


The Dean's Corner—

Spring Semester is now well underway, although right now it feels like it should be called "winter semester." I had hoped to be able to report on our search for a new dean, but there is no official word yet. The State Legislature is now in session and there is considerable optimism on increased funding for higher education. Progress continues on the Eccles Science Learning Center and even though there have been some cold-weather delays, the contractor remains confident that the building will be completed around mid-July 2001. In fact, departments in the College are scheduling the new 500-seat auditorium and the smaller 160-seat lecture hall for fall semester.

And although the semester has only begun, it is time to consider honoring our outstanding faculty and students. Nomination information has been provided to each department head for faculty teacher, researcher, and advisor of the year and graduate student teacher and researcher of the year. There are now two award categories for graduate student researcher, one at the MS level and one at the PhD level. If you are aware of a faculty colleague or graduate student who has done an outstanding job in teaching, research, or advising, please consider nominating him or her for this appropriate recognition.

I have recently completed a review of six faculty files for tenure and promotion. The depth and breadth of research activity within our College is very impressive and it was very enlightening to find that the research carried out by our faculty is held in such high esteem by their peers around the world. In most cases, these faculty were working with both undergraduate and graduate students in their research endeavors. I have also been impressed by the large number of faculty who have come by (often at the eleventh hour) these last few months to get a CG-01 signed for a grant proposal. In virtually every case, there is support for students requested. I applaud your continuing efforts to mentor and fund students in your research.

I hope that all is going well for you this semester and I look forward to visiting with you at our spring college coffee break on 8 March.



***College of Science
Coffee Break***

*Thursday
8 March 2001
2:30 - 4:00 pm*

*For
Administration,
Faculty &
Staff*

Contents—

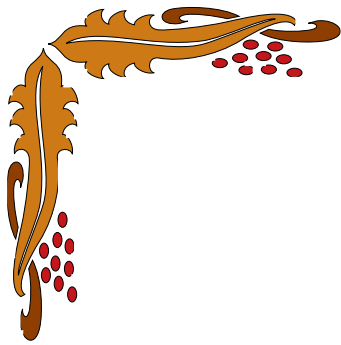
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Acting Dean Don Fiesinger's Office Hours

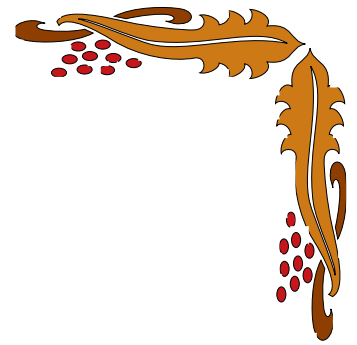
Wednesdays & Fridays

10:00 am to Noon

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**Utah State University &
College of Science
Calendar**



2001

President's Day (no classes)	19 Feb	USU Holiday
College of Science Phonathon	20 Feb - 03 Mar	College Calendar
College of Science Coffee Break	8 March	SER 101E—2:30 - 4:00 pm
USU Spring Break (no classes)	12-16 Mar	Class Schedule
College Awards Program	20 Apr	Haight Alumni Center—3:30 - 4:30 pm
No Test Week	23-27 Apr	Class Schedule
Spring Semester Last Day of Classes	27 Apr	Class Schedule
Spring Semester Final Exams	30 Apr - 4 May	Class Schedule
University Hooding Ceremony	4 May	Dee Glenn Smith Spectrum—1:30 pm
College Graduation Open House	4 May	Haight Alumni Center—3:30 - 5:00 pm
University Graduation	5 May	Dee Glenn Smith Spectrum—9:30 am
College Graduation	5 May	TSC Ballroom—12 Noon
Summer Semester Begins	07 May	Class Schedule
Memorial Day	28 May	USU Holiday
Independence Day	4 Jul	USU Holiday
Eccles Science Learning Center	15 Jul	Scheduled Completion Date
Pioneer Day	24 Jul	USU Holiday
Summer Semester Last Day of Classes	02 Aug	Class Schedule
Summer Semester Final Exams	03 Aug	Class Schedule
Fall Semester First Day of Classes	27 Aug	Class Schedule
Labor Day	03 Sep	USU Holiday
Thanksgiving	21-23 Nov	USU Holiday
No Test Week	03-07 Dec	Class Schedule
Last Day of Classes	07 Dec	Class Schedule
Final Exams	10-14 Dec	Class Schedule

Department of Biology

James H. Cane presented a paper titled “Alternative Pollinators for Blueberries and Cranberries” at the Seventh International Symposium on Vaccinium Culture, Chillan, Chile, 4 December 2000.

James H. Cane gave a seminar titled “Genetic Improvements of Pollinators: Benefits of Pollen Hoarding for Cranberry Production” to the Department of Biology, Universidad Catolico, Valparaiso, Chile, 12 December 2000.

Daryll B. DeWald gave an invited talk titled “Salt Stress-Induced Phosphoinositide Signaling in *A. Thaliana*” at the Gordon Research Conference-The Cellular Basis of Salt and Water Stress in Plants, Tilton, New Hampshire, 20-25 August 2000.

Daryll B. DeWald gave invited talks titled “The Ptdlns 4-kinase, Pik1p, Regulates Protein Secretion at the Golgi in Yeast” at the Gordon Research Conference-Neural and Hormonal Peptide Biosynthesis, 16-21 July 2000, New London, New Hampshire, and at the 4th Harima International Forum on Phosphoinositide Signaling, Osaka, Japan, 1-4 November 2000.

Timothy A. Gilbertson gave a plenary lecture titled “Mechanisms of Vertebrate Taste Reception” in a session titled “The Art and Science of Taste Masking” at the Annual Meeting of the American Association of Pharmaceutical Sciences, Indianapolis, Indiana, 29 October - 2 November 2000.

Timothy A. Gilbertson presented a seminar titled “Gustatory Cues for Dietary Fat and Their Relationship with Dietary Fat Preference” to the Department of Physiology, University of Utah School of Medicine, Salt Lake City, Utah, 10 November 2000.

Hiroko Hama presented a seminar titled “Regulation of Protein Secretion by Phosphatidylinositol 4-Phosphate in *Saccharomyces cerevisiae*” at the Department of Biochemistry, Medical University of South Carolina, 5 October 2000.

Hiroko Hama presented seminars titled “Regulation of Protein Secretion by Phosphatidylinositol 4-Phosphate in *Saccharomyces cerevisiae*” at The Department of Molecular Biotechnology, Faculty of Engineering, Hiroshima University, on November 13 and the Department of Cell Biology, National Institute for Basic Biology, Okazaki, Japan, 10 November 2000.

Joseph K.-K. Li presented a paper titled “Expression, Purification and Functional Characterization of Blue-tongue Virus NS-2 Protein That Binds Only to ssRNAs” at the International Symposium of Current Topics in Gene Expression Systems, 24-27 September 2000, in San Diego, California.

Vijendra K. Singh presented a keynote address titled “The Emerging Role of Autoimmunity in Autism” at the International Allergy-induced Autism Conference, Birmingham, England, 29-30 September 2000.

Jon Y. Takemoto gave an invited talk titled “Syringomycin E: A Pore-Forming Lipodepsipeptide with Antifungal Activity” at the 4th International Workshop on Pore-Forming Toxins, Trento, Italy, 14-17 September 2000.

Jon Y. Takemoto gave a seminar titled “Sphingolipid Modulation of Membrane Pore Formation by Bacterial Lipodepsipeptide Syringomycin E” at the Institute of Biophysics of Semmelweis University, Budapest, Hungary, 26 September 2000.

Jon Y. Takemoto gave a seminar titled “Sphingolipid Modulation of Pore Formation by Antifungal Lipodepsipeptide Syringomycin E” at the Lilly Corporate Center of Eli Lilly and Company, Indianapolis, Indiana, 25 October 2000.

Jon Y. Takemoto presented seminars in Japan titled “Sphingolipid Modulation of Membrane Pore Formation by Bacterial Lipodepsipeptide Syringomycin E” at the Graduate School of Biological Sciences, Nara Institute of Science and Technology, 7 November 2000; the Department of Molecular Biotechnology, Faculty of Engineering, Hiroshima University, 13 November 2000; the Department of Biochemistry, Faculty of Agriculture, Kyushu University, Fukuoka, 15 November; and the Supra-biomolecular System Research Group, RIKEN Frontier Research System, Wako, Saitama, 17 November 2000.

Department of Geology

The Department of Geology at Utah State University (USU) was broadly represented at the Geological Society of America Annual Meeting, 12-16 November 2000. Talks, posters, debates, and field trips were presented by members of the faculty and student body, as detailed below in order of presentation:

10-12 November 2000. Field Trip titled “Neogene and Quaternary Hillslope Records, Basin Sedimentation, and Landscape Evolution of Southeastern Nevada.” Hosted by **Joel L. Pederson**, USU.

11-12 November 2000. Short Course titled “Characterization and Modeling Fluid Flow in Fault and Fracture Zones: The Reality and the Idealized” taught by **James P. Evans**, USU; Jonathan S. Caine, with the U.S. Geological Survey, Denver; Craig B. Forster (USU adjunct associate professor; University of Utah).

13 November 2000. Poster titled “Normal Fault Patterns around the Yellowstone Hot Spot: A New Model” by **Susanne Janecke**, USU; Michael Perkins, University of Utah; Robert B. Smith, University of Utah.

13 November 2000. Talk titled “Historical Analysis of the 1884 Bear Lake Earthquake, Utah” by Dawn Martindale, graduate student at USU; **James P. Evans**, USU.

13 November 2000. Poster titled “The Nucleation and Growth of Slip-Surfaces within Zones of

Deformation Bands in High-Porosity Sandstone” by **Zoe K. Shipton**, USU; Patience Cowie, Edinburgh University.

13 November 2000. Talk titled “Multistage Origin of the Coast Range Ophiolite, California: Implications for the Life Cycle of Supra-Subduction Zone Ophiolites” by **John W. Shervais**, USU.

13 November 2000. Talk titled “How Much Rock Uplift in the Colorado Plateau can be Attributed to Post-Laramide Erosion and its Isostatic Response?” by **Joel L. Pederson**, USU and Mousumi Roy, University of New Mexico.

14 November 2000. Debate titled “Kinematics vs. Mechanics: Are Only One or Both Useful Rationales for Understanding Rock Deformation?” moderated by **James P. Evans**, USU. This debate has been inspired by the 20th Anniversary Special Issue of *The Journal of Structural Geology* which contains several papers that argue for different positions about the relative utility, objectivity, and reliability of kinematic versus mechanical models of rock deformation.

14 November 2000. Talk titled “Long-term Hillslope Sedimentary Records: Implications for Understanding Overall Landscape Responses to Climate Change” by **Joel L. Pederson**, USU; Frank J. Pazzaglia, Lehigh University; Gary A. Smith, University of New Mexico.

15 November 2000. Poster titled “Stratigraphic and Structural Heterogeneities in Faulted Aeolian Sandstone from Borehole Geophysics and Cores, San Rafael Swell, Central Utah” by Kevin J. Thomas, USU; **James P. Evans**, USU; Zoe K. Shipton, USU.

Department of Mathematics & Statistics

Bob Heal, Larry Cannon and Richard Wellman taught a mini-course titled “Interactive Math Applets for Web-Based Instruction” at the International Conference on Technology in Collegiate Mathematics, Atlanta, Georgia, 16-19 November 2000.

Department of Physics

Jill Marshall gave a talk titled “Opportunities for Participation in NASA Space Science: IMAGE & AIS” at the 2001 Winter Meeting of the American Association of Physics Teachers and American Astronomical Society Joint Meeting, San Diego, California, 10 January 2001.

W. John Raitt attended an Industrial Physics Forum Academia-Industrial Outreach Workshop at the AIP Corporate Associates’ Industrial Physics Forum, San Diego, California, 5 November 2000.

T.R. Wood, D. Stoner, C. Tolle, J. James, D. Peak, B. Faybishhenko, and J. Crepeau, gave a presentation titled “Can a Fractured Basalt Vadose Zone be Characterized as a Complex System?” at the Geological Society of America, Reno, Nevada, 9-18 November 2000.

Center For Atmospheric & Space Sciences

The following papers were presented at the American Geophysical Union Fall Meeting, San Francisco, California, 10-14 December 2000:

Bela G. Fejer, John T. Emert, and Dwight Sipler. “Storm-Time Dependence of Nighttime F-Region Neutral Winds Over Millstone Hill.”

Clark M. Groves, Jan J. Sojka, Robert W. Schunk, Barbara A. Emery, and Doris J. Knipp. “Ionospheric Storm Simulation Driven by AMIE Output Magnetospheric MHD Output, and by Empirical Models, With Data Comparisons.”

J. Ruohoniemi, D. Baker, Bela G. Fejer, and Ousuke Saka. “Characterization of High Velocity Events Seen in the High-Latitude Ionosphere by the SuperDARN HF Radars.”

Robert W. Schunk. “Impact of Storms and Substorms on the Ionosphere.”

Robert W. Schunk, Ludger Scherliess, and Jan J. Sojka. “Ionospheric Data Assimilation.”

Jan J. Sojka. “Magnetosphere-Ionosphere Coupling From Ionospheric Perspectives.”

Jan J. Sojka, and Rod A. Heelis. “GEC Mission Rationale for Space-Time Resolution and Scale Characterization of Electrodynamical Processes Within the Ionospheric Conductivity Layer.”

The following posters were presented at the American Geophysical Union Fall Meeting, San Francisco, California, 10-14 December 2000:

Abdallah R. Barakat and Robert W. Schunk. “Effects of Low-Altitude Auroral Ion Energization on the Dynamic Behavior of the Generalized Polar Wind.”

Michael David, Jan J. Sojka, Robert W. Schunk, and Rod A. Heelis. “Solar EUV and Auroral Generation of the F-Region Tongue of Ionization.”

Robert D. Sears and Vincent B. Wickwar. “Lidar Observations of Climatology of Mesospheric Density Perturbations Above Logan, Utah.”

Lie Zhu, Jan J. Sojka, and R. W. Schunk. “Theoretical Modeling of Global Ground Magnetic Disturbance Patterns of Substorms.”

W. John Raitt, Donald C. Thompson, Louise C. Gentile, and Brian E. Gilchrist presented a paper titled “Observations of Strong Wave-Particle Interactions of KeV Electron Beams With Simulated and Actual Space Environments” at the International Union of Radio Science (URSI) National Radio Science Meeting, Boulder, Colorado, 8-11 January 2001.

W. John Raitt attended the University Corporation for Atmospheric Research (UCAR) Members Meeting, Boulder, Colorado, 10-11 October 2000.

Department of Biology

Robert L. Minckley, James H. Cane, and Linda Kervin. 2000. Origins and Ecological Consequences of Pollen Specialization Among Desert Bees. *Proceedings of Royal Society* (London) 267:265-271.

Daniel G. Mulcahy and Joseph R. Mendelson III. 2000. Phylogeography and Speciation of the Morphologically Variable, Widespread Species *Bufo valliceps*, Based on Molecular Evidence from mtDNA Molecular. *Phlogenetics and Evolution* 17(2):173-189.

Shoichiro Ozaki, Caryll B. DeWald, Joseph C. Shope, Jian Chen, and Prestwich, Glenn D. Prestwich. 2000. Delivery of Phosphoinositides and Inositol Polyphosphates into Cells Using Polyamine Carriers. *Proceedings of the National Academy of Sciences* 97:11286-11291.

T'ai Roulston and James H. Cane. 2000. Pollen Nutritional Content and Digestibility for Animals. *Plant System and Evolution* 222:187-209.

T'ai Roulston, James H. Cane, and Stephen L. Buchmann. 2000. What Governs Protein Content of Pollen: Pollinator Preferences, Pollen-pistil Interactions, or Phylogeny? *Ecological Monographs* 70(4):617-643.

Blair Sampson and James H. Cane. 2000. Pollination Efficiencies for Three Bee Species (Hymenoptera: Apoidea) Visiting Rabbiteye Blueberry, *Vaccinium ashei* Reade (Ericaceae). *Journal of Economic Entomology* 93:1726-1731.

Department of Chemistry & Biochemistry

Se Bok Jang, Lance C. Seefeldt, John W. Peters. 2000. Insights into Nucleotide Signal Transduction in Nitrogenase: Structure of an Iron Protein with MgADP Bound. *Biochemistry* 39:14745-14752.

Xi Li, Hai-Feng Zhang, Lai-Shen Wang, Grant D. Geske, and Alexander I. Boldyrev. 2000. Pentaatomic Tetracoordinate Planar Carbon, $[CAl_4]^{2-}$: A New Structural Unit and Its Salt Complexes. *Angewandte Chemie International Edition* 39:3630-3632.

Lai-Sheng Wang, Alexander I. Boldyrev, Xi Li, and Jack Simons. 2000. Experimental Observation of Pentaatomic Tetracoordinate Planar Carbon-Containing Molecules. *Journal of American Chemical Society* 122-7681-7687.

Department of Mathematics & Statistics

Calvin D. Ahlbrandt, Martin Bohner and Jerry Ridenhour. 2000. Hamiltonian Systems on Time Scales. *Journal of Mathematical Analysis and Applications* 250:561-578.

Miklos Csorgo, Lajos Horvath and Piotr Kokoszka. 2000. Approximations for Bootstrapped Empirical Processes. *Proceedings of the American Mathematical Society* 128:2457-2464.

Liudus Giraitis, Piotr Kokoszka and Remigijus Leipus. 2000. Stationary ARCH Models: Dependence Structure and Central Limit Theorem. *Econometric Theory* 16:3-22.

Lajos Horvath, Piotr Kokoszka and Josef Steinebach. 2000. Approximations for Weighted Bootstrap Processes with an Application. *Statistics and Probability Letters* 48: 59-70.

Piotr Kokoszka and Remigijus Leipus. 2000. Change-point Estimation in ARCH Models. *Bernoulli* 6(3):513-539.

Piotr Kokoszka and Thomas Mikosch. 2000. The Periodogram at the Fourier Frequencies. *Stochastic Processes and their Applications* 86:49-80.

Zhi-Qiang Wang. 2000. Sign-Changing Solutions for a Class of Nonlinear Elliptic Problems. *Nankai Series in Pure and Applied Math* 6:370-383.

Zhi-Qiang Wang and Thomas Bartsch. 2000. Multiple Positive Solutions for a Nonlinear Schrödinger Equation. *Zeitschrift für Angewandte Mathematik und Physik* 51:366-384.

Zhi-Qiang Wang, Thomas Bartsch and Kung-Ching Chang. 2000. On the Morse Indices of Sign-changing Solutions for Nonlinear Elliptic Problems. *Mathematische Zeitschrift* 233:655-677.

Zhi-Qiang Wang and Florin Catrina. 2000. On the Caffarelli-Kohn-Nirenberg Inequalities. *Comptes Rendus des Séances del l'Académie de Sciences. Série I. Mathématique* 330:437-442.

Zhi-Qiang Wang and Florin Catrina. 2000. Symmetric solutions for the Prescribed Scalar Curvature Problem. *Indiana University Mathematical Journal* 49:779-813.

Zhi-Qiang Wang, Norimichi Hirano and Shujie Li. 2000. Morse Theory Without (PS) Condition at Isolated Values and Strong Resonant Problems. *Calculus of Variations and Partial Differential Equations* 10:223-247.

Zhi-Qiang Wang and Shujie Li. 2000. Mountain Pass Theorem in Order Intervals and Multiple Solutions for Semi-linear Elliptic Dirichlet Problems. *Journal d'Analyse Mathématiques* 81:373-396.

Zhi-Qiang Wang and Klaus Schmitt. 2000. On Critical Points for Noncoercive Functionals and Subharmonic Solutions of Some Hamiltonian Systems. *Proceedings of a conference in honor of A. Lazer's sixtieth birthday, Electronic Journal of Differential Equations, Conf.* 05:237-245.

Zhi-Qiang Wang and Michel Willem. 2000. Singular Minimization Problems. *Journal of Differential Equations* 161:307-320.

Department of Physics

T.-C. Shen. 2000. Role of Scanning Probes in Nanoelectronics: A Critical Review. *Surface Reviews and Letters* 7:683-688.

J. R. Tucker and T.-C. Shen. 2000. Can Single-Electron Integrated Circuits and Quantum Computers be Fabricated in Silicon? *International Journal of Circuit Theory and Applications* 28:553-562.

Center For Atmospheric & Space Sciences

Jan J. Sojka, Lie Zhu, Michael David, and Robert W. Schunk. 2000. Modeling the Evolution of Meso-Scale Ionospheric Irregularities at High Latitudes. *Geophysical Research Letters* 27(21):3595-3598.

Grants & Proposals—

Department of Chemistry & Biochemistry

Lisa M. Berreau

National Science Foundation CAREER Award
1 February 2001 to 31 January 2006, \$450,000
"Bioinorganic Chemistry of Nitrogen/Sulfur Ligands Possessing Internal Hydrogen Bond Donors"

The bioinorganic chemistry of a new class of chelating nitrogen/sulfur ligands containing hydrogen bond donors will be developed. In the educational component, a new type of bioinorganic chemistry course utilizing cooperative learning strategies and new undergraduate laboratory experiments in bioinorganic chemistry will be developed.

Lisa M. Berreau

American Chemical Society Petroleum Research Fund
1 September 2001 to 31 August 2002, \$25,000
"Nitrogen/Sulfur Ligated Divalent Metal Hydroxide Complexes"

This project involves the synthesis and examination of the structural and reactivity properties of nitrogen/sulfur-ligated metal hydroxide species.

Department of Geology

James P. Evans

NSF - SGER (Small Grants for Exploratory Research)
November 1, 2000 to March 31, 2001, \$56,000
"Insights into Earthquake Propagation Processes from the Shallow Drilling Project, Chelungpu Fault, Taiwan"

This work will investigate how large magnitude earthquakes break to the earth's surface. The work will include field work at the site of two drill holes into the tip of the fault that caused a magnitude 7.6 earthquake in 1999.

Department of Physics

David Peak

Bechtel/INEEL (Idaho National Engineering & Energy Laboratories)
1 September 2000 to 1 September 2001, \$30,000
"Next Generation Vadose Zone Models"

To study the origin of large fluctuations in the flow of liquids through fractured rock and granula soils, with the intent of better understanding ground water contamination.

David Peak

FIPSE
1 September 2000 to 1 September 2001, \$11,000
"Redefining the Teaching of Applied Quantum Mechanics"

To study the effectiveness of using computer simulations on concept mastery related to learning quantum mechanics in courses on introductory modern physics.

Appointments, Awards & Honors—

Department of Chemistry & Biochemistry

John W. Peters has been elected to the Stanford Synchrotron Radiation Laboratory Users' Organization Executive Committee.

John W. Peters has been appointed to the Board of Expert Analysts for the Inorganic Chemistry Edition of the journal *Chemtracts*.
