Transfer.”

**Timothy Humphry, Marcello Forcon, Alvan C. Hengge, and Nicholas H. Williams.** “Mechanism of Reaction of Phosphate Esters Coordinated to a Model of Dinuclear Metallophosphatases.”

**Przemyslaw G. Czyryca and Alvan C. Hengge.** “A Novel Motif for the Design of Transition State Analogs for Phosphatases.”

#### **Department of Computer Science**

**Stephen Clyde and David Rogers** presented papers titled “Using the National Scenic Byways Web site as a Marketing Tool” and Virtual Communities: Using the Internet to Improve Collaboration and Coordination Among Byway Communities” at the 3rd National Scenic Byways Conference, Portland, Oregon, 26-29 August 2001.

#### **Department of Geology**

**James Evans** gave a talk titled “Fault Seal and Fault Rupture Processes on a Low Permeability Fault” American Association of Petroleum Geologists Annual Meeting, Denver, Colorado, 4 June 2001.

**James Evans** presented a poster titled “Hydraulic Properties of Faults in Porous Sandstones: Bighole Drilling Project Results” American Association of Petroleum Geologists Annual Meeting, Denver, Colorado, 4 June 2001.

**James Evans** gave a talk titled “Structure and Composition of Exhumed Seismogenic Faults: Processes of Slip Localization” California Institute of Technology Seismology Lab, Pasadena, California, 22 June 2001.

**James Evans** gave a talk titled “Reservoir-Scale Hydraulic Properties of Faulted Sandstones” Rocky Mountain Association of Geologists: Workshop on New Concepts for Faulted and Fractured Rocky Mountain Reservoirs, Denver, Colorado, 1 October 2001.

**James Evans** gave a talk titled “Analysis of CO<sub>2</sub> Leakage from a Natural CO<sub>2</sub> Reservoir: Crystal Geysir and the Little Grand Wash Fault, Utah” Carbon Capture Project Workshop on Geologic Sequestration of Carbon, GeoForschungZentrum, Potsdam, Germany, 31 October 2001.

**James Evans** gave a talk titled “Composition and Structure of Faults from 15 km to the Surface: Implications for Seismogenesis.” Eugene Oregon, 28 November 2001.

**Susanne Janecke** gave a talk at University of Oregon titled “Insights into Processes of Continental Extension from Field Studies in the Rocky Mountain Basin and Range Province” Eugene Oregon, 21 November 2001.

**Bradley D. Ritts** presented a paper titled “Sedimentary Evolution of Cretaceous Basins Adjacent to the Hohhot Metamorphic Core Complex” at the Field Conference on Mesozoic Extension in Eastern China and Mongolia, Hohhot, Inner Mongolia, China, 5 July 2001.

**Bradley D. Ritts** presented a paper titled “Mesozoic-Cenozoic Sedimentary Basins and Slip History of the Altyn Tagh Fault, NW China” at the University of Kansas, Lawrence, Kansas, 25 October 2001.

**Bradley D. Ritts** presented a paper titled “Basin Analysis and Petroleum Systems of the Qaidam Basin, NW China: Oil on the Roof of the World” to the Utah Geological Association in Salt Lake City, Utah, 12 November 2001.

**John Shervais** presented an abstract titled “Birth, Death, and Resurrection: The Life Cycle of Supra-Subduction Zone Ophiolites” International Meeting on the Geology of Oman, Muscat, Oman, 13 January 2001.

**John Shervais** presented an abstract titled “Intermediate Depth Drilling of the Snake River Plain in Support of EarthScope: Tracking the Yellowstone Plume Through Space and Time” EarthScope Workshop, Snowbird, Utah, 10 October 2001.

The following abstracts were submitted at the Annual Geological Society of American Meeting, Boston, Massachusetts, 6-7 November 2001:

**Allen Dennis, Donald Secor, and John Shervais.** “Constraints on Assembly of the Carolina Composite Terrain in the Southern Appalachian Piedmont: Role of Eclogite-High-P Granulite Facies Rocks in Central South Carolina.”

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**Rodney Metcalf and John Shervais.** “Supra-Subduction Zone (Ssz) Ophiolites: Is There Really An ‘Ophiolite Conundrum?’”

**John Shervais.** “The Coast Range Ophiolite, California: Multistage Origin of a Supra-Subduction Zone Ophiolite.”

#### Department of Mathematics & Statistics

**Larry Cannon and Bob Heal** gave an invited presentation titled “Using Interactive Java Applets for Remote Testing and Distance Education” at the International Conference on Technology in Collegiate Mathematics, Baltimore, Maryland, 1-4 November 2001.

**Piotr Kokoszka** gave a presentation titled “Why Statisticians are Interested in Financial Data” at the November Meeting of the Utah Chapter of the ASA, Salt Lake City, Utah, 2 November 2001.

**Motoya Machida** gave a talk titled “Perfect Sampling Via Cross-monotonicity for Simple Mixtures” at The 53<sup>rd</sup> Session of the International Statistical Institute, Seoul, Korea, 22-29 August 2001.

#### Department of Physics

**W. John Raitt** attended the American Institute of Physics 2001 Academic-Industrial Workshop, Rochester, New York, 21 October 2001.

**W. John Raitt** attended the American Institute of Physics Industrial Physics Forum, Rochester, New York, 22-23 October 2001.

**D. Mark Riffe and Ali Sabbah,** gave a presentation titled “Femtosecond Carrier and Coherent-Phonon Dynamics of Si(100) Measured with Pump-Probe Reflectivity at 800 nm” at 2001 Four Corners Section of the American Physical Society Fall Meeting, Los Cruces, New Mexico, 2-3 November 2001.

**T.C. Shen** gave a presentation titled “Low Temperature Si Epitaxy on Si(100) Monohydride Surfaces” at the American Physical Society March Meeting, Seattle, Washington, 13 March 2001.

**T. C. Shen** presented a colloquium titled “From Nanoscale to Atom-Scale Devices: An Opportunity for Physicists,” Arizona State University, Tempe, Arizona, 5 April 2001.

**T. C. Shen** presented a talk titled “Controlled Coupling of Donor Atom-Wave Functions in Silicon” at Quantum Computing Program Review, Baltimore, Maryland, 28 August 2001.

**T.C. Shen** gave a presentation titled “Growth and Electrical Characterization of Ultra-Dense Phosphorous Delta-Doping Layers in Silicon” at the 48th International Symposium of AVS, San Francisco, California, 30 October 2001.

**Charles Torre** gave a seminar titled “The Principle of Symmetric Criticality in General Relativity” at the Department of Physics, University of Utah, Salt Lake City, Utah, 7 November 2001.

**Charles Torre, Ian Anderson, and Mark Fels** gave a presentation titled “General Relativity and Symmetric Criticality” at the Pacific Coast Gravity Meeting, Institute for Theoretical Physics, Santa Barbara, California, 9 March 2001.

#### Center For Atmospheric & Space Sciences

The following papers were presented at the American Geophysical Union Spring Meeting, Boston, Massachusetts, 29 May - 2 June 2001:

**Robert W. Schunk.** “Ionospheric Mass Extraction Processes.”

**Bela G. Fejer.** “Variability of Low Latitude Ionospheric Electrodynamics.”

**Department of Biology**

**Jenny K. Archibald, Paul G. Wolf, Vincent J. Tepedino, and Janet Bair.** 2001. Genetic Relationships and Population Structure of the Endangered Steamboat Buckwheat, *Eriogonum ovalifolium* var. *williamsiae* (Polygonaceae). *American Journal of Botany* 88:608-615.

**Mary E. Barkworth and Maria Amelia Torres.** 2001. Distribution and Diagnostic Characters of *Nassella* (Poaceae: Stipeae). *Taxon* 50:439-468.

**James H. Cane.** 2001. Habitat Fragmentation and Native Bees: A Premature Verdict? *Conservation Ecology* 5(1):3. <http://www.consecol.org/vol5/iss1/art3>

**James H. Cane, Robert L. Minckley, and Linda J. Kervin.** 2000. Sampling Bees (Hymenoptera: Apiformes) for Pollinator Community Studies: Pitfalls of Pan-Trapping. *Journal of the Kansas Entomological Society* 73:225-231.

**James H. Cane and Vincent J. Tepedino.** 2001. Causes and Extent of Declines Among Native North American Invertebrate Pollinators: Detection, Evidence, and Consequences. *Conservation Ecology* 5(1):1. <http://www.consecol.org/vol5/iss1/art1>

**John P. DeLong and James A. Gessaman.** 2001. A Comparison of Noninvasive Techniques for Estimating Total Body Fat in Sharp-Shinned and Cooper's Hawks. *Journal of Field Ornithology* 72:349-364.

**Daryll B. DeWald, Javad Torabinejad, Christopher A. Jones, Joseph C. Shope, Amanda R. Cangelosi, James E. Thompson, Glenn D. Prestwich, and Hiroko Hama.** 2001. Rapid Accumulation of Phosphatidylinositol 4,5-Bisphosphate and Inositol 1,4,5-Trisphosphate Correlates with Calcium Mobilization in Salt-Stressed Arabidopsis. *Plant Physiology* 126:759-769.

**Timothy A. Gilbertson, John D. Boughter, Jr., Huai Zhang, and David V. Smith.** 2001. Distribution of Gustatory Sensitivities in Rat Fungiform Taste Cells: Whole Cell Responses to Apical Chemical Stimulation. *Journal of Neuroscience* 21:4931-4941.

**Susan G. Kelley and Frederick J. Post.** 2001. *Basic Microbiology Techniques*. 4th edition. Star Publishing.

**Brandon P. Matthey and Bradley R. Kropp.** 2001. A Revision of the *Inocybe Ianuginosa* Group and Allied Species in North America. *Sydowia* 53:93-139.

**Karim Melliti, Ulises Meza, and Brett Adams.** 2001. RGS2 Blocks Slow Muscarinic Inhibition of N-type Ca<sup>2+</sup> Channels Reconstituted in a Human Cell Line. *Journal of Physiology* 532.3:337-347.

**Joseph R. Mendelson III.** 2001. A Review of the Guatemalan Toad *Bufo ibarraii* (Anura: Bufonidae), with Distributional and Taxonomic Comments of *Bufo valliceps* and *Bufo coccifer*.

*Mesoamerican Herpetology: Systematics, Zoogeography, and Conservation* 10-19.

**Frank J. Messina and Charles W. Fox.** 2001. Offspring Size and Number. *Evolutionary Ecology: Concepts and Case Studies* 113-127.

**Frank J. Messina and Suzann M. Sorenson.** 2001. Effectiveness of Lacewing Larvae in Reducing Russian Wheat Aphid Populations on Susceptible and Resistant Wheat. *Biological Control* 21:19-26.

**Michael E. Reding, Diane G. Alston, Sherman V. Thomson, and Anchalee V. Stark.** 2001. Association of Powdery Mildew and Spider Mite Populations in Apple and Cherry Orchards. *Agriculture, Ecosystems and Environment* 84:177-186.

**T'ai H. Roulston and James H. Cane.** 2001. The Effect of Diet Breadth and Nesting Ecology on Body Size Variation in Bees (Apiformes). *Journal of the Kansas Entomological Society* 73:180-193.

**Peter S. Searles, Bradley R. Kropp, Stephan D. Flint, Martyn M. Caldwell.** 2001. The Influence of Solar UV-B Radiation on Peatland Microbial Communities of Southern Argentina. *New Phytologist* 152:213-221.

**Christopher A. Sheil and Joseph R. Mendelson III.** 2001. A New Species of *Hemiphractus* (Anura: Hylidae: Hemiphractinae), and a Redescription of *Hemiphractus johnsoni*. *Herpetologica* 57:189-202.

**Christopher A. Sheil, Joseph R. Mendelson III, and Helio R. da Silva.** 2001. Phylogenetic Relationships of the Species of Neotropical Horned Frogs, Genus *Hemiphractus* (Anura: Hylidae: Hemiphractinae), Based on Evidence from Morphology. *Herpetologica* 57:203-214.

**Vijendra K. Singh.** 2001. Neuro-immunopathogenesis in Autism. *New Foundation of Biology* 447-458.

**Sedonia D. Sipes and Paul G. Wolf.** 2001. Phylogenetic Relationships within *Diadasia*, A Group of Specialist Bees. *Molecular Phylogenetics and Evolution* 19:144-16.

**Alan R. Smith, Hanna Tuomisto, Kathleen M. Pryer, Jeffrey S. Hunt, and Paul G. Wolf.** 2001. *Metaxya lanosa*, A Second Species in the Genus and Fern Family *Metaxiaceae*. *Systematic Botany* 26:480-486.

**Suzanne Stratford, Daryll B. DeWald, and Scott Summers.** 2001. Ceramide Dissociates 3'-Phosphoinositide Production from Pleckstrin Homology Domain Translocation. *Biochemical Journal* 354: 359-368.

**James E. Throne, James E. Baker, Frank J. Messina, Karl J. Kramer, and John A. Howard.** 2000. Varietal Resistance. *Alternatives to Pesticides in Stored-Product IPM* 165-192.

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**Yuriy Y. Vilin, Esther Fujimoto, and Peter C. Ruben.** 2001. A Novel Mechanism Associated with Idiopathic Ventricular Fibrillation (IVF) Mutations R1232W and T1620M in Human Cardiac Sodium Channels. *Pflüegers Archives* 402:204-211.

**Yuriy Y. Vilin, Esther Fujimoto, and Peter C. Ruben.** 2001. A Single Residue Differentiates Between Cardiac and Skeletal Muscle Na<sup>+</sup> Channel Slow Inactivation. *Biophysical Journal* 80:2221-2230.

**Carol D. von Dohlen, Shawn Kohler, Skylar T. Alsop, and William R. McManus.** 2001. Mealybug  $\beta$ -Proteobacterial Endosymbionts Contain  $\gamma$ -proteobacterial Symbionts. *Nature* 412:433-436. (This article was also the cover of this issue.)

**Paul G. Wolf.** 2001. Number Crunching: Statistical Analysis Software Aids Date Interpretation. *The Scientist* 15:22-26.

**Paul G. Wolf, Harald Scheneider, and Tom A. Ranker.** 2001. Geographic Distributions of Homosporous Fern Taxa: Does Dispersal Obscure Evidence of Vicariance? *Journal of Biogeography* 28:263-270.

#### Department of Chemistry & Biochemistry

**Cheng-Wei T. Chang, Terri Clark, Mumbi Ngaara.** 2001. Novel and Convenient Method for the Synthesis of 2,6-Dideoxypyranoses, 3, 6-Dideoxypyranoses, and Azido (amino) Analogs of 3,6-Dideoxypyranoses. *Tetrahedron Letter* 42:6797-6801.

**Cheng-Wei T. Chang, Yu Hui, Bryan Elchert.** 2001. Studies of the Stereoselective Reduction of Ketosugar (Hexosulose). *Tetrahedron Letter* 42:7019-7023.

**Hsiu-Ju Chiu, John W. Peters, William N. Lanzilotta, Matthew J. Ryle, Lance C. Seefeldt, James B. Howard, and Douglas C. Rees.** 2001. MgATP-Bound and Nucleotide-Free Structures of a Nitrogenase Protein Complex Between the Leu 127 Delta-Fe-Protein and the MoFe-Protein. *Biochemistry* 40:641-50.

**Alvan C. Hengge.** 2001. Isotope Effects in the Study of Enzymatic Phosphoryl Transfer Reactions. *FEBS Letters* 501:99-102.

**Richard H. Hoff, Paul Larsen, and Alvan C. Hengge.** 2001. Isotope Effects and Medium Effects on Sulfuryl Transfer Reactions. *Journal of the American Chemical Society* 123:9338-9344.

**Se Bok Jang, Mi Suk Jeong, Daniel D. Clark, Scott A. Ensign, and John W. Peters.** 2001. Crystallization and Preliminary X-ray Analysis of a NADPH 2-Ketopropyl-Coenzyme M Oxidoreductase/Carboxylase. *Acta Crystallography*. D57:445-447.

**Alexey E. Kuznetsov, Alex I. Boldyrev, Xi Li, Lai-Shen Wang.** 2001. On the Aromaticity of Square Planar Ga<sub>4</sub><sup>2-</sup> and In<sub>4</sub><sup>2-</sup> in Gaseous NaGa<sub>4</sub><sup>-</sup> and NaIn<sub>4</sub><sup>-</sup> Clusters. *Journal of American Chemical Society* 123:8825.

**Alexey E. Kuznetsov, John D. Corbett, Lai-Shen Wang, Alex I. Boldyrev.** 2001. Aromatic Mercury Clusters in Ancient Amalgams. *Angewandte Chemie International Edition* 40:3369.

**Brian J. Lemon and John W. Peters.** 2001. Iron-Only Hydrogenases. *Handbook of Metalloproteins* 738-750.

**Xi Li, Aleksey E. Kuznetsov, Hai-Feng Zhang, Alexander I. Boldyrev, and Lai-Sheng Wang.** 2001. Observation of All-Metal Aromatic Molecules. *Science* 291:859-861.

**Xi Li, Hai-Feng Zhang, Alexey E. Kuznetsov, Nathan A. Cannon, Lai-Shen Wang, Alex I. Boldyrev.** 2001. Experimental and Theoretical Observation of Aromaticity in Hetero-cyclic XAl<sub>3</sub><sup>-</sup> (X=Si, Ge, Sn, Pb) Systems. *Angewandte Chemie International Edition* 40:1867.

**Morten Sorlie, Jennifer Christiansen, Brian J. Lemon, John W. Peters, Dennis R. Dean, and Brian J. Hales.** 2001. Structural and Mechanistic Interpretation of the EPR Signals Observed During Acetylene Reduction by the A-H195Q Mutant of Nitrogenase. *Biochemistry* 40:1540-1549.

#### Department of Computer Science

**Vicki H. Allan and Xiaoxin Chen.** 2001. Convert2Java: Semi-Automatic Conversion of C to Java. *Future Generation Computer Systems, Java in High Performance Computing* 18(2):201-211.

**Jonathan Dinerstein, Larre Egbert and Nicholas Flann.** 2001. Linear Grouping – A Method for Optimizing 3D Vertex Transformation and Clipping. *Journal of Graphics Tools* 6(1):1-6.

#### Department of Geology

**Andrew Hanson, Bradley D. Ritts, David Zinniker, Micheal Moldowan, and Ulderico Biffi.** 2001. Upper Oligocene Lacustrine Source Rocks and Petroleum Systems of the Northern Qaidam Basin, Northwest China. *American Association of Petroleum Geologists Bulletin* 85:601-619.

**Kevin Hestir, Stephen Martel, Junming J. Yang, James P. Evans, Jane S. C. Long, Peter D'Onfro, and William D. Rizer.** 2001. Use of Conditional Simulation, Mechanical Theory, and Field Observations to Characterize the Structure of Faults and Fracture Networks. *American Geophysical Union Monograph* 61-75.

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**Bradley D. Ritts, Brian Darby, and Tim Cope.** 2001. Early Jurassic Extensional Basin Formation in the Daqing Shan Segment of the Yinshan Belt, Northern North China Block, Inner Mongolia. *Tectonophysics* 339:235-253.

**Bradley D. Ritts and Ulderico Biffi.** 2001. Mesozoic Northeast Qaidam Basin: Response to Contractual Reactivation of Qilian Shan, and Implications for Extent of Mesozoic Intracontinental Deformation in Central Asia. Paleozoic and Mesozoic Tectonics of Central Asia — From Continent Assembly to Intracontinental Deformation. *Geological Society of America Memoir* 194:293-316.

**John W. Shervais.** 2001. Birth, Death and Resurrection: The Life Cycle of Suprasubduction Zone Ophiolites. *Geochemistry, Geophysics, Geosystems* 2.

**Edward Sobel, Nick Arnaud, Maurice Jolivet, Bradley D. Ritts, and Marc Brunel.** 2001. Jurassic Exhumation history of the Altyn Tagh, NW China. Paleozoic and Mesozoic Tectonics of Central Asia — From Continent Assembly to Intracontinental Deformation; *Geological Society of America Memoir* 194:247-268.

#### **Department of Mathematics & Statistics**

**Piotr Kokoszka and Lajos Horvath.** 2001. Change-Point Detection with Non-Parametric Regression. *Statistics* 35:1-29.

**Piotr Kokoszka, Lajos Horvath and Gilles Teysnière.** 2001. Empirical Process of Squared Residuals of an ARCH Sequence. *The Annals of Statistics* 29:445-469.

**Piotr Kokoszka and Murad Taqqu.** 2001. Can One Use the Durbin-Levinson Algorithm to Generate Infinite Variance Fractional ARIMA Time Series? *Journal of Time Series Analysis* 22:317-337.

**Piotr Kokoszka and Lajos Horvath.** 2001. Large Sample Distribution of ARCH( $p$ ) Squared Residual Correlations. *Econometric Theory* 17:283-295.

**Motoya Machida and James Allen Fill.** 2001. Stochastic Monotonicity and Realizable Monotonicity. *The Annals of Probability* 29(2):938-978.

#### **Department of Physics**

**Jeong-Young Ji and David Peak.** 2001. The Vacuum Excitation and Squeezing Properties of Two Quantum Oscillators with Delta-Kicked Interactions. *Journal of Physics A: Mathematical and General* 34:3429-3435.

#### **Center for Atmospheric & Space Sciences**

**Allen Q. Howard.** 2000. Petrophysics of Magnetic Dipole Fields in an Anisotropic Earth. *IEEE Transactions on Antennas and Propagation* 48(9):1376-1383.

### Department of Biology

**Michelle A. Baker** has been awarded the 2001 Hynes Award for New Investigators by the North American Benthological Society. The award is named in honor of the legendary benthic scientist, H.B.N. Hynes, and recognizes excellence in benthic research by an investigator who has recently completed a degree program. The nomination was based on a paper published within the last three years (the senior author must not have finished their PhD longer than five years from the date of nomination) and a defined set of criteria including significance and breadth; the use of scientific method; organization and clarity of objectives and figures; methodology and use of multiple approaches; appropriate use of statistics, as well as the author's overall cleverness and the level of excitement generated by their study.

Her paper titled "Organic Carbon Supply and Metabolism in a Shallow Groundwater Ecosystem" was published in *Ecology* 81:3133-3148. Co-authors were H.Maurice Valett and Clifford N. Dahm (her PhD advisors at the University of New Mexico). The following were comments from the selection committee:

"Baker et al. expands the boundaries of the stream to include the RoSS - region of seasonal saturation, and furthermore links this active region o the watershed to stream function, in this case, metabolism. We felt that Baker et al. makes a significant contribution to the field of stream ecology by forcing us to think about stream ecosystems in a spatially and temporally explicit context, and consider the implications of terrestrial-aquatic interactions on stream function. We also felt that Baker et al. provided a thorough and stimulating discussion of the factors that may influence RoSS-groundwater interactions in different ecosystems, such as the influence of climate and geomorphology, and how interaction among these factors may affect hydrologic connectivity between sub-systems and therefore influence stream metabolism. In fact, this paper is reminiscent of Hynes 1975 - A stream and Its Valley. Both consider the influence of geomorphology and terrestrial-aquatic linkages on streams; however, Baker et al. extends these relationships and uses what we considered to be clever, innovative methodology to measure metabolism in relation to DOC supplied by the RoSS in a temporal context. The link between the spatial and temporal structure of an ecosystem and its function is an important topic in ecosystem ecology today and Baker et al. 2000 certainly advances this concept in streams. In general, we were excited about the spatial and temporal linkage between different components of the watershed ecosystem, and the potential implication of these linkages for stream function."

**Edmund D. Brodie, Jr.**, was named the recipient of the 2001 D. Wynne Thorne Research Award. The Thorne Award is "given to the individual or group on the USU campus that completed the most outstanding research within the previous 5 years." Dr. Brodie is known for his contributions to the understanding of anti-predator behavior of amphibians. His current research focuses on the co-evolution of predator-prey interactions between amphibians and reptiles. (See the last issue of *INSIGHTS*, *Spring 2001/Volume 9 Issue 2*, p. 5)

**James A. Gessaman** has been selected to serve on the Board of Trustees and to be the Chairman of the Science Committee of Hawkwatch International, a Salt Lake City-based organization that works to protect eagles, hawks, and other birds of prey and their environment through research, education, and conservation. Both positions are three-year appointments.

**Joseph K.-K. Li** was awarded the Distinguished Service Award at the 9th International Symposium of the Society of Chinese Bioscientists in America (SCBA) at the Academia Sinica in Taipei, Taiwan, 5-11 August 2001. He also served as organizer of the meeting.

**Joseph R. Mendelson III** has been elected to serve on the Board of Directors for the Society for the Study of Amphibians and Reptiles. His term begins 1 January 2002 and continues through 31 December 2004.

**Kimberly A. Sullivan** has been elected as a Fellow in the American Ornithologists' Union. Fellows are chosen for their eminence in ornithology.

### Department of Chemistry & Biochemistry

**John W. Peters** was elected to Stanford Synchrotron Radiation Laboratory Users' Organization Executive Committee.

### Department of Physics

**Jamie Jorgensen and Charles Torre** were awarded a USU Undergraduate Research and Creative Opportunities (URCO) Award for research in gravitational physics in the amount of \$500 and a travel grant from the Topical Group in Gravitation, American Physical Society to attend the Spring Meeting of American Physical Society in the amount of \$400.

**Department of Biology**

**Peter C. Ruben and James Groome**

The Muscular Dystrophy Association  
July 1, 2001 to June 30, 2004, \$225,000  
“Sodium Channel Deactivation in Non-Dystrophic Myotonia.”

Long-term objective of research is to characterize the structure/function relationships in sodium channels and to relate these relationships to diseases of excitability. This particular grant will demonstrate that defects in deactivation in sodium channels are the primary cause of myotonia.

**Department of Chemistry & Biochemistry**

**Stephen W. Clyde**

Federal Highway Administration  
1 October 2001 to 30 September 2003, \$830,891  
“On-going Information Systems Development and Support for the National Scenic Byway Program.”

This grant provides on-going research and development of the National Scenic Byways web site and information systems.

**Stephen W. Clyde**

Sun Remarketing  
18 November 2000 to 17 November 2001, \$30,000  
“Computer Programming and Administrative Services.”

This grant provided programming services and software development.

**John W. Peters**

National Science Foundation  
1 May 2001 to 31 August 2001, \$3,650  
“Structural Studies on the Fe-Only Hydrogenase (Cpl) from *Clostridium Pasteurianum*.”

This grant provided 2001 summer support for Research Experience for Undergraduates(REU).

**John W. Peters**

National Science Foundation  
1 September 2001 to 31 August 2004, \$375,000  
“Structural and Biochemical Investigations on Fe-Only Hydrogenases.”

This project will involve addressing the mechanism of reversible hydrogen oxidation by the metal-containing enzyme hydrogenases. A structural function-based approach will be used to increase our knowledge of the chemical mechanism of reversible hydrogen oxidation. The results could conceivably impact the feasibility of hydrogen as a fuel source.

**Department of Geology**

**James Evans**

US Geological Survey  
October 1, 2001 to October 1, 2003, \$22,000  
“Laboratory and Field Studies of the Mechanical, Sonic, Permeability and Textural Properties of an Active Fault: Collaborative Research, UNLV and USU.”

This work will examine the microstructures and physical properties of rocks from the Mozumi Fault, Japan. A research tunnel provides direct access to the fault-related rocks, and we will investigate the nature of rocks that are deforming today along the fault zone.

**James Evans**

US Geological Survey  
October 1, 2001 to October 1, 2002, \$21,000  
“Analysis of Pre- and Early Instrumented Earthquakes in the Western United States Using Modern Historiographical Methods.”

In collaboration with Clyde Milner II of the History Department at USU, Dawn Martindale (M. S., History, USU) will examine primary historical records of the 1857 Ft. Tejon earthquake in southern California, and one other large, pre-instrument era earthquake to determine the nature of ground shaking associated with some of the largest earthquakes noted in the western US since the time of settlement by Europeans.

**Joel Pederson**

National Science Foundation Grant EAR-0107065  
June 15, 2001 to May 31, 2003, \$80,000  
“Tectonic Geomorphology of Grand Canyon-Testing a Hypothesis for Differential Incision Due to Quaternary Slip on the Hurricane-Toroweap Fault System.”

This grant will pay for dating of basalt flows and spring deposits that can be used to calculate incision rates for Grand Canyon and fund a student to test a hypothesis of how active faults that cross the Canyon may be affecting landscape development. The project should increase our knowledge, especially for interpretive purposes, of how the Grand Canyon was formed, and further our understanding of the relative roles of tectonics and climate in landscape change.

**Joel Pederson**

USGS Grand Canyon Monitoring and Research Center  
August 29, 2001 to August 28, 2002, \$90,000  
“Testing the Utility of Monitoring and Mitigation Strategies for Gully Erosion of Cultural Sites in Grand Canyon: Towards Refining Our Understanding of the Geomorphic Conditions Responsible.”

Funding will go towards exploring the use of remote sensing for very high resolution erosion monitoring, and is currently funding a graduate student to investigate the causes of increased gully erosion of archeological sites in the Grand Canyon. Research should help to preserve and manage cultural resources in the Grand Canyon national park.

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**Bradley D. Ritts**

Seismic Microtechnology, Houston, Texas  
1 August 2001 to 31 July 2004, Software Grant –  
KINGDOM suite (\$569,940)  
“Reservoir Characterization of Lacustrine Sandstones: Red  
Wash Field, Uinta Basin, Utah.”

This software grant is for subsurface geophysical investigation of the Uinta Basin, Utah. Research involves interpretation of three-dimensional seismic and borehole data to define the geometry, heterogeneity and reservoir potential of Green River Formation sandstones.

**John Shervais**

USGS National Cooperative Geologic Mapping  
May 1, 2001 to July 31, 2002, \$9,235  
“Geologic Mapping of San Luis Obispo Urban Area California.”

This project involves constructing a geologic map of Cuesta Ridge ophiolite adjacent to San Luis Obispo, California, to assess the origin of the ophiolite, slope stability of the soils, and distribution of naturally occurring asbestos in serpentine.

**Department of Mathematics & Statistics**

**Adele Cutler and Leo Brieman**

NSF ITR-AP (Information Technology Research-Applications  
in Science & Engineering)  
September 1, 2001 to August 31, 2004, \$92,204 (USU’s portion)  
Total Grant \$422,147  
“A Program for Predicting and Understanding Data.”

The goal of this research is to develop graphical and numerical tools for understanding predictive methods in machine learning. Applications include medical, financial, and scientific applications such as microarray data analysis.

**Department of Physics**

**T.C. Shen**

Defense of Advanced Research Projects Agency (DARPA)  
20 February 2001 to 19 January 2003, \$350,726  
“Wavefunction Engineering of Individual Donors for Si-Based  
Quantum Computers.”

The technology of quantum computers could be crucial to national security in the next 15 years. This project will use a pair of phosphorous atoms in a silicon crystal to demonstrate how to read and change their spin states. If successful, a solid-state based quantum computer can be realized.

**Center For Atmospheric & Space Sciences**

**Robert W. Schunk**

National Aeronautics and Space Administration  
1 April 2002 to 31 March 2005, \$915,000  
“The Flow of Plasma in the Solar Terrestrial Environment.”

This award will provide funding to continue studies of the flow of plasma in the Earth’s ionosphere and magnetosphere, which are the regions of space where most satellites and the Space Shuttle fly.