Biology ♦ Chemistry and Biochemistry ♦ Computer Science ♦ Geology ♦ Mathematics and Statistics ♦ Physics

Insights

Fall 1997

College of Science | Alumni Newsletter | Vol. 6 Issue 1

MacMahon's Musings

Dean James A. MacMahon

Things are really jumping at USU, especially in the College of Science. The campus welcomed about 430 new students this quarter, an increase of about 2%. The contract to build the new Widtsoe Hall has been signed, and just two weeks ago the workmen began erecting fences to keep people out of the construction site. The college is attempting to get legislative support to replace aging equipment in our teaching labs and to hire some technical staff members to maintain equipment and help us to create better lab experiences for our students. We have a new development director, Jerome Davies, who got here shortly after I received word that we needed pledges of $1.5 million before 10 December if the Science Learning Center is going to be built as a part of the Widtsoe Hall project. On 4 November we received word of a $1.5 million gift. Whew! We are actively putting the finishing touches on all of our plans to implement the change from quarters to semesters. And last, but not least, we are just finishing the site review to renew the accreditation of the entire university for the next ten years. This level of activity is taxing for the faculty and staff, but they are performing admirably and I would grade them as doing A+ work.

You will be happy to hear that the new faculty we hired over the last five years are now well established and that both their teaching evaluations and their publication records suggest these are truly gifted scholars who care about education. If you have any questions about any of our programs or plans give me a phone call and let's talk.

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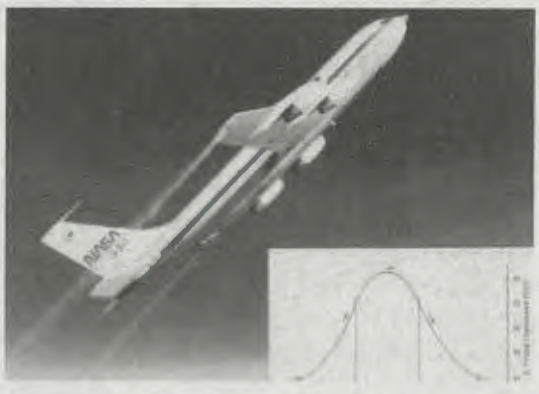
USU students fly on NASA jet

Utah State University engineering students designed a sound wave experiment that was tested on 15 and 16 April 1997 on the "Vomit Comet," a NASA-owned turbojet modified to produce brief intervals of weightlessness. Michael Anderson, an electrical engineering major, Mike Sorenson, a computer engineering major, Morgan Davidson, a technical engineering major, and Mike Anderson, a biological engineering major, designed this experiment and performed it on the plane.

The four-engine KC-135, the Vomit Comet, is used at Johnson Space Center at Ellington Field, Texas. It is modified to do a series of parabolic maneuvers resulting in periods of twenty to twenty-five seconds of weightlessness. These intervals are used by scientists and students to perform experiments that require a microgravity environment. The main body of the aircraft is hollow and the walls are padded, allowing technicians to float while performing their experiments. The nickname "Vomit Comet" is due to first-time passengers experiencing motion sickness. For the four USU students, flight on the Vomit Comet was a messy adventure.



The four USU engineering students belong to the Get Away Special program (GAS), and faced intense competition for time on the Vomit Comet. USU was one of twenty-four college teams chosen for the flight.

The students wrote the proposal, built the equipment, and went through all the medical testing required for Vomit Comet passengers. Their experiment was designed to investigate how sound waves move through granular material. The basic experimental tool was an 8-inch-long, 2-inch-wide box filled with tiny glass beads. There is a spring-loaded lever to send shock waves through the beads. The information obtained by measuring the pattern and intensity of the wave

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Inside *INSIGHTS*

Distinquished Golden Aggie Profile

HOWARD AND JUNE BLOOD

Imagine living on a 10,000-acre floating platform off the coast of Baja California. The platform is equipped to desalinate sea water for domestic use and to generate power from the waves, along with other practical and useful functions. This may seem like a science fiction dream to some, but not to College of Science Golden Aggie Howard Blood, whose company hopes to have a prototype in place within two years.

Dr. Blood was born and raised in Logan, the son of Dr. and Mrs. H. Loran Blood. Dr. Loran Blood was a collaborator in the Utah Agricultural Experiment Station, serving as a botanist in the Bureau of Plant Industry, Soils and Agricultural Engineering.

Dr. Blood recalls living in a house on campus located where the Taggart Student Center now stands and ice skating in the current parking terrace area. He was a student at Whittier Elementary School, graduated from Logan High, and attended USU for one year before serving in the U.S. Army Air Corps during World War II. Dr. Blood met his future wife, June, when he was home on leave.

Raised in Corinne and Brigham City, Utah, June Blood learned early to work very hard as she helped on the family farm. Along with thinning beets and other chores, she developed into a prize-winning milker, a skill which eventually paid off when she won the cow milking competition at USU two years in a row. After high school, she worked in Ogden as a telephone operator before coming to USU, where she operated the switchboard in President Peterson's office. As a music major, she also worked weekends singing at Dansante in downtown Logan, and it was there she first met her future husband. Dr. Blood had seen her earlier at church and wanted to become acquainted. "As soon as we said 'How do you do' we both knew we were meant to be together," says Dr. Blood.

After a two-month whirlwind romance, the two were married. Dr. Blood completed his final year in the service, then the Bloods returned to USU where Dr. Blood finished degree work to obtain a BS in physics. They then headed for Seattle, Washington, where Dr. Blood had a fellowship at the University of Washington (UW) and Mrs. Blood worked for the telephone company.

Two years into graduate school, Dr. Blood began to work as an instructor at the university. "There was a great need for instructors to teach the many new students who came as a result of the GI Bill," Dr. Blood says. In 1954, he was awarded a PhD in solid state physics, and stayed at UW as a faculty member for twenty years, primarily teaching solid state physics to electrical engineering students. "The transistor was new at that time, but no one in electrical engineering knew solid state physics," says Dr. Blood. "My faculty appointment was actually in the electrical engineering department, which seems sort of funny for a PhD in physics."

Though much of Dr. Blood's research is difficult to explain and the practical applications are not always immediately apparent, Mrs. Blood benefited from his original work in nuclear magnetic resonance when she needed an MRI (magnetic resonance imaging), a process that resulted from that work. "I was very grateful then," she says.

During his years at UW, Dr. Blood had the opportunity to chair a NATO steering committee responsible for building facilities to calibrate radar and other naval equipment. The Bloods fondly recall the wonderful people from around the world with whom they worked and socialized. "I remember a party at our house when it seemed that each person spoke a different language," says June.

From UW, the Bloods went to San Diego, where Dr. Blood served as the technical director of the Naval Undersea Center, responsible for 3,000 engineers and a $500 to $600 million annual budget. After two years and a reorganization, he became director of the newly named Naval Ocean Systems Center.

In 1983, Dr. and Mrs. Blood again moved, this time to Baltimore, Maryland, where Dr. Blood set up a research and technical division for Gould Corporation. Eventually the Bloods came back to San Diego when Dr. Blood was made Gould's vice president for West Coast operations.

Following his service with Gould and after a brief retirement, Dr. Blood started his own company to design and develop floating platforms. The research is funded by many groups interested in utilizing such platforms: the military, the oil industry, the power industry, and municipalities. The city of Tokyo has even asked Dr. Blood's company to design an off-shore airport to relieve some of the congestion on land.

The Bloods, along with their professional accomplishments, are also the proud parents of a son who lives with his wife and three children in Florida.

Eccles Fellowship Recipient

Yarrow Axford, Department of Geology

A geology graduate student, Yarrow Axford, is this year's recipient of the Willard L. Eccles Foundation Science Fellowship.

Ms. Axford's decision to attend graduate school at Utah State University was a result of her interest in conducting original geologic research under USU geology professor Darrell Kaufman, who she met on a research trip to Alaska. Her primary research focus is glacial geology and quaternary.

Ms. Axford's avid interest in science was awakened during her undergraduate years at Mount Holyoke College, which is famed for excellent undergraduate science programs.

"They taught me that science is about inquiry and exploration, not simple memorization and regurgitation of facts," Axford says. Geology became her main interest when she was able to spend time discovering science in nature.

During the summer of her junior year, Ms. Axford traveled to Denali National Park, Alaska. This was her first experience in a real wilderness environment and her first experience with serious field work. The trip strengthened her determination to conduct additional research. Ms. Axford and Al Werner, a professor at Mount Holyoke College, went to Alaska to conduct research centered on environmental changes that have occurred in that area over the past 20,000 years. Axford met USU's Professor Darrell Kaufman on this trip.

From a small kettle lake informally named Pork Chop Pond, the research team recovered a core sample from the lake bottom. Ms. Axford did additional research on the core sample throughout her senior year at Mount Holyoke College. Her laboratory work included x-raying and photographing the core, obtaining various sets of proxy data to describe the core, studying sediment samples with a scanning electron microscope, and preparing samples for tephra analysis and radiocarbon dating. Through this research, Ms. Axford gained a clearer understanding of the composition of the sediment throughout intervals of the core formation and was able to reconstruct climate changes that had occurred.

While doing her senior project, Ms. Axford interviewed for teaching jobs, but her interest in continuing field and laboratory research turned her toward graduate school. She applied to several universities, but her decision was made by the chance to do further work with Professor Kaufman in Alaska. The Eccles Fellowship allows Ms. Axford more flexibility in her curriculum, a chance to do more field work in her major study of glacial geology, and exposure in other studies beyond her emphasis.

Ms. Axford will prepare during this academic year for future trips to Alaska, where she plans to spend the next two summers doing field work. Her third postgraduate summer will be spent in Minnesota. After fulfilling degree requirements, she plans to teach.

"It is my opinion that science can do little good if it is not effectively communicated to nonscientists (students, policy makers, the general population). So I am pretty sure that I will teach someday, hoping to help bridge the unfortunate and unnecessary divide that exists between scientists and other folks," says Axford.

Ms. Axford's research goals are to learn more of the processes of scientific research, to become a better scientist, and to contribute to the growing scientific understanding of climate change.

The Willard L. Eccles Foundation, a philanthropic organization, has long been a supporter of higher education at Utah State University. Over the past several years, it has provided research funds for faculty who work on human welfare projects such as disease control, clean-up of environmental contamination sites, and food production in third-world countries. Fortunately for USU, the Eccles Foundation has extended their generosity through fellowships, now available to graduate students in the College of Science who desire to promote human well being and health.

These fellowships target students with outstanding academic achievement who creatively and ambitiously seek to solve research problems. Applicants submit an essay identifying plans to better the world and a resume indicating special academic efforts, skills, and achievements. Each fellowship provides $15,000 a year for three years, thus enabling the recipient to focus talents and time on graduate studies and thesis research projects. The Willard L. Eccles Foundation awards one fellowship each year. "The fellowship is an investment by the Eccles Foundation in helping us attract the best students," says James MacMahon, dean of the College of Science.

1997 College of Science Awards

Dr. James Evans

College of Science Researcher of the Year

Dr. James Evans is a busy man. In the ten years he has been at Utah State University, he has published about thirty papers and forty-five abstracts, not to mention teaching numerous classes. It is this drive that has earned Dr. Evans the title of College of Science Researcher of the Year.

"Basically my research is concerned with how rocks deform, especially with emphasis on the interactions of fluid and deformation processes in rocks of the upper ten kilometers of the earth's crust. I also specialize in faults—how they form, the mechanisms at the microscopic scale, and the interactions between deformation and fluid flow," Dr. Evans said.

Beginning in 1998, Dr. Evans will serve as chief editor of the *Journal of Structural Geology*. He has worked on projects funded by the National Science Foundation, the Petroleum Research Fund, the American Chemical Society, and the Utah Geological and Mineral Survey, to name a few. Dr. Evans has also worked on a couple of collaborative research projects dealing with the San Andreas fault, and he says this has been some of his most fascinating work, "though they all have been interesting."

Dr. Evans received a bachelor of science degree in geology and engineering from the University of Michigan and a master's and PhD in geology from Texas A&M University.

Martin Juras

College of Science Graduate Student of the Year

Martin Juras, Department of Mathematics and Statistics, was named the College of Science Graduate Student of the Year. His dissertation focuses on the general area of geometric methods for nonlinear differential equations.

In support of his nomination, Mr. Juras's major professor wrote: "Altogether, this dissertation is an excellent mix of general theory and specific applications, it contains important new results on the geometry of the PDE and it does a fine job of reviewing portions of the classical literature...he is arguably one of the top two or three PhD graduates in Mathematics at Utah State University..."

Prior to coming to USU, Mr. Juras completed most of the requirements for a PhD in computer science in Czechoslovakia. He was awarded two PhD degrees in 1997, one in computer science from the Technical University in Brno and one in mathematics from Utah State University.

Mark DeWall

College of Science Scholar of the Year

Mark DeWall was named College of Science Scholar of the Year with a GPA of 3.97 in applied biology. He completed his undergraduate work at USU in spring 1997 and graduated summa cum laude.

During his years at USU, Mr. DeWall was awarded a sophomore tuition waiver, the biology department's Outstanding Student Award, the Seely-Hinckley Scholarship, the Joseph E.

Greaves Memorial Scholarship, and an ISU/USU scholarship. His professional interests include conducting research in an industrial setting involving subjects such as molecular biology and genetics, primarily virus-host interactions, and the cellular transformation that occurs in the onset of cancer. Mr. DeWall has been awarded a graduate teaching assistantship at Purdue University, where he is studying molecular biology.

Dr. John Hubbard

College of Science Advisor of the Year

Time is a barrier Dr. John Hubbard fights, especially as an advisor of more than forty-five students. However, he does not let it stop

him. With the help of a "great secretary," Dr. Hubbard makes time for his students. It is this dedication that sets Dr. Hubbard apart as Advisor of the Year for the College of Science.

"Dr. Hubbard advised me when I was an incoming freshman, and he seemed to know just what I needed, even though I didn't. He helped me set the academic goals that have helped me stay focused in school," said Ruth Anderson, a junior at Utah State.

Time is the only pitfall, though, that Dr. Hubbard finds in being an advisor. "I enjoy getting to find out what the student is interested in and helping them through the bureaucracy."

Dr. Hubbard has been teaching chemistry courses at Utah State since 1989. Prior to coming here, he taught at the University of Vermont and worked as a visiting scientist at Dartmouth for four months. Dr. Hubbard received a bachelor's degree in chemistry from the University of Missouri and a PhD in chemistry from the University of Arizona. He also spent fifteen months in Frankfurt, Germany, working on his postdoctorate in chemistry.

Sean O'Leary

College of Science Graduate Student Teacher of the Year

After graduating in 1994 with a bachelor's degree in mathematics and statistics, Sean O'Leary, 1997 College of Science Graduate Student Teacher of the Year, began pursuing a master's degree at Utah State University and was awarded a teaching assistantship. He has taught Math 002, 101, 105, and 106 at USU, and currently teaches full time at the Bridgerland Applied Technology Center while finishing his master's degree work.

It did not take long for him to realize he loves teaching. "I enjoy learning and I enjoy helping others learn...Many students have struggled with math their entire lives. Having my students tell me they are 'finally able to understand math' and they 'actually enjoy doing their homework' motivates me to do even better," he said.

One of the things Mr. O'Leary says he learned from teaching is that each student starts on a different level. "I want each student to progress from whatever point they currently find themselves. This is much more than just delivering a set amount of content. In addition to teaching them the content, I want each of them to expand their abilities and reach higher levels," he said.

Dr. Jill Marshall

College of Science Teacher of the Year

Few students turn out to be physicists, College of Science Teacher of the Year Dr. Jill Marshall admits. When Dr. Marshall teaches physics classes, this is always foremost in her mind. Her energy and excitement captivate all students, not only those destined to become scientists.

"She has tons of energy when she teaches. You can tell she loves it," said Joanne Farr, one of Dr. Marshall's physics students.

It is this same attention to students and physics that attracted Dr. Marshall to Utah State University. "The physics department at USU is unique. That is one of the reasons I came here," she said. "They recognize the importance of teaching people who are not going to be physicists."

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Jet Propulsion Lab Commisions

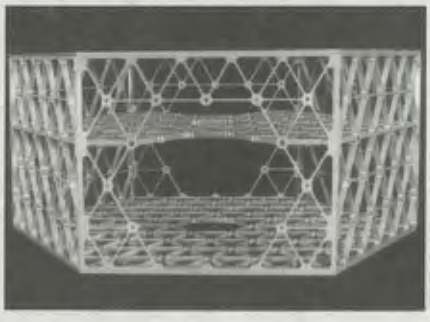
Student-Designed Satellite

Students from the GAS (Get Away Special) program at USU were commissioned by Jet Propulsion Laboratory (JPL) to design a satellite structure to transmit cosmic rays. USU was chosen for this project based on the university's past experimentation in satellite design.

The satellite, called the Wide Field Infrared Explorer (WIRE), was designed to study the evolution of starburst galaxies. It is an iso-grid structure built out of aluminum with a 12-inch diameter and no moving parts. The intricate design of triangles cut out of the metal makes it lightweight and sturdy. This instrument requires 35 watts of power and a data rate of 9,000 bits per second.

During a four-month lifetime, WIRE will amass a catalog which exceeds the size of the existing Infrared Astronomical Satellite Point Source Catalog. It will observe galaxies 500 times fainter than the last satellite was able to discern. WIRE will be launched from the Goddard Space Flight Center in Greenbelt, Maryland, by October 1998. It will be placed 248 miles above Earth's surface.

GAS students Steve Fennosback, Casey Hatch, Rick Rambo, and Flint Hamblin designed the satellite on the CAD layout system and oversaw the entire project. The satellite was manufactured on a Space Dynamics Lab milling machine in USU's Research Park in Logan. The project was started in January 1997, and the hardware was delivered in April 1997, with a construction cost of $7,000. The students received a small grant for the project.

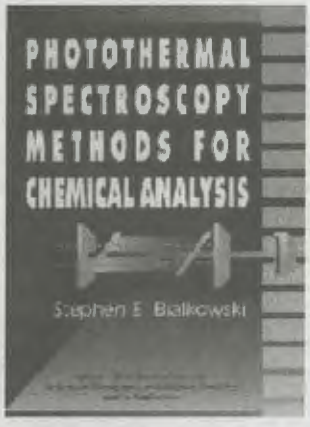


The GAS program is made up of thirty to fifty student volunteers, who benefit from the hands-on experience they receive. The program is supported by the university under the aegis of the physics department, which provides secretarial support and offers some monetary assistance to the students.

Chemistry Faculty Member Publishes Book

Photothermal Spectroscopy
Methods for Chemical Analysis
Stephen E. Bialkowski
Wiley, New York, 1996. 584 pp.
$89.95 hc ISBN 0-471-57467-8

In 1996, Dr. Stephen E. Bialkowski, USU Department of Chemistry and Biochemistry, published his book *Photothermal Spectroscopy Methods for Chemical Analysis.*



For use as a guide to the application and theory of optical measurement of laser light-induced photothermal phenomena in homogeneous media, the book provides information on a mathematical basis, methodologies, and reported applications of the various types of photothermal methods. The book covers both theoretical and practical aspects of photothermal spectroscopy. Several sections include entirely new treatments of the subject, including a broader theoretical basis for signal modeling and nonlinear spectroscopy.

Photothermal spectroscopy has had a tremendous effect on the field of analytical sciences. It is unique in its ability to measure optical absorption coefficients and absorbances. Bialkowski's book has a potentially wide audience, from undergraduate and graduate students to scientists already working in the field and those who may be intending to study photothermal spectroscopy.

"This book is an unmatched resource in its overview of the mathematical basis for signal description, including hydrodynamic, optical, physical, and chemical phenomena relating to photothermal phenomena," said one reviewer, Tsugus Samada, University of Tokyo (Japan).

"Bialkowski is definitely among the leaders in photothermal spectroscopy, having helped make major contributions in the instrumentation and measurement-science domain of ultrasensitive detection in analytical chemistry," said another reviewer, Andreas Mandelis, University of Toronto. "This book stands alone among a dozen or so existing books on photoacoustic and photothermal phenomena in that Bialkowski actually worked on the research results of his colleagues and has placed them in the proper perspective within the array of photothermal spectroscopic techniques."

The first chapter of Bialkowski's book is available on his web page: www.chem.usu.edu/faculty/sbialkow.

Dr. Michael Porsch

Postdoctoral International Visiting Scholar, Departs USU

November marked the end of a more than one-year stay in the United States for Dr. Michael Porsch, visiting scholar from Germany working in the Department of Chemistry and Biochemistry at Utah State University.

Dr. Porsch joined Dr. Michael E. Wright's group as a postdoctoral fellow in August 1996. His stay in the United States was supported by the Feodor Lynen Fellowship, a prestigious German fellowship from the Alexander von Humboldt Foundation. Only thirty percent of people who apply for the Humboldt receive it, Dr. Porsch said.

While at Utah State, Dr. Porsch produced some exciting chemistry. Working with Dr. Wright, Chad Buckley, and Brooks Cochran, the group had an article published in the *Journal of the American Chemical Society*, one of the top journals in the chemical community, Dr. Wright said. The article was also highlighted in the 8 September 1997 issue of *Chemical and Engineering News.*

Having Dr. Porsch at Utah State has been a unique opportunity for the Department of Chemistry and Biochemistry. While the department benefits from three to four postdoctoral visiting scientists a year, to have an international scholar is rare, especially one supported by such a distinguished fellowship, Dr. Wright emphasized.

While at USU, Dr. Porsch worked largely with the synthesis of conjugated polymers. However, his influence was felt in more than just his research. "He has worked with the USU students, and he has helped them to grow," Dr. Wright said. "He has had a tremendous affect. He has helped students to have a better appreciation for German expertise and culture. He has incorporated German culture and expertise into the [Utah State University] chemistry program."

USU's Dr. Wright knows from first-hand experience the hard work it takes to be a Humboldt fellowship recipient. Supported by a Humboldt fellowship, he spent 1993-94 in Germany working at the University of Regensburg during a sabbatical leave from Utah State. It was during his time in Germany that Dr. Wright met Dr. Porsch, who was then a student at the university. Dr. Wright encouraged Dr. Porsch to apply for a Humboldt fellowship and supported his application. "I was aware of his work and knew he would fit in well," Dr. Wright said.

"Many international scholars are attracted through the sabbatical leave of professors. This is one of the reasons these leaves are so important to the college," Dr. Wright said.

Because of his time in Germany, Dr. Wright also understands some of the adjustments Dr. Porsch faced while working in the United States. He added, "Michael has been one of the most positive and productive additions I've had to my research group."

In Dr. Wright's research group, Dr. Porsch also worked with postdoctoral visiting scholar Phil Stafford, from the University of Illinois, and several graduate and undergraduate researchers.

Dr. Porsch studied chemistry at the University of Regensburg, graduating in September 1993. Continuing his work with Professor Jorg Daub, Dr. Porsch was awarded a PhD summa cum laude from the University of Regensburg in May 1996.

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patterns is relevant to the physics of landslides, avalanches, and earthquakes, and is useful when handling materials such as salt, pharmaceuticals, and highway sands and gravel. Because of the settling effect of gravity, this project cannot be performed on the ground.

The experiment had the chance of being performed numerous times in a single flight because the plane does forty up-and-down maneuvers in which zero gravity is reached at each high point. Each cycle of the experiment requires the participation of two individuals, so if one experimenter was busy trying to recover from the loss of lunch, the experiment could not be performed. And, sickness affected the experimenters' overall ability to function. Because each run of the experiment took longer than expected, there was not enough good data to judge whether the project was fully successful.

Drs. Jan Sojka and David Peak of the physics department supervised the USU team. They followed the experiment from the ground. Lynnette Harris, a USU media specialist, accompanied the students on the flight. As a follow-up to the experiment, Mike Anderson designed an instructional video and sent it to the flight program organizers.

The GAS program, a volunteer student program, is a way for USU students to go beyond in-class learning and receive hands-on training.

College of Science Coffee Break

Dean Jim MacMahon, left; Jay Gogue, provost, right

Ivan Palmbald, biology, left; Kim Sullivan, biology, right

Dean Jim Shaver, left; Donald Cooley, head of computer science, right

Kim Sullivan, biology, left; Emily Stone, mathematics, right

Graduation Open House

Faculty, staff, and guests enjoyed socializing with each other last June at the Graduation Open House.

New Faculty Join College of Science

James Fry

Department of Biology

James Fry, assistant professor in the Department of Biology, holds a BA in biology from Columbia University and an MS and a PhD in biology from the University of Michigan at Ann Arbor. He did postdoctoral research in the Department of Zoology at Duke University and spent six months as a visiting scientist at Uppsala University, Sweden, in 1996.

Dr. Fry investigates the evolutionary genetics of quantitative traits that show continuous variation among individuals in a population of organisms. Understanding the heritability of such traits as height or weight and how natural selection acts on those traits is fundamental to understanding the evolutionary process. Dr. Fry's current research focuses on the maintenance of genetic variation in life-history traits such as survival and egg production in the fruit fly.

Joseph R. Mendelson III

Department of Biology

Joseph R. Mendelson III, assistant professor in the Department of Biology, holds a BA in biology from the University of California, Santa Barbara. He was awarded an MA by the University of Texas at Arlington, and a PhD by the University of Kansas.

A lifelong interest in reptiles and amphibians has led Dr. Mendelson to field research in Mexico, Guatemala, Peru, and Australia. Most recently, he has focused on a group of distinctly crested toads in Central America and unusual Marsupial Treefrogs from South America, studying the evolution of distinctive morphologies, life histories, and behaviors of these animals. Dr. Mendelson also studies the overall pattern of animal distributions with respect to geography, their evolutionary history and ecology.

Daiusz M. Wilczynski

Department of Mathematics and Statistics

Dariusz M. Wilczynski, assistant professor in the Department of Mathematics and Statistics, holds an MS in mathematics from A. Mickiewicz University in Poznan, Poland, and a PhD from Indiana University. He as served as assistant professor at the University of Notre Dame and as a visiting assistant professor at Yale University.

Dr. Wilczynski's research area is geometric topology, in particular the topology and geometry of four-dimensional manifolds. In the past few years, he has investigated embedding and classification problems for surfaces knotted in four-dimensional space. He is presently working on the topological classification of closed and compact four-manifolds with boundary, and isotopy classification of embedded surfaces and their invariants.

John W. Peters

Department of Chemistry and Biochemistry

John W. Peters, assistant professor of biochemistry in the Department of Chemistry and Biochemistry, holds a BS from the University of Oklahoma, and a PhD from Virginia Tech.

Preceding his appointment to the faculty at USU, Dr. Peters held a postdoctoral position under Professor Douglas C. Rees at the California Institute of Technology. His primary research interest is structure/function relationships of metal containing proteins. To a large extent, the research involves determining the structure of proteins using x-ray diffraction methods.

Mark Fels

Department of Mathematics and Statistics

Mark Fels, joins the Department of Mathematics and Statistics as assistant professor. He holds an undergraduate degree in computer science and applied mathematics from the University of Waterloo, Waterloo, Canada; a master's degree in applied mathematics from the University of Waterloo; and a doctorate in pure mathematics from McGill University in Montreal, Canada.

Before his appointment to the faculty at USU, Dr. Fels served as visiting assistant professor at USU. He spent one quarter at the Institute for Advanced Study and was a research assistant in both biomechanics and physics at the University of Bern, Switzerland.

His main interest is differential geometric aspects of differential equations, often involving a number of topics in mathematical physics.

D. Jerome Davies

College of Science Dean's Office

D. Jerome Davies was named director of development for the College of Science in August. A 1987 USU graduate with a BA in liberal arts, Jerome also holds a master of nonprofit organizations degree from the Mandel Center for Nonprofit Organizations at Case Western Reserve University.

Before joining the dean's office staff, Jerome was director of special gifts at Western State College and Foundation in Gunnison, Colorado, and served as interim executive director of that organization immediately preceding his move to USU.

MUSINGS

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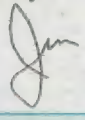
Be sure to send us any of your sons or daughters, or those of your friends and neighbors. I know I can guarantee an exceptional education in a pleasant and safe environment. During interviews with our graduating seniors I hear that nearly all our students are pleased with their education at USU and that if they had it to do all over again they would choose us. I want to be sure that we can offer future students an even better experience, but I need your help, large or small, and I have to swallow my pride and just ask boldly.

I mentioned our new development director. He will be developing both phone and mail campaigns to elicit your help as we try to garner funds to help realize some of our dreams. These dreams include more student scholarships, endowed chairs for some professors, a new astronomical observatory for teaching, and a new wing for our ever more crowded biologists. Some of you do not like to receive phone calls soliciting your help; however, telephoning is one way for us to get our story out to you, so I hope you will endure our brief intrusion into your daily life.

In a letter like this I cannot fully convey the excitement we all feel about working with our students and faculty. I hope this issue of *Insights* gives you a sense of pride in the college and the university. Your hard work as students and your subsequent successes have helped us to develop the fine reputation we enjoy. Please know that we are proud of you and want you always to be proud of being a College of Science Aggie.

I look forward to writing to you in the spring and will keep you apprised of our progress.

Sincerely,



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While at USU, Dr. Marshall has worked on developing an introductory physics curriculum free of the biases that have often discouraged women students, herself included, in the past. While developing the curriculum, she has investigated innovative methods of teaching and learning physics.

Dr. Marshall says the USU physics department tailors education to the student. This focus on learning, especially that which occurs in introductory classes, thrills Dr. Marshall; she is most engaged when students are both learning from her and teaching her.

With an undergraduate degree from Stanford University and a PhD in physics from University of Texas at Austin, Dr. Marshall joined USU in 1994 following a ten-year stint with Southwest Research Institute in San Antonio, Texas. There she specialized in instrument development for space research and science education in the community. She was the scientist in charge of diagnostics on the Space Experiment with Particle Accelerators, which flew on the 1992 ATLAS-1 Shuttle mission. She was also part of the design team for the Cassini Saturn Orbiter Plasma Spectrometer.

USU Builds Student Alumni Career Network

An alumni network...is perhaps the most valuable resource career services offer. Other job hunters would kill to gain access to similar lists of well-connected, interested contacts.

from *Managing Your Career*, published by the *Wall Street Journal*

The Student Alumni Career Network at USU needs your help. "No one," says Dallin Phillips, assistant director of the USU Career Services and Cooperative Education office, "knows a profession as well as someone working every day in it. USU alumni are a priceless resource for our students."

Offering students a chance to benefit from first-hand knowledge, the Student Alumni Career Network maintains a list of alumni willing to advise USU students as they investigate potential careers.

"Typically students use the network at two times," says Dallin. "First, they use the network when they are arranging an internship or cooperative learning experience. Alumni are able to offer insight into internships that will prepare students for their professional lives. Then, the students use the network as they enter the job market."

Alumni members of the network can expect a few calls a year from USU students, who will ask questions relating to employment in and preparation for specific careers.

If you are interested in participating in the Student Alumni Career Network, or would like more information regarding the network, please check the appropriate box on the alumni questionnaire, or email us at scido@cc.usu.edu.

Alumnet Responses

1934

Robert John Evans (BS 1934, Chemistry, MS 1936, Biochemistry) received a PhD in 1939 from the University of Wisconsin and was appointed to the faculty of the State College of Washington. Seven years later, he was appointed to the faculty of Michigan State University, where he served for thirty years. In 1977, he retired as professor of biochemistry and returned to Utah, where he still lives. His wife, **Alice (Pugmire) Evans** (BS 1935) died in December 1977. Until a few years ago, Mr. Evans has traveled, but his journeys have been limited recently by poor health.

1950

Arizona resident **Alban R. Essbach** (BS 1950, Zoology) began a successful career with his appointment to the New Jersey Department of Fish and Game, where he served as a fisheries biologist from 1951 to 1964. In 1965, he moved to Arizona where he served first as a fisheries biologist and then as chief of the fisheries division before starting his own management consulting business. He and his wife, Marie Crowell, have five children and seven grandchildren.

1951

A 1944 graduate of the U.S. Coast Guard Academy with a degree in marine engineering, **Joseph K. Everton** (MS 1951, Mathematics) also holds a PhD in computer science from the University of Utah. After working at the Los Alamos Scientific Lab from 1955 to 1957, he joined the Sperry Univac Corporation, where he remained until his retirement in 1985. Dr. Everton now lives in Utah, and his memory was tickled by the story about Neville Hunsaker in the Spring 1997 edition of *Insights*. Dr. Everton has warm memories of his professional association with Neville Hunsaker, and especially remembers hearing Hunsaker say, "I think it should be illegal for a person to be paid for doing something he enjoys as much as I enjoy teaching that class." In the same article, Dr. Everton recognized Professor Larry Cannon, who was a student of Dr. Everton's in the early fifties.

1957

Retired USDA meat and poultry inspector **James R. Hasler** (BS 1957, Bacteriology) lives in Kentucky, where he and his wife are enjoying life. Dr. Hasler, who was awarded a DVM in 1961 by Kansas State University, has taken up wood carving and is still active in his church assignment and scouting.

1971

Family physician **Mark Guilfoose** (BS 1971, Zoology) received an MD from the University of Vermont in 1983 after teaching high school biology and physics for seven years. He is currently a faculty member at the Gersinger Medical Center family practice residency program. He and his wife, Kathleen, have two sons, John and Chris.

ALUMNET
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ALUMNET

1969

Jay M. Johnson (BS 1969, MS 1973) is regional vice president of sales for the Pacific Northwest at Dreyfus Investments.

1975

N. Alden Caldwell (BS 1975, Microbiology) is senior professional neurology specialist with Novartis Pharmaceutical. He and his wife, Carla, have been married for twenty-five years. Three of their children are in college, and one is in high school.

Currently working toward her specialty at SUNY-Health Science Center in Syracuse, New York, **Marianne Musa Nimah** (BS 1981, Chemistry) was awarded an MD by American University of Beirut in 1996. She is presently interning in pediatrics.

1987

Robert K. Peterson (BS 1987, Biology) was awarded his MD by Albert Einstein College of Medicine in 1992. He is currently completing a one-year fellowship in sports medicine with Mississippi Sports Medicine in Jackson, Mississippi.

1987

Researcher **Terry J. Lofthouse** (BS 1987, Chemistry) is employed by Battelle Memorial Institute where he is CIS director for the analytical chemistry department of the national security division. Married to **Lorena (Simnitt) Lofthouse**, who attended USU in 1987 and 1988, he is also a consultant to her multimedia and internet publishing company.

1989

In September, **Mark Shelton** (PhD 1989, Biology) became associate dean in the Cal Poly State University College of Agriculture. He has served as head of the crop science department and teaches entomology.

As director of the Oregon Health Services Commission, **Darren Coffman** (MS 1989, Statistics), oversees maintenance of the prioritized list of health services used to determine benefit packages for the Oregon Health Plan. **Mary (Brindley) Coffman** (BS 1989, Biology) is a registered nurse, and is employed by a Portland, Oregon, nursing home, where she is a resident care manager. The couple has an eight-month-old daughter, Abigail.

1990

Presently emergency room director at Osan Air Force Base in South Korea, **Shane Powell** (BA 1990, Chemistry) received an MD in 1994 from the University of Utah School of Medicine. He plans to start a residency in ophthalmology at the Medical College of Virginia in one year.

1992

Richard C. Stone (BS 1992, Public Health/Industrial Hygiene) has worked with the Pantex Plant in Texas as an industrial hygienist for the past four and one-half years. He is pursuing certifications in safety and industrial hygiene.

1993

Travis Q. Talbot (BA 1993, Biology) has been awarded his DDS summa cum laude from Creighton University. He will spend the next three years in the orthodontics residency program at the Mayo Clinic.

1994

Rebecca M. (Schmidt) Condas (BS 1994, Medical Technology) is working in transfusion services at LDS Hospital in Salt Lake City. She has been married for three years to Kevin Condas.

Entering his clinical rotation years at University of Health Sciences College of Osteopathic Medicine, **Derek Ipsen** (BS 1994, Pre-med Biology) has been inducted into Psi Sigma Alpha, the National Osteopathic Scholastic Honor Society. Following his two clinical years of training, he will be a physician in the U.S. Army.

Walter Johnson (BS 1994, Computer Science) is a programmer for Phone Directories Company. He is married and has "two wonderful, if somewhat mischievous, children."

1996

Currently pursuing a master's degree in physical therapy at the University of Utah, **Tiffany (Marshall) Fairbanks** (BS 1996, Public Health Education) married Whit Fairbanks in July 1996. She is employed by the Utah Governor's Council on Health and Physical Fitness and hopes to be awarded an MS in 1999.

Donald S. Hamilton (BS 1996, Geology) is employed as a field hydrologist by the Utah operations division of the River Gas Corporation. He is a member of AAPG and UGA. He is currently building a home.

Currently employed by First Security Bank in Salt Lake City, **Kami Woodruff** (BS 1996, Mathematics/Statistics) is a consumer loan adjustor. She is preparing to return to USU to obtain a master's degree in business administration.

Survey Introduction

We want to improve communication with you. We have included a brief reader survey in this issue, and we ask you take a few minutes to complete it. Unfortunately, our new web site is still under construction, and so we are unable to offer an on-line version of the survey, although we plan a more complete alumni survey later in the academic year that will be available on line. However, we have added an email address to our Alumnet response options (scido@cc.usu.edu), and we invite you to use email to communicate with us if that is convenient for you.

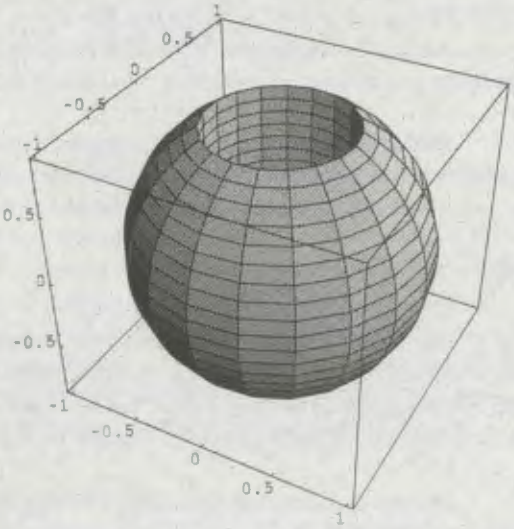
Whatever your chosen method of communication, we urge you to communicate with us. Your post-graduate experience, the lessons you have learned in your professional life, and your insights into the College of Science experience at USU are valuable resources. We ask you to share them with us.

College of Science Alumni & Faculty Awards

We invite you to submit a notice of your recent publications, awards, and honors for inclusion.

Coray wins NORCHE Prize

The Northern Rockies Consortium for Higher Education (NORCHE) awarded the NORCHE prize to Chris Coray, USU Department of Mathematics and Statistics, for his proposal entitled "Teaching Multivariable Calculus in a High-tech Environment." The prize carries a $3,000 honorarium. The NORCHE Prize has been awarded only four times, and it was first awarded in 1991.



Dr. Coray's proposal identifies the difficulties in visualizing models of equations of functions studies in advanced calculus classes. New computer technology can eliminate these difficulties.

USU has invested $50,000 in a high-tech classroom renovation and is about to provide an additional $27,000 to renovate another classroom. However, there is a critical need for curriculum materials and classroom presentations to make use of this technology. The goals and objectives of Dr. Coray's project are to develop software scripts using high level languages that can be executed with a single keystroke, minimizing distractions and making it teacher friendly. Dr. Coray's software will be used in the multivariable calculus class at USU, benefitting 400 students a year, and will be available to other teachers on the Internet.

Dr. Coray expects to target the specific central ideas, the learning of which requires extensive three-dimensional and higher thinking, and to redesign classroom lectures for teaching those ideas using computer technology. He will construct specific examples using mathematica, MATHLAB, or MATHCAD.

Alumnus wins Arkansas teaching and research award

Kimberly G. Smith, a USU College of Science alumnus and a professor in the Fulbright College of Arts and Sciences at the University of Arkansas (UA), has received the Teaching and Research Award from the University of Arkansas. Smith has been on the biological sciences faculty at UA as a community ecologist since 1981. He has been involved in revamping the biology and ecology programs, and has chaired the biological sciences curriculum committee for three years.

In recognition of his academic excellence, Smith was inducted into the UA chapter of the Honor Society of Phi Kappa Phi in 1987. He was also inducted into the UA chapter of Phi Beta Delta, the honor society for international students. In 1991 he was elected a fellow in the American Ornithologists Union, the oldest professional ornithological society in North America. He was also elected to the American Association for the Advancement of Science.

Insights, the newsletter of the Utah State University College of Science, is published twice a year. Its purpose is to inform alumni and friends of current events, projects, and changes happening within the College. The newsletter also provides a forum for alumni to follow one another's careers and professional development. This issue of *Insights* was under the direction of Sally McGovern, intern coordinator and editor, and Colette Yates, project coordinator and editor. Contributors include English Department interns Lisa Archibald and Carrie Teuscher and Dean James MacMahon. Special thanks to Gene Underwood, Sue Morgan, and USU Photo Services for the photographs, to Linda Keith of Editorial Services, and to Kandy Baumgardner.

Insights Readers' Survey

Name: _____

Name While at USU: _____

Nickname: _____

Gender: _____

Email Address: _____

Occupation: _____

Company/Business: _____

fold Title/Position: _____ fold

If Retired, Former Employer: _____

Do you read *Insights?* _____

If yes, what do you like about the newsletter? _____

_____

_____

What do you dislike? _____

_____

_____

Who was your most memorable teacher at the College of Science? _____

_____

Thank you for your time.

❑ Yes, I am interested in participating in the Alumni Career Network.

fold fold

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A L U M N E T

Dear College of Science Alumni and Friends,

We always enjoy hearing from you and hope you will take a moment to complete and mail this alumni information form. Please note the postage-paid format—simply cut off this last page of the newsletter, fold along the lines marked on page 15, tape it shut, and drop it in the mail, or fax it to us (801) 797-3378. Or, email us at scido@cc.usu.edu.

Name _____

Mailing address _____

Home phone ( ) _____ Work phone ( ) _____

E-mail address _____ Web page URL _____

USU degree(s) _____ Year _____ Major _____

Other degree(s) _____ (year, school) _____

Profession/employer _____

About yourself _____

_____

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_____

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