

INSIGHTS

UTAH STATE UNIVERSITY - COLLEGE OF SCIENCE

When students and faculty learn together...discovery follows

FALL 2003

TEACHING EXCELLENCE

Dr. Jan Sojka Receives Carnegie Award

Geology Department Honored

Emeritus Professor Dr. William A. Brindley

Parties for Mars

Utah State
UNIVERSITY



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

FROM THE DEAN'S OFFICE

It's my pleasure again to introduce *Insights*, the College of Science alumni newsletter, this time as dean of the College of Science rather than interim dean, as in the previous three years. In the way of background, I've been at Utah State University since 1976 as a faculty member in the Department of Geology. Originally from Syracuse, New York, I have a BA in education from SUNY Potsdam, an MS in geology from Wayne State University, and a PhD in geology from the University of Calgary. Prior to coming to Utah, I taught for two years at SUNY New Paltz. My previous administrative experience includes serving as the head of the Department of Geology from 1982 until 2000; as the associate director of the Liberal Arts & Sciences Program from 1993 to 2000; and I also served a very brief stint as associate dean from January to June of 2000. My research interests have been in igneous petrology, specifically the study of volcanic rocks, their chemistry, mineralogy, and magmatic evolution. I've taught a number of geology courses over the years, including introductory geology, mineralogy, optical mineralogy, ore deposits, igneous & metamorphic petrology, and igneous petrography. I continue to teach mineralogy and optical mineralogy each year.



Dean Don Fiesinger

The reason that I've mentioned my teaching experience is because we are focusing on teaching in this issue of *Insights*. We often hear about Utah State University as an outstanding research university, but at the same time, we excel in teaching too. In this issue you will read about some of the outstanding teachers in the College of Science, and from my experience in regularly reviewing faculty course evaluations, promotion and tenure documents, and post-tenure review reports, the people highlighted in this issue are very representative of our high-quality faculty throughout the College. And we hope these articles cause you to reflect on some of your classroom experiences and the outstanding faculty that may have influenced your academic careers and perhaps your lives.

DEAN'S OFFICE...

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GEOLOGY DEPARTMENT

For many of us, the phrase "getting your hands dirty" is little more than a workplace cliché. But for Utah State's Department of Geology it is a literal description of the learning process.

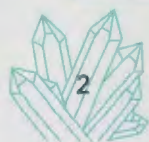
"Hands-on, experiential learning, where students struggle with the process as well as the 'facts' is how Department Head Dr. John Shervais describes the ultimate learning environment. This focus on discovery-based learning, and the dedication of the teachers who help instill it, were recognized last commencement with a University *Department Teaching Excellence Award*, for an "outstanding commitment to fostering a culture of learning excellence."

From fieldtrips to laboratory activities, down among the ancient sea beds of central Utah or out along the fold belt of southwestern Montana, learning outside the classroom is integral to the Department of Geology. It is something that the department extends to every course level (inclusive of non-science majors) with its goal being development of critical thinking skills, relevant to all careers and professional applications.

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On the Cover: A geology class at Corona Arch, near Moab. Photo by Joel Pederson



HONORED FOR TEACHING EXCELLENCE

The curriculum ensures learning in the “ultimate” setting, and it also provides close contact with professors. “We’re a small department, classes are usually small, and consequently we get to know the students quite well,” said Associate Department Head



Fieldtrip to North Logan Trench.
Photo by Associate Professor Susanne Janecke

Dr. Peter Kolesar. “I believe that the small class size, with the resulting high degree of in-class interaction, makes for an ideal learning environment.”

Dr. Shervais refers to this role of interaction as a “dialogue,” one that is shared between students and professors, and also among the students themselves.

With nine faculty members, the department may be small in size but all involved are incredibly accessible. “The faculty in the geology department is remarkable, because in their busy schedules they always seem to make time for students,” said geology major Dustin Keele. “It’s just one of the many reasons they are so highly regarded.” Of the nine, three have been awarded *College of Science Teacher of the Year*: Donald W. Fiesinger (1986), Peter Kolesar (1988), and James P. Evans (1993).

Routinely attending meetings and workshops on teaching and curriculum, the faculty is always integrating new information into the learning process. And their departmental means and methods are kept in synch and up-to-date with the wants of prospective employers through the aid of an advisory

board. This group, comprised of geology alumni and professionals (including ExxonMobil and Anadarko Petroleum managers and several geotechnical consultants, among others), offers program input and recommendations, keeping graduates readied for good positions in their field.

The department continues to build upon its programs and facilities. In addition to scheduling more fieldtrips, it has expanded opportunities for undergraduate research. Over the last three years, nearly fifty percent of graduating seniors have participated in sponsored research. More recently, the student study room was outfitted with upgraded equipment and computers. And during the “Distinguished Lecture Series,”

“THE FACULTY IN THE GEOLOGY DEPARTMENT IS REMARKABLE, BECAUSE IN THEIR BUSY SCHEDULES THEY ALWAYS SEEM TO MAKE TIME FOR STUDENTS.” SAID GEOLOGY MAJOR DUSTIN KEELE.

a unique experience is made available: students not only benefit from the presentations offered, but they make contacts and interact with the visiting speakers through complementary lunches or dinners provided by the department.

The Department of Geology wishes to extend thanks to its alumni, who maintain one of the best records for giving in the College of Science, for ongoing support. Congratulations to the entire department. ■

Did you know?

MANY OF UTAH’S NEXT GENERATION OF HIGH SCHOOL MATH TEACHERS (APPROXIMATELY 75%) ARE BEING TRAINED IN THE UTAH STATE DEPARTMENT OF MATHEMATICS AND STATISTICS, IN ITS MATH EDUCATION PROGRAM.



Assistant Professor Joel Pederson conducts class at Freemont Lake, Wyoming.

Dr. Jan Sojka Receives Carnegie Foundation Award

While space research with the Physics Department/Center for Atmospheric and Space Sciences might routinely take **Dr. Jan Sojka** (figuratively) high into the ionosphere, it is teaching undergraduate physics that keeps him grounded at Utah State.

Known for his enthusiasm and an ability to engage students, Dr. Sojka's teaching has made a lasting impact on the many lives he has touched—from undergraduates to elementary school kids. He was honored last year for his teaching dedication with a 2002 Carnegie Foundation Award for the Advancement of Teaching, representing all of Utah as *Professor of the Year*.

"It was a really good feeling, pretty special to say the least," said Dr. Sojka of his trip last November to the awards ceremony in Washington, D.C., where he was accompanied by his wife, Susan. Held at the National Press Club, the ceremony honored top undergraduate teachers from across the nation. Physics Department Head **Dr. John Raitt** was also in attendance representing the University, which added a unique connection to the event. "He was my major professor in England when I got my PhD [at University College-London]," Dr. Sojka explained. "So there was a great social thing about this."

A native of Scotland, Dr. Sojka joined the Physics Department at Utah State in 1978 on a research project. And while a passion for research remains a prominent focus of his career (including super-computing work with large-scale ionospheric models and equatorial ionospheric-plasmaspheric models), his work with students has been especially important.

"When I teach," he said, "I teach with total enthusiasm and commitment." He acknowledges that not every physicist, immersed in his or her own advanced research, is going to want to dive back into

His introductory level classes are known for their emphasis on student participation and occasional infusions of humor. For instance, in Sojka's class, Sir Isaac Newton has a brother named "Fig," a character who helps keep discussions of gravity relevant to engineering students—such as how to shield oneself from a barrage of falling apples. He uses the stadium wave, common to sporting events, to get people involved in applying simple principles of physics. And instead of centering everything on equations, he would rather reinforce the concepts behind the equations. "It's how you get them to accept the equations," he said. "I'm not formal in terms of having learning objectives," he added. More important seems to be a focus on the overall learning experience. "If a student had a positive experience, then it's going to be more lasting."

Fellow physicist **Dr. Farrell Edwards** commented on Sojka's commitment to teaching as "legendary."

He added, "Although Jan is skeptical about new teaching methods and devices (discs, workbooks, videos, pedagogical theories, etc.), and seems to favor some of the good, old-fashioned ways, he nevertheless tries some new ideas with enthusiasm. But he is choosy about which ones he attempts. But the fact is, when something comes along and claims it will improve learning, Jan never makes a decision as to whether or not to use it on the basis of how much work it will take. That is the farthest thing from his mind. What matters to him is whether or not the idea will truly aid learning."

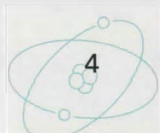
In addition to his classes, Dr. Sojka has overseen the Society of Physics Students and currently mentors undergraduate research teams. He has served for a dozen years as faculty advisor for the NASA Get-Away-Special project, a unique interdisciplinary program that joins undergraduate students, high

"I'M NOT FORMAL IN TERMS OF HAVING LEARNING OBJECTIVES...IF A STUDENT HAD A POSITIVE EXPERIENCE, THEN IT'S GOING TO BE MORE LASTING."

school students, and elementary students all with a common mission: to see their experiments become payload for the NASA Space Shuttle. The team interactions are popular and have been a great way for Utah State students to learn, as well as teach. "We give them a real hands-on experience," he said.

introductory classes. But, he offered, "I've always had an interest in the students who are potentially going to become physicists or engineers or to whom physics is important. You have an opportunity to still motivate and convince people that this is good stuff, that the material is important...that some of this is relevant, that they can actually do it."

Sojka is the assistant director of the interdisciplinary Center for Atmospheric and Space Sciences, director of the Bear Lake Observatory, and serves as co-associate director for the Rocky Mountain NASA Space Grant Consortium.





Dr. Sojka's classes are known for an emphasis on student participation.

The *Professor of the Year* award is something he's modest about, conceding only that "there's some feedback to the system," that he's simply passing something along. With a smile crossing his face he added in jest, "My only bad feeling, eventually, was a chemist won the overall [national] award. A physicist beaten by a chemist!" But then he added, "His work was pretty awesome."

Dr. Sojka is the sixth Utah State University professor to be honored with this award. ■

Did you know?

UTAH STATE'S GET-AWAY-SPECIAL (GAS) PROGRAM HAS PLACED MORE SMALL PAYLOADS IN SPACE THAN ANY OTHER UNIVERSITY IN THE WORLD.

DEAN'S OFFICE...

Continued from page 2

Also introduced in this issue of *Insights* is a new look, part of our emphasis on improving the image of the College of Science. It became very apparent during these past three years that the College of Science and its departments were not effectively communicating the outstanding achievements of our faculty and students to our various constituencies. Although in existence only since last spring, our image and marketing committee has been very effective in devising ways to promote the College and its accomplishments. You will see some examples of our efforts, such as "Did you know?" a student research poster, and other marketing materials presented in various places throughout this issue. Utah State University has announced that the freshman class of 2003 is the most academically prepared freshman class in its history. We are hoping that our improved image and marketing strategies will help us attract more of these exceptional students into degree programs in the College of Science.

I hope that you enjoy this issue of *Insights* and please do not hesitate to contact me if you have suggestions for future articles, such as a favorite faculty member or program that you would like to see highlighted. *Insights* will be successful only if it provides information of interest and appeal to you, the reader. Please let us know.

Sincerely,

ON THE HORIZON

In the next issue of *Insights* we will focus on the role of alumni in the College of Science; how they are reconnecting with Utah State and making a difference.

We will also introduce

Lara B. Anderson,
2004 Rhodes
Scholar winner.

Emeritus Professor William A. Brindley:

TEACHING STUDENTS TO TEACH THEMSELVES

When William A. (Bill) Brindley began preparations for his retirement, after 36 years of teaching in the Department of Biology, he met with a financial adviser who posed a straight forward but thought-provoking question: "What will you do the first day of your retirement?" For Bill, who had known he wanted to teach ever since he was in high school, the answer came rather naturally: He'd find a group of students and teach them. And ever since his "official" retirement in July of this year, that is just what he has been doing.



At Fenway Park in Boston, Massachusetts, on a "retirement gift trip" from his wife, Vivian.

Born in Moscow, Idaho, Bill grew up the oldest of three children. When he was 12, his family relocated to Iowa where his father had taken a position at Iowa State University as a USDA Entomologist and professor of entomology. It was here that Bill began down a road that would start him on his career.

In 8th grade he began a summer job with Iowa State's apiary in a study under Dr. Walter Rothenbuhler, a project that was trying to determine a genetic basis for behavior in honeybees. Bill's duties included everything from mowing the grounds to cleaning lab equipment, and being a part of what turned out to be a famous research project had a huge impact on him. (Even a near-death incident at the apiary, in which a half dozen bees stung him simultaneously on the temple, spiking his temperature to 106 degrees, was not enough to discourage him; he continued to work there for another year and a half after the stinging.) Following this project, Bill went on to assist in another lab at Iowa State, and it was these combined early experiences that helped set the stage for things to come: a passion for science, learning, and teaching.

Bill stayed at Iowa State and, under the direction of Dr. Paul Dahm (his boss since high school), earned BS and MS degrees in entomology, and narrowed his PhD work to focus on insecticide toxicology. Iowa State is also where he and his wife, Vivian, met, while at a dance, which was a "great reason to stay in Ames!"

Following school, and in pursuit of a job, Bill says, "Because my father had been successful in the USDA, I could have gone to three or four USDA labs, sight unseen, but I wanted to teach." So he applied for a position with only one university, a place that he was

impressed with for its "high professional level" and "emphasis on students"—Utah State University. He got the job, as assistant professor of zoology, and he and Vivian moved to Logan in 1967.

"When I came here," he recalls, "and had a chance to teach, I realized it was harder to do than I thought. Some of the first classes were pretty rough." He originally taught insect physiology & internal anatomy and insecticide toxicology. Later, he would develop a course called pesticide resistance (designed for ag students) "to give them a practical view of the chemistry of pesticides," which grew from his own research. He was hired originally as a teacher and a researcher, and throughout his professional life, has been occupied with both responsibilities.

"One day," Bill recalls, thinking back on his career, "Dr. Jack Simmons, who was the department head, called me down and he said 'I would like you to take [on] either our undergraduate course in evolution or medical ethics.'" Feeling equipped for both, Bill decided to choose evolution because, "I thought that evolution would represent a huge challenge." In fact, the weight of the challenge set in almost immediately. After that meeting: "When I came upstairs...I was in fact wondering, my gosh, what am I going to say?"

Addressing evolution would prove a daunting task for anyone. But Bill devised a unique teaching plan. He required every student to write ten, two-page essays, one per week (this was during the day of the quarter system), on any aspect of evolution, except religion. The essays would, in turn, link up into a larger thesis, and by the end of the quarter this composite essay would be packaged with an introduction and conclusion and turned in for an exam-worthy grade. His thinking was that if the students were able to really grapple with the concepts, to inform themselves, and "understand that the idea is not that threatening," they would benefit the most from the experience. "If you're confused about something," he says, "the best thing to do is to write your way out of it. That's the philosophy that I have," he adds. "You have to teach students to teach themselves."

His students, many of whom expected a succinct man-from-monkeys view of evolution, were instead brought into a much larger scope of the subject. They delved into *Origin of Species*, Darwin and Wallace, the origin of the universe, the shaping of the Earth, how molecules function, what cells are made of, genetic variation, and evidence of evolution, among other things. This comprehensiveness and integration of material encouraged an understanding of what one student summarized as "my connection to the world around me."

Additionally, Bill's style of essay-based learning, which he refers to as "creative, independent scholarship," had another effect on students. While, for the purposes of the class, it helped them to comprehend the subject matter, it also enabled them to develop a means of navigating and exploring a difficult subject. "If we're building things that help them to achieve... we can make a big difference in them that extends far beyond the details that we have actually taught," he said. "They come out of it with an enhanced ability to learn."

Eventually, as the class size grew, he had to whittle the essays down to three in number, but this effective means of teaching continues. And these days, though his 3000-level course is not required for any major, the class fills quickly (with 60 to 80 students), typically during the first or second day of registration.

Bill said even though he's "officially" retired that he will teach the class one more time (in person) before handing over the reins, but will continue to teach evolution (and introductory biology) on-line and via satellite. His students are primarily at Utah State, though some are overseas and a few are taking his class from prison and also from Utah State's "time-enhanced learning" sites.

"It's gotten to the point now," he reflects, "that the day I retired was the day I wished I could have begun." Along the way, he said, he learned a big part of teaching was being a good stage actor, lecturing fluently, and learning what was confusing or appealing to students. Throughout, his approach to teaching meant helping students "pick up strategies for learning" and requiring, first and foremost, "an honest effort." Bill ended his formal teaching career with three courses: evolution, insect biology, and invertebrate physiology.



Bill Brindley receives retirement award.

Maybe the most satisfying thing for any teacher is the good feedback you get from your students. Though not all students liked the approach, in a number of course evaluations, Bill's students commented that his evolution class was their favorite in college; that they never worked so hard, or had such a positive learning experience; that his class helped them get beyond a mere absorption of information, and instead focus on connecting ideas.

"IF WE'RE BUILDING THINGS THAT HELP THEM TO ACHIEVE...WE CAN MAKE A BIG DIFFERENCE IN THEM THAT EXTENDS FAR BEYOND THE DETAILS THAT WE HAVE ACTUALLY TAUGHT."

Now that Bill is retired (somewhat), he has more time for his hobbies, which include gardening and cooking. He admits of the latter, "I can't stand to follow a recipe, not even my own." (It might be that "creative, independent scholarship" has a place in the kitchen, too.) Vivian, who has a certification in gerontology from Utah State, continues her work as business office manager at Sunshine Terrace, a nursing home in Logan. They have four grown children: Mark, Mary, Marla, and Maia.



Research Days: In a California bean field with University of California entomologist Nick Toscano.

And his first impressions of Utah State, back when he was looking for a teaching/research/entomology job, remain the same: He is still struck by the University's strong emphasis on students. Bill says he sees it in his colleagues—day in, day out. "In all the people around me,

they care about their students. At the same time we have people who are getting grants, publishing papers, doing books, traveling to foreign countries, having foreign visitors and post-docs coming to them, and they still care about their students." And Bill Brindley will always be among them. ■

Red Planet Revelry

Sixty thousand years seems like a long time to wait for an encore. That is how long it took Mars to make a follow-up performance of the last time it was so close to Earth. But for stargazers, the wait was worth it—the planet was brilliant, even with the naked eye.

The event came on August 27, 2003, and Mars moved nearest at approximately 4:00 a.m. The last time around, if there were any amateur astronomers looking on in awe, they would have been Neanderthals.

In recognition of the occasion, the Physics Department hosted a “Mars Party” on the evening of August 26, inviting stargazers of all ages, from throughout the community, to come to the Utah State quad after dark and take a turn peering into one of several telescopes that had been set up. Additionally, **Tonya Caldwell**, a department lecturer, offered a presentation on Mars that overfilled the Eccles Science Learning Center’s 500-seat auditorium.

The party was so popular—an estimated 900 people were in attendance that night—and the clouds ended up being a bit on the uncooperative side, so a second party was put together two evenings later.

“We were all very agreeably pleased with the interest and enthusiasm of the visitors,” said Department Head **John Raitt**, who believes in the importance of outreach at Utah State. “This kind of outreach,” he says, “adds another component of the population who are endeared to the University through public outreach activities.”

For those who participated, it was an educational and momentous experience. If you didn’t get the chance, well, you might be in for a bit of a wait. As event organizer and department laboratory supervisor **James Coburn** told *Utah State Today*: “If you still think you’ll be around in August of 2287, you can witness the historic moment again.” That’s how long until the next show.



Photo by Brent Stevens/Herald Journal

SCIENCE AMBASSADOR PROGRAM ESTABLISHED

Last spring, under the guidance of former Science Senator **Jeffrey Leek**, a College of Science Student Ambassador Program was initiated to bring an undergraduate voice to the College’s recruitment efforts. Now active, this program, which is modeled on other ambassador programs at Utah State, is a means for undergraduates to speak with prospective students about what the College offers, from specific learning opportunities to individual laboratory facilities.



Science Ambassadors: **Front to back**—Craig Golightly, Justin Mellott, Leila King (President’s Leadership Council), Ryan Wilcox, Ali Pence, Dustin Keele. **Not pictured**—Cory Jurgensmeier, Mike Nay, Chad Wasden.

There are eight ambassadors in the program, with at least one student representing each department. As a group, they have a number of responsibilities, including hosting a booth for recruitment events; giving tours of science buildings; offering public

talks and presentations; and assisting with other College activities. In addition to maintaining an active presence on campus, the ambassadors will also travel to the Salt Lake City area, and sometimes even farther, to reach their audience.

The group will be kept small in size in order to optimize a cross section of knowledge and experience, but allow for close-knit cohesion. Ambassadors must at least be sophomores and can serve for up to three years, or until they graduate. The program also involves the Science Senator, the College’s Presidential Leadership Council representatives, and two faculty advisors.

Dr. Lisa M. Berreau, an assistant professor in the Department of Chemistry and Biochemistry, is one of the advisors. “We have a really great group of students,” she said, and describes the students as “articulate” and “go-getters.”

“A lot of what we’ve been doing, in the last month or so, in getting the program up and running, is spending some time as a group, discussing the College of Science,” she said. “We want the students presenting what they know about their department...and then sharing some of their unique experiences that they’ve had here so that they can build on their general knowledge of the College.”

This knowledge certainly includes fundamentals of their majors—such as specific emphases areas—but it also includes the unique insight of each ambassador, particularly things such as their involvement with undergraduate research; their participation in interest groups in the department; the one-on-one experiences they have had with professors; and the experiences they have had working in small groups with other students. Of course, they have to be able to field a variety of major-related questions.

“The questions that I usually get are either about general advising-type issues (which classes to take first)...or about placement rates for graduates,” said **Ali Pence**, a mathematics education major.

SCIENCE AMBASSADOR...
Continues on page 14

Think Science

NEW IMAGE AND MARKETING CAMPAIGN GETS UNDERWAY

The next time you are traveling through Salt Lake City International Airport, take a second to look around and you just might observe a space shuttle blasting off—on a billboard, that is.



The eye-catching image of a NASA shuttle upon ignition, found on illuminated billboards throughout the airport, is a promotional piece as part of a larger USU marketing campaign to grow enrollment and increase visibility. This clever plug for space sciences (with text reading, "Next Payload: Your Homework") is helping to promote the varied and vast strengths found throughout the College of Science and the University.

Attracting talented students and faculty to USU is an ongoing and essential mission, and it is one that is receiving new attention. University Public Relations and Marketing, working with New York-based Carnegie Communications, has recently developed a new image brand, "Think," that is being tied into the promotion of Utah State, with a focus on academics.

"The 'Think' campaign isn't just a new look for the University," said Whitney Wilkinson, Utah State Public Relations Specialist, "it's a new vehicle that highlights our academic accomplishments and shares our goals of research, discovery, and learning." She says that the plan involves targeting a different program each year for the next three years, to emphasize its individual achievements. This year, the program is space education and research.

At the same time, the College of Science has been unveiling a marketing campaign of its own, to dovetail with that of the University's. This past spring, under the direction of **Dean Fiesinger**, an inter-departmental Image and Marketing Committee was established to address the needs of recruitment and publicity. The committee, which includes a faculty member from each of the College's six departments, and a number of student representatives from the Science Council, has convened to discuss everything from core research competencies to a College motto.

Director of Development Joel Kincart, chair of the committee, has been part of the process from the beginning. "The perception was that the College is excelling in many ways," he said. "We have undergraduates participating on research teams with faculty members. Many have had work published. Our graduate students are also being published at a high rate. Our medical and dental school placement rates exceed the national averages." But, he adds, the feeling of everyone involved "was that we needed to do a better job of publicizing this information."

To this end, the College is initiating the development of several science-specific marketing materials. Included are a series of recruitment posters, a DVD presentation, and a compilation of research program synopses. Assisting with the marketing and PR perspective is a public relations intern, **Alissa Hansen**, and three public relations students who are collaborating on a class project.

According to Kincart, the centerpiece for recruitment efforts is the poster. Each features a Utah State science student (or graduate) at work, and offers a brief sketch of their university experiences and accomplishments. These are being used to inform high school students of the College's strong programs and hands-on opportunities, and are being displayed at the featured student's high school.

To help underscore the message of the College, the committee introduced the following motto, "*When students and faculty learn together...discovery follows*," which is being integrated into all aspects of the College's promotions, stressing the important—and emphasized—role of collaborative research.

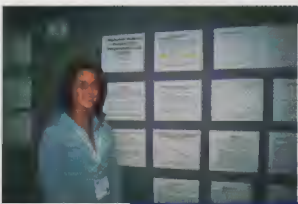
Also, in the final stages of production is a DVD presentation, which delivers a welcome to the College and an overview of individual departments. Co-narrated by Dean Fiesinger and this year's valedictorian and 2004 Rhodes Scholar winner, **Lara Anderson** (who graduated as a physics, mathematics and statistics major), the presentation is being created as an undergraduate research project by a member of the Department of Computer Science, and when completed, it will be dispersed to high school guidance counselors and science teachers.

For prospective graduate students and faculty, the College is preparing research summary sheets, which highlight core departmental areas at a glance. In addition to recruitment, these

will also be used as a resource to disseminate with public relations materials to external audiences, such as the state legislature.

There is a great deal happening in the name of promoting the College of Science. These combined efforts will help to sustain the College's commitment to excellence—in the classroom, labs, the field, and even up in space. ■

When students and faculty learn together . . . discovery follows



Major: Chemistry

Borah High School Class of 2000

JAMIE PURCELL

Jamie Purcell is currently pursuing a degree in Chemistry at Utah State University. She is on the College of Science Senator's committee and is acting as the advertising and publication vice-president. Jamie will graduate with three years of undergraduate research experience, two poster sessions and an article in the prestigious *Journal of the American Chemical Society*. These are impressive undergraduate opportunities that would not have been possible without partaking in undergraduate research. Although her love of science comes first, Jamie is also an adamant rugby enthusiast and has been on the Utah State team since her freshman year.

Jamie says that her accomplishments are a direct reflection of her interactions with Professor Alvan Hengge: "I know that my research experiences here at Utah State have not only made me a better chemist and student, but have prepared me for graduate school, which is the next big step in my life. I've had the opportunity to read, write and critique numerous academic papers, while gaining hands-on laboratory experience. I know that I will be successful in the years to come because I've had a professor that was inexhaustibly willing to show me what I needed to know to succeed in a competitive scientific field, such as biochemistry and chemical biology."

ThinkScience

The College of Science at Utah State University

www.usu.edu/science

YEAR 2003 ROLL OF DONORS

We gratefully acknowledge the almost 600 donors who contributed in excess of \$460,000 to the College of Science in the fiscal year 2003 (1 July 2002 to 30 June 2003). Alumni, friends, foundations, corporations, faculty, and staff have all donated generously. Every department, several special programs and projects, and numerous scholarships benefited from your contributions. **Thank you for enhancing the College's commitment to excellence in science education and research.**

Your support is critical each year. You may contact **Joel B. Kincart** at (435) 797-3510 or joel.kincart@usu.edu for additional information on opportunities to support the College of Science.

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College of Science Awards Program reception.



Associate Dean Kandy Baumgardner and Science Senator Jeff Leek at the 2003 Awards Program.

AWARDS PROGRAM AWARDS PROGRAM AWARDS PROGRAM



2003 Awards Program, Dean Fiesinger congratulates Allan Spaulding, Zobel Graduate Scholarship recipient.



Undergraduate Award Recipients: **Front**-Martin Mayne (Tuition Waiver), Ashley Ellsworth (Garth L. Lee Undergraduate Scholarship), Mike Spackman ("A" Pin), Jace Beattie (Tuition Waiver). **Middle**: Edgar Lee (Seely-Hinckley Scholarship), Victor Haroldsen (Tuition Waiver), Laura Michele Gardner (Dean's Scholarship), Joseph Spencer (Seely-Hinckley Scholarship). **Back**-Chad Wasden (Tuition Waiver), Kyle George (Tuition Waiver), Cory Jensen (Tuition Waiver), John Wennergren (Dean's Scholarship).

AGGIE DAY AGGIE DAY AGGIE DAY AGGIE DAY



College of Science booth at Aggie Day.



Alumni Gathering: Phoenix, Arizona
Left to right-Roberta Clement (1967, Biology, Physiology); Michael Clement; Donald Fiesinger (Dean); Winifred Green (1948, Biology, Nursing); Ray Horspool; Lief Nielsen (1996, Math/Stat, Mathematics Education); Nikkel Nielsen (1996, Education, General Family Life); Marcie Christenson (2001, HASS, Sociology); Kirk Christenson (2001, Biology, Public Health).



Alumni Gathering: Phoenix, Arizona
Left to right-Ray Waddoups (1963, Physics); JoAnne Waddoups (1964, Elementary Education); Nancy Avery (1987, Psychology); Chris Avery (1989, Geology); Donald Fiesinger (Dean).

ALUMNI GATHERING ALUMNI GATHERING



Science Ambassador Craig Golightly fields questions at a recruiting event.

Craig Golightly, a senior studying computer science, who said that he is serving as an ambassador to help “students see the value of studying science,” acknowledges a personal benefit from participating. “I have become more acquainted with my department and have been made aware of the numerous research opportunities that are available throughout the College,” he said.

For all, the ultimate goal, Dr. Berreau shared, is to “excite people about science.” For these students, that just might be the easiest part.

“I enjoy being an ambassador because it gives me the chance to share my enthusiasm for my major with prospective students with the same interests,” said Ali. ■

NEW APPOINTMENTS

COLLEGE OF SCIENCE ANNOUNCES NEW ASSOCIATE DEAN



Richard J. Mueller

Dr. Richard J. Mueller has joined the Dean’s Office as associate dean. He began the position this year on July 1.

“A new challenge,” is how Dick describes the position. He calls it an opportunity to “work for the whole College, rather than just my home department.”

Dick has been a valued presence in the Department of Biology since he came to Utah State in 1982. He is an associate professor and served as interim department head (1992-1994) and director of undergraduate studies (1997-2003). Among his primary assignments as associate dean are to assist the College’s departments with curriculum issues, recruitment, and to help “raise the profile of the College.”

Dick received the *College of Science Advisor of the Year* award in 1996 and will continue to advise biology teaching majors.

Trained as a plant morphologist, he has taught a variety of botany courses. “I enjoy interacting with the students, especially in my depth science course, ‘Plants and Civilization,’ where the challenge is to bring an appreciation for the methods and accomplishments of science to non-majors. I also enjoy teaching an upper-division course in my specialty area of plant structure.”

“The best moments really are when you help a student understand a difficult concept or get them to think and ask questions about new ideas,” he said. “That’s what college is all about.”

NEW DEPARTMENT HEAD OF BIOLOGY



Jon Y. Takemoto

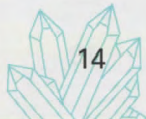
The College of Science is pleased to announce that **Dr. Jon Y. Takemoto** has been named the new head of the Department of Biology.

A member of the Utah State faculty for 28 years, Jon has brought true dedication to both his microbiology research and teaching. When asked about his priorities as department head, he said that he is hoping

to build upon his predecessor’s efforts, continuing the direction of former Department Head **Dr. Edmund D. “Butch” Brodie, Jr.**, who stepped down after eight years to focus on research and teaching. “Due in large part to Butch, the department has a young, productive, and vibrant faculty, and an excellent staff,” said Jon. “I hope to take advantage of these strengths and to facilitate the Department’s quest to become nationally recognized for its scholarly achievements and excellent teaching.”

“One of the major priorities is to improve and expand our graduate level programs,” he added. Jon interacts with undergraduates and graduate students in the classroom, and in his lab. His work focuses on the roles of biological membranes in plant-microbe interactions.

“I have enjoyed much satisfaction from engagement in the free inquiry process of basic research that USU has allowed me to do,” he said. “But perhaps more rewarding has been working with students, particularly graduate students, and seeing them get excited about the science and eventually pursuing and succeeding in science careers themselves.” He began the position this year on July 1.



College of Science Welcomes New Faculty



Claudia Mora

Claudia Mora, originally from Guatemala, is a lecturer in the Department of Mathematics and Statistics. She says that when she first came to the U.S., in 1980, learning English made school extremely difficult, but she discovered that math was a "language" in and of itself that she could use to communicate. "That is where my fascination with math began," she explains.

Claudia received a BS degree in mathematics at Loyola University New Orleans in 1993, and an MS degree in applied mathematics, concentrating on partial differential equations, specifically hyperbolic equations, from the University of Houston (1996). At the University of Houston she began teaching and would later receive the University's *Graduate Assistant Teaching Excellence Award*. Following this, she returned to Loyola to teach math and remained there for three years.

"I was attracted to the Mathematics and Statistics Department at USU," she said, "because they are giving me the opportunity to concentrate on teaching. I also have more flexibility in the classes I will be teaching [calculus, among other things] and more responsibilities such as advising students and supervisory duties." She has been enjoying her teaching at USU, saying, "I have an incredible group of students. They are hardworking, curious, respectful and friendly."

Of her new home, Claudia says, "I have found the people in Logan to be extremely kind, helpful, and considerate." She's a fan of live music, particularly jazz, blues, and classical.



Doug Harris

Doug Harris comes to the Department of Chemistry and Biochemistry as a lecturer. Born and raised in Idaho Falls, Idaho, Doug received a BS degree in biochemistry from Idaho State University in 1996 where he worked on enzyme kinetic research, and then earned a PhD degree at Brigham Young University in biochemistry (2002) on molecular modeling of enzyme/inhibitor interactions.

He credits an experience at BYU, working in a "teaching partnership" with several professors who put him on the path to pursuing science education as a career. "Two high school teachers," Doug adds, "had a great impact on my chosen field. One of these teachers was my chemistry teacher and the other was my zoology teacher. I thought that I would combine the best of both of these worlds, so I pursued the field of biochemistry."

At USU he will be involved in teaching general chemistry courses; supervising the student-teaching biochemistry laboratories; and "In conjunction with my Chemistry 1010 assignment, I'll assist in teaching an international distance education Chemistry 1010 course in Hong Kong."

A large part of what makes USU a desirable place to work "is the great departmental faculty and staff," Doug said. "The Widtsoe building and Cache Valley are beautiful places to work and live." He and his wife, Cara, have three children: Ariel, Justin, and Clint, with whom he enjoys scouting projects and watching films.



Joan Hevel

Joan Hevel joins the Chemistry and Biochemistry Department as the *R. Gaurth Hansen Assistant Professor in Biochemistry*. She began her appointment this past August.

Originally from Marysville, Pennsylvania, Dr. Hevel most recently worked as a post-doctoral fellow and instructor at the University of South Alabama, where she taught and conducted research on a bi-functional protein involved in cancer and diabetes.

She earned a BS degree in chemistry (with biochemistry as a 2nd major) at Lebanon Valley College in 1988, and then received a PhD degree in medicinal chemistry at the University of Michigan (1993), focusing on the properties of nitric oxide synthase. She completed post-doctoral work at UC-Berkeley, with research on the biochemical mechanism for the formation of an unusual enzyme-bound cofactor, and was a post-doctoral associate at the University of Hawaii-Manoa, assisting in a project on elucidating the mechanism of bioactive natural products syntheses in cyanobacteria. She was awarded a 2003 *National American Heart Association Scientist Development Grant* that came with her to USU.

Joan will teach both undergraduate and graduate courses, in general chemistry and biochemistry, and will have an active research program. "My research can broadly be defined as understanding cellular communication at the molecular level," she said. "Specifically, I am interested in how a cell uses protein-protein interactions and chemical modifications and reactions to communicate or dictate a local response."

There were a number of things about Utah State that appealed to her, including "an active department; a commitment to teaching; an interdisciplinary department; and a geographical area that was well-suited to mine and my family's tastes."

Joan's family includes her husband, Bennett, her son, two yellow labs, and a fish named Neptune. She says, "In our spare time we like to get outside—we are planning on a lot of hiking and camping. I also try and squeeze in a little quilting, photography, and painting."



SeungJin Lim

SeungJin Lim comes to the Department of Computer Science as an assistant professor, where he is teaching a data mining course for graduate students and focusing his research on data mining, bioinformatics, and semi-structured databases.

Though he studied geology as an undergraduate at Korea University (BS, 1977), and later completed

a master's program at Korea University in counseling psychology (in 1979), it was Dr. Lim's ongoing interest and job experiences in computers that eventually brought him into the field of computer science. So after earning a BS degree in computer science at the University of Utah (1993), he pursued an MS degree and PhD at Brigham Young University, in 1995 and 2001, respectively. His PhD project involved semantic hierarchies in semi-structured data sets.

Dr. Lim says that among the allures of Utah State was a "very good size for collaboration opportunities." And he adds, "the department is young and dynamic." He also was drawn to the location, weather, and people.

He and his family find much to like about living in the Cache Valley—his hobbies include hiking, traveling, classical music, and electronics. Dr. Lim and his wife, Youngok, have three sons: Dukyoung, Mooyoung, and Jooyoung.



Bryan Bornholdt

Bryan Bornholdt is a new lecturer with the Department of Mathematics and Statistics. He said that he originally chose to get into math because "I believed it would provide me with a wide range of opportunities. If you can do math, you can do anything. I still believe it."

Raised in Kansas, Bryan attended Emporia State University, Kansas, where he received a BS degree in mathematics education in 1983. He earned an MS degree in mathematics (1986) at Colorado State University, with a numerical study that explored conjugate gradient/conjugate residual methods. At the University of Wyoming he earned a PhD degree (1997), with a dissertation that focused on a functional analysis studying isometries of Frechet spaces.

At Utah State, Bryan is teaching a number of classes and supervising all sections of Math 1010. He is also working with the field-based mathematics education program, observing student teachers for pre-service middle and secondary school mathematics and statistics.

His prior experiences include teaching C++ and JAVA courses to corporate clients and serving as an assistant

professor of mathematics at Mesa State College, Colorado. He also taught at the University of Wyoming and worked in software maintenance and development with the Early Warning Defense System (DSP) in Boulder, Colorado.

"Being at a larger, research-oriented university appealed to me," he said of Utah State. "When I interviewed for the position, I was pleased to discover how friendly people are on campus."

Additionally, Bryan said he is engaged in several research projects of his own. One is a collaboration with his former advisor, working with isometric operators, and the other pairs Bryan with a past student to conduct a static analysis of a piece of rock-climbing hardware.

With his wife, Debbie, and daughter, Breanna, Bryan said he enjoys a range of outdoor activities—including biking, hiking, "canyoneering," skiing, and climbing. "Especially," he said, "those that include our golden retriever, Cedar." Bryan is a climbing guide during the summer and, "on the more obscure end of the spectrum," also enjoys juggling and unicycling.



Tonya B. Caldwell

Tonya B. Caldwell came to Utah State University in 1997 to pursue an MS degree in physics (2002), and now, in addition to working on her dissertation, she joins the Department of Physics as a lecturer. The position will involve teaching introductory level classes for non-science majors—including energy, astronomy, intelligent life in the universe, and physics by exploration.

Having grown up in Pescadero, California, Tonya relocated to attend the University of Utah for a BS degree in physics (1990). "I fell in love with physics in high school, when a wonderful teacher opened the doors to a new idea," she shared. "I never lost that feeling."

Prior to coming to Utah State, she served in the U.S. Navy as an officer and taught physics, chemistry, and radiological fundamentals at Naval Nuclear Power School (1990-1995) in Orlando, Florida. She also taught at Salt Lake Community College.

The opportunities for research and the staff of the physics department were what attracted her to Utah State. So was a commitment to education. Tonya was honored last year as the 2002 *College of Science Graduate Student Teacher of the Year*.

Outside the University, she serves on the national board of the Head Start Association, and is active in the local Bear River chapter. She has four children: Brad, Lori, Elizabeth, and Genevieve.



Stephen Yeung

Stephen Yeung is a new assistant professor with the Mathematics and Statistics Department. Dr. Yeung received a BS degree in physics (1994) in his native Hong Kong at The Chinese University of Hong Kong, and then attended Cornell where he earned a PhD degree (1999) in the field of theoretical and applied mechanics.

He cites a curiosity about "how this world works, how things are related to one another," as a reason for choosing his profession. "Sharing with students...things that they may not learn from textbooks, is an important part of the teaching experience," he said.

Stephen will be teaching graduate-level scientific computing and will also be involved working with the Interdisciplinary/Industrial Mathematics Program. He added, "I will also be conducting research on various topics, such as structures of gene networks, signal processing, coupled oscillators, and dynamical systems."

He is eager to work alongside Utah State colleagues such as **Joe Koebbe**, **Jim Powell**, and **Emily Stone**. "Our view is that math is not simply a game played by mathematicians to amuse themselves," Stephen shared. "Instead, it comes from, and is useful in the real world. In particular, it helps us solve problems in industry, engineering, and various disciplines of sciences."

Stephen's wife, Shirley, works as a research technician in Utah State's Toxicology Program. He added that the area seems to be a good fit for both of them: "Logan is a nice town, located in a beautiful valley. I like it a lot here." His interests include chess and hiking.



Robert F. Erbacher

As an assistant professor with the Department of Computer Science, **Robert F. Erbacher** will be involved with both teaching and research. Born in New York, he was raised in Massachusetts, where he would attend the University of Massachusetts-Lowell to earn a BS degree in computer science in 1991; an MS degree in 1993, with an emphasis on studies of computer graphics; and it is also where he

completed a PhD degree in 1998, with an examination of visual assistance for concurrent processing.

Interested in computers from an early age, Robert shares that it was a high school experience writing a program that would later morph into a closely related study for his doctoral work. He said that being able to make things take shape really gets him going. "The challenges have kept me interested," he added.

Prior experiences include serving as a visiting assistant professor of computer science at the University of Idaho-Moscow, and most recently as an assistant professor at SUNY-Albany, where he spent four years. His work at Utah State will involve teaching computer graphics and computer security. He will also conduct research on computer graphics, visualization, computer security, intrusion detection, bioinformatics, and "whatever else students prove to be interested in." Also, he is an associate editor for *The Journal of Electronic Imaging*, where he has served for more than four years.

"The opportunities provided by the department and University" helped attract Robert to Utah State. His love for the mountains did not hurt either. He enjoys hiking, reading, and attending musicals and plays. ■

Heritage Society

The Heritage Society was established to recognize those individuals who have made bequests or other planned gifts for Utah State University. Such generosity and commitment honors the rich heritage of Utah State and helps prepare for a brighter future. Partnerships in philanthropy are increasingly vital to the future of Utah State as it fulfills its vision of becoming one of the nation's leading research and teaching universities. We invite you to join the Heritage Society.

If you would like more information about including USU and the College of Science in your will, or if you would like to make a planned gift, please contact Development Director Joel B. Kincart, at (435) 797-3510 or joel.kincart@usu.edu.

Tom K. and Esther Archuleta
Dr. Melvin C. Cannon
Ralph S. Christensen*
Dr. John W. and Norda F. Emmett
Keith W. and Beverly Fullmer
Dr. Marguerite Greaves
C.T. and Jo Ann K. Griffiths
Ronney Dean and LuAnn Harris
Robert Q., Jr. and Luella F. Oaks
Dr. Grant M. Reeder
Jay Reed and Lorraine M. West

*Deceased

2003 COLLEGE AWARD RECIPIENTS

College of Science Scholar of the Year

Jeffrey T. Leek, graduate of the Department of Mathematics and Statistics, was selected as the *College of Science Scholar of the Year*. Jeff said that when he first arrived at Utah State (from Pocatello, Idaho) his ambition was to study mechanical engineering, but soon realized his "true love" was for mathematics. "I was kind of intrigued by the interaction between mathematical theory and direct applications that could be measured," he said. "It's really quite amazing that our theories and constructs match the real world at all!"

Earning a BS degree in mathematics, with honors, Jeff maintained a 3.96 GPA while also contributing time and talent to the College, University, and the local community. In addition to serving as Science Senator and spearheading the College's Science Ambassador Program (see page 8), he helped other students in the department as a tutor and volunteered his time to work as a Spanish translator in the ER at Logan Regional Hospital.

"I have always enjoyed science in general," Jeff acknowledged. "As an undergraduate researcher, I was able to indulge my desire for rigorous mathematical formulation and my interest in scientific inquiry in general." For his honors project, Jeff worked with mathematical and computational models in the developmental timing of bark beetles, a study he conducted under **Dr. James Powell**, for which he spent two summers collecting data and compiling analyses. "Along the way, Jeff helped other students and was 'generally indispensable,'" said Dr. Powell. Their resulting research was presented last August in a poster at the 2003 Society for Mathematical Biology meeting in Dundee, Scotland.

"Jeff was in my honors calculus course three years ago, which is when I first met him," Powell recalled. "I remember him being stunned by one of the labs we ran in that class, the 'James Bond' lab, in which students try to figure out, using calculus, what shape for a cable between two buildings would minimize James' travel time. He was amazed when I showed the class the optimal answer (the brachistochrone problem) and came to my office to pursue the math that led to that answer."

Now working toward a PhD degree in biostatistics at the University of Washington, Jeff said that he is currently interested in "quantifying the results of DNA microarray

analysis." He said, "I get to be part statistician, part geneticist, part computer scientist, and part little kid, tinkering around with new ideas." His hope is to pursue a career in academia.

"All my success and happiness as an undergraduate at Utah State I owe to the faculty, staff, and students," Jeff shared. "I particularly would like to express my appreciation for the College of Science staff, the staff and faculty of the Mathematics and Statistics department, the deans, and Dr. James Powell. They truly are what made my Utah State experience wonderful."

College of Science Valedictorian

Lara B. Anderson, graduate of the Department of Physics, was the 2003 *College of Science Valedictorian*. Additionally, she represented Utah State at commencement as the 2003 *University Valedictorian*.



Featured in this issue. Front-Francois van Heerden (2003 Graduate Student Teacher of the Year), Kristin Bakkegard (Willard L. Eccles Fellowship Recipient). Middle-Laura Olson Buelow (Willard L. Eccles Fellowship Recipient), Aleksay E. Kuznetsov (2003 Graduate Student Researcher of the Year). Back-Lee Bjerregaard (Piette Graduate Scholarship Recipient), Alan Spaulding (ZoBell Graduate Scholarship Recipient). Not pictured-Lara B. Anderson (2003 Valedictorian) and Jeffrey T. Leek (2003 Scholar of the Year).

Lara's speech, which touched on the advice she had received from four Utah State professors, had those in attendance trying to guess the number of piano tuners found in the city of Chicago. Her point (reflecting on the advice of **Dr. David Peak**, and with homage to Nobel Prize-winning physicist Enrico Fermi) was that even the seemingly unknowable is made graspable by applying what we do know (i.e., estimating the number of people in Chicago, then estimating the percentage who own pianos...). The exercise, Lara explained, was a lesson in reasoning, "to employ all our resources in tackling the issues before us."

Graduating with double majors in physics and mathematics, Lara began to immerse herself in research as a sophomore. During a three-year period, Lara dedicated time each week to a project in mathematical

physics, researching supergravity models and quantum field theory with **Dr. James Wheeler**.

"My participation in this research has been important in clarifying and strengthening my motivation for a career in science," said Lara. "Under Dr. Wheeler's supervision I have independently studied a great number of topics in advanced physics and mathematics in order to fully participate in the research. Our work is an attempt to contribute to the question of quantum gravity, an area of exploration that has captivated me with its profound complexity, importance, and beauty."

Dr. Wheeler, Lara's faculty escort at commencement, recalled a physics class he taught where Lara, as a freshman, was the "top student in class" among 350 students. "She does professional caliber work," he said of their collaborative research. "She does so much background work and really remembers things and moves quite quickly."

At present, Lara is working toward an MS degree in physics at Utah State, while teaching physics recitation classes and labs, and continuing her work with Dr. Wheeler. "As a result of this experience, I find my enthusiasm for a career in physics research and teaching more firmly grounded and my fascination deeper than it was before," Lara said of her research.

In 2001, she received the *Barry M. Goldwater Scholarship*, one of only two awarded to Utah students. Among other distinctions, she received the *College of Science Theodore M. Burton Scholarship* and a *USU Presidential Fellowship*.

Lara was born in Omaha, Nebraska, and her family later relocated to Cache Valley when her father, **Dr. David (Andy) Anderson**, joined the Department of Biology faculty. Prior to coming to Utah State, Lara was a home-schooled student. She studies and teaches Karate and Aikido (holds a black belt in both), plays violin, and recently found a new interest in soccer.

Looking back over her experiences at Utah State, Lara shared, "I have enjoyed studying physics at USU. The faculty members in the physics and mathematics departments at USU have been wonderful. They spend many hours outside of class helping me to look deeper into the material...sharing a contagious delight in their topics."

College of Science Graduate Student Teacher of the Year

The *College of Science Graduate Student Teacher of the Year*, recognizing "an outstanding graduate teaching assistant who shows rapport with students and faculty and has excellent course evaluations," is **Francois van Heerden**, Department of Mathematics and Statistics.

After studying actuary science at the University of Pretoria, South Africa, Francois discovered he was most drawn to the inherent applications of math in this field—measuring probabilities, gauging insurance outcomes—and his interest "gradually shifted towards pure mathematics," he said.

At the invitation of former Department Head **Dr. David H. Sattinger**, Francois came to Utah State in 2000 and, working under mathematics professor **Dr. Zhi-Qiang Wang**, earned an MS degree (2002) with a study of nonlinear differential equations. He is working towards a PhD degree, and at the same time has taught introductory course work in quantitative reasoning, for which he has received excellent ratings in evaluations. "It is a class that allows a lot of freedom in its approach," he said. "As a result, I had the opportunity to explore a large number of interesting topics and share it with my students."

"Francois is a very good teacher in mathematics because he uses his own passion and enthusiasm to motivate his students, giving students an enjoyable and challenging learning process," said Dr. Wang.

Last year, Francois was named the *College of Science MS Student Researcher of the Year*. His work is centered on partial differential equations, nonlinear analysis, variational methods,

and nonlinear waves, and has been published in *Differential and Integral Equations* (co-authored with Dr. Wang); several other articles are soon to appear in other journals.

Francois calls "the valuable research and writing experience... [and] the opportunity to work with other leading people in my field," the most rewarding aspects of his studies at Utah State.

College of Science Graduate Student Researcher of the Year

The *College of Science Graduate Student Researcher of the Year* is **Aleksey E. Kuznetsov**, from the Department of Chemistry and Biochemistry. Aleksey was also the recipient of the *Utah State Robins Award for the Graduate Research Assistant of the Year*.

Born in Magadan, on the eastern coast of Russia, Aleksey grew up in Belarus. His fascination in chemistry was apparent early on, as was his ability. In 1990 he won the Republic of Belarus' Olympiad in Chemistry for High School Graduates.

Before coming to Utah State in 2000, Aleksey received BS and MS degrees in radioecology at the International Institute of Radioecology in Minsk, Belarus. He said that his interest in chemistry deepened while working at the Academy of Sciences of Belarus. While there, he also first read about Utah State University, in a brochure from the Department of Chemistry and Biochemistry. The work of **Dr. Alexander Boldyrev** so intrigued him that he decided the "amazing realm of theoretical chemistry" would be his field of focus. "And apparently that was the determining step," said Aleksey.

"I chose Utah State [to pursue a doctorate in chemistry] because I considered it an excellent place for fruitful studying and working, and because I found here such a great supervisor as Dr. Boldyrev," he said. He joined Dr. Boldyrev's research group on a project related to the theoretical design of novel molecules and materials.

Aleksey's work, which specializes in the aromaticity of all-metal systems, has been presented at a number of professional meetings (national and international) and published in many journals. "Aleksey is a co-author of 11 published articles, including two articles in *Science*...probably unprecedented for a graduate student at USU," said Dr. Boldyrev.

In addition to receiving attention from the regional press (including the *Salt Lake Tribune*), Aleksey's research was highlighted in *Chemical and Engineering News*, *Science News*, and *Chemistry & Industry* magazine.

"In a short period of time he has learned a lot about one of the most difficult disciplines in chemistry—quantum chemistry," Dr. Boldyrev added.

"I think most rewarding was an opportunity to get closely involved in the active and interesting life of the international chemical community, and to get familiar with wonderful people living and working here," Aleksey said of his Utah State experiences.

Dr. Boldyrev informed us that Aleksey will graduate this (fall) semester and he has accepted a postdoctoral position "in one of the most prestigious research centers in Germany—the Max-Planck Institute in Berlin."

During his time at Utah State, Aleksey also received the *Claude E. Zobel Scholarship*.

College of Science Researcher of the Year

Dr. Scott A. Ensign, professor in the Department of Chemistry and Biochemistry, was named the *College of Science Researcher of the Year*.

"I have always been fascinated by biological problems," Scott expressed. "In particular, how reactions work at the molecular level." This interest in chemistry solidified at Brigham Young University, where he earned a BS degree in chemistry in 1986. "When I took my first semester of general chemistry at BYU, I was fascinated to learn how the details of enzyme-catalyzed reactions could be unraveled using chemical tools," he added. Pursuing this interest, he obtained a PhD degree in biochemistry from the University of Wisconsin at Madison (1991), and then conducted postdoctoral work through the Life Sciences Research Foundation at Oregon State University. Following this, Scott joined the faculty at Utah State.

His current research involves looking at the manner in which bacteria metabolize hydrocarbons and hydrocarbon derivatives, and from these processes, examining the properties of the enzymes and cofactors involved. "Our work has led to the identification of the reactions, enzymes, and cofactors—helper molecules—involved in the metabolism of gaseous pollutants, acetone, and a particularly toxic class of compounds known as aliphatic epoxides," he said. "We have also identified new bacteria with new capabilities for growing with and degrading toxic pollutants."

Scott said that a large benefit of his research comes from working with others, including his PhD students, other university-based research groups (with whom his lab collaborates), and, in particular, students at the undergraduate level who just are beginning to discover a passion for the field. "We truly have a huge pool of undergraduate research talent at Utah State, and it has been very rewarding to follow these students in their intellectual development from introductory chemistry to graduation and beyond," he said.

Scott's work as both a researcher and a teacher has been recognized for its significant contribution to the College and Utah State. Last year, he was the *College of Science Teacher of the Year*, and he was also honored with Utah State's 2002 *Robins Award for Teacher of the Year*. Presently, he teaches principles of biochemistry, introductory chemistry, and a graduate course in enzymology.

Born in Los Angeles, and raised in Madison, Wisconsin, Scott's family tree is rooted in science and the Cache Valley. Both his parents have degrees in the biological sciences. His father (who grew up in Logan) teaches microbiology at the University of Wisconsin. Scott's paternal grandparents, from Logan, attended

Utah State when it was the Agricultural College of Utah. His grandfather was an organic chemist who invented a process that is still used today for making high-fructose corn syrup.

Among his lab's achievements, Scott includes the discovery of a unique cofactor, coenzyme M, crucial to metabolism of aliphatic epoxides. This work was published in *The Proceedings of the National Academy of Sciences*. Recently in print is a review summary of this research, found in *Annual Reviews of Biochemistry*, co-authored by Scott and a former student, **Jeffrey R. Allen**, now a senior scientist at The Dow Chemical Company.

Scott has served as the elected chair of the microbial physiology and metabolism division of the American Society for Microbiology, contributes to the editorial board of *Applied and Environmental Microbiology*, and is an editor for *Archives of Microbiology*. He and his wife, Karen, have four children: Stephanie, Michael, Matthew, and Mark.



Left to right: Steven D. Aust (2003 University Outstanding Graduate Mentor), George H. Emert (2003 Advisor of the Year), David Peak (2003 Teacher of the Year), Dennis Welker (2003 Undergraduate Research Mentor), and Scott Ensign (2003 Researcher of the Year).

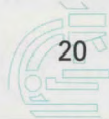
College of Science Teacher of the Year

The *College of Science Teacher of the Year* is **Dr. David Peak**, professor and assistant department head of the Department of Physics.

Teaching is an interest that David can date back to high school, where he had a "prototypical John Keating" (from the film, "The Dead Poets Society") for an English teacher—an inspiring individual whose efforts made a lasting impression. At the same time, he was starting to discover a connection to physics, drawn to the idea that you can "understand a lot about the things happening around you in terms of a single, simple equation." He added, "Later I found out that a more sophisticated understanding of nature required a couple of other equations, but my

epiphany, that complicated stuff often has simple explanations, has served as the inspiration for my professional life as a teacher and a researcher."

David received a BS degree in physics (1965) from State University College at New Paltz, New York, and a PhD degree in physics (1969) from State University of New York at Albany. Prior appointments include working as a research associate for Princeton University, serving as visiting scientist at Argonne National Laboratory, and as a faculty research associate at NASA Goddard Spaceflight Center. At Richmond University, he was the *E. Clairborne Robins Distinguished University Professor in Science*. David taught physics for 20 years at Union College, a small liberal arts college in upstate New York, where he was the *Frank and Marie Louise Bailey Professor of Physics*, before coming to Utah State in 1994.



Regarding his field of expertise, nonlinear dynamics, he says, "[It] shows us many examples of how regularity and unpredictability are two sides of the same coin...we see the possibility of understanding the schizophrenic character of the universe and also the potential for doing something about the unpredictable part. I think that's pretty cool."

His enthusiasm for physics is certainly felt in the classroom. Former student and College Valedictorian **Lara Anderson** calls David "an excellent teacher." She added, "In his lectures, he really gets to the substance of complex subjects and makes them accessible. His explanations are not only clear and pithy, but filled with humor and enthusiasm. I learned a lot in his classes and had a great time doing it!"

Among his accomplishments, David includes his book, *Chaos Under Control: The Art and Science of Complexity* (written with Michael Frame), "an introduction to chaos, fractals, and complexity for the general reader." The text is drawn from his research with studies of chaos. "The professional accomplishments of which I am most proud concern undergraduate research," David said. He helped found a national organization dedicated to promoting undergraduate research, the Council on Undergraduate Research, and brought about the development of the National Conference on Undergraduate Research, an annual "celebration of scholarly and creative work by America's undergraduates." In 1996 he received a prize from the American Physical Society for research conducted with undergraduate colleagues.

David is an artist and also enjoys traveling and the outdoors. His wife, Terry, is an associate professor and director of the Social Work Program in Utah State's Department of Sociology, Social Work and Anthropology.

College of Science Undergraduate Research Mentor

Dr. Dennis L. Welker, associate professor and director of undergraduate studies in the Department of Biology, was selected as the *College of Science Undergraduate Research Mentor*.

Dennis, who has been with Utah State since 1984, said growing up on a farm in Pennsylvania Dutch country helped guide him into the world of science. "I was interested in living organisms and breeding programs such as for crop improvement," he said of his early fascinations.

At Shippensburg State University, Dennis focused on physics, earning a BS degree in 1973, and then shifted his studies to biophysics at Pennsylvania State University for MS (1976) and PhD (1977) degrees. "I studied genes dealing with DNA repair in cellular slime molds," he said regarding graduate work. "From there I drifted into molecular genetics."

His research involving RFLP analyses, DNA-sequencing, and recombinant DNA manipulations, has taken him as far away as Australia (to the Australian National University, where he served as a postdoctoral fellow) and Germany (where he worked as a research associate at the Max-Planck Institute for Biochemistry). "Now I work on molecular genetics of the bacteria involved in making cheese," he explained. "My research deals with genetic analyses of lactic acid bacteria, and focuses on genes involved with exopolysaccharide synthesis and cheese flavor development."

As a teacher and advisor, Dennis has taught, mentored, and collaborated with numerous students, and in addition to his research work with graduate students, he has, to date,

sponsored the research endeavors of over 30 undergraduates. "I enjoy working one-on-one with students, both in the research lab and as an advisor," he said.

"He not only possesses the excellent qualities of a research mentor, but has an excellent sense of humor that makes him a pleasure to be around," said former undergraduate advisee **Victor Haroldsen**. "It should be fairly obvious from the multitude of students that have worked with him, that he enjoys having undergraduates in his lab and helping them gain experience."

Dennis has served on over a dozen University committees, including many years on the University Research Council and committees that promote research for undergraduates.

Of his personal interests he said, "I like collecting things—rocks, fossils, insects—and I enjoy bird watching with my wife, **Dr. Joanne Hughes**."

College of Science Advisor of the Year

Dr. George H. Emert, emeritus professor in the Department of Chemistry and Biochemistry, and past president of Utah State University, was named *College of Science Advisor of the Year*.

A native of Tennessee, Emert studied zoology (BA) at the University of Colorado and earned an MA degree in zoology from Colorado State University. He gained a PhD degree in biochemistry and nutrition at Virginia Polytechnic Institute and State University. Following this, Emert became a professor of biochemistry at the University of Arkansas and also served as executive vice president at Auburn University, before coming to Utah State in 1992, as the University's 13th president.

Under his leadership, Utah State saw tremendous growth, including the addition of several campus facilities, such as the new Widtsoe Chemistry Building and the Science and Technology Library. In 2000, Emert retired as president and returned to teaching.

"In my opinion, from the time he became an active member of this department, George Emert took an active interest in students," said **Dr. Steve Scheiner**, Chemistry and Biochemistry department head. "He volunteered to teach Chem 1010, both fall and spring semesters, and expended a great deal of effort in developing this course into something a little different than what it had been previously. His door was always open to any of his students that cared to speak with him."

"I have the highest respect for his advising and for his teaching," said **Dr. Kandy D. Baumgardner**, the College's associate dean for undergraduate affairs. "They go hand in hand, and he set an example for all our faculty. Chemistry is difficult to teach, but George understands what the 'teacher' part of the equation is all about." In directing students for advising, Baumgardner said she would often suggest they visit Dr. Emert, regardless of whether he was their assigned advisor or not. "He was widely respected by students in his chemistry class because he made it clear that he cared about what they learned," she added.

George and his wife, Billie, have four children. □

Awards and Honors

ALUMNI AWARDS AND HONORS

John C. Nelson, MD (BS 1965, Biology), who has a private practice in Salt Lake City, Utah, was named president-elect of the American Medical Association (AMA) Board of Trustees. He has served as president of the Utah Medical Association and the Salt Lake County Medical Society.

FACULTY AWARDS AND HONORS

Brett A. Adams and Peter C. Ruben have been selected to serve as reviewers for the Western Consortium of the American Heart Association. This review committee provides a critical assessment of fellowship and research grant applications according to American Heart Association standards. Their appointments end in 2006.

Diane Alston is currently serving as president-elect for the Pacific Division of the Entomological Society of America. Her term as president began March 2003 and continues until March 2004.

The USU Mortar Board Society honored **Andy Anderson** as a *Top Professor* on 13 March 2003. He was nominated by one of his students, community health major Audra Rose.

Steven D. Aust was chosen as the 2003 *University Outstanding Graduate Mentor*.

Lisa M. Berreau received the 2002 *Merrill Library Faculty Award* in recognition of her outstanding support of USU Libraries.

Stephen E. Bialkowski received the *Willard Gardner Prize in Science* at the Utah Academy of Science, Arts, and Letters Annual Meeting, Weber State University, Ogden, Utah, 11 April 2003.

Daryll B. DeWald has been named as Associate Director for Research of the USU Center for Integrated BioSystems (CIB). Dr. DeWald will focus on "bringing genomics, bioinformatics, and center-driven research to the CIB."

Scott A. Ensign was appointed to the editorial board of *Applied and Environmental Microbiology*.

James P. Evans served as a panel member on the U.S. Geological Survey National Earthquake Program Grants, Process and Theory Panel, 22 July 2002.

Joseph K.-K. Li was an invited guest of the Chinese Academy of Sciences (CAS) in Beijing, China, 14-16 November 2002. He accepted the role of organizer for an international symposium sponsored by CAS, the Chinese Academy of Medical Sciences, and Peking University that is scheduled in Beijing for 16-21 August 2003, and the International Symposium on Biotechnology and Bio Pharmacology in Shanghai on 23-24 August 2003. He was also an invited guest at the Hong Kong Genome Center, the Institute of Molecular Biology of the Hong Kong University, the Hong Kong University of Science and Technology, and the Chinese Hong Kong University. While in Hong Kong, he accepted a three-year extension to serve on the Hong Kong Grant Council.

Joseph R. Mendelson III was nominated and elected to the board of directors of the Society for the Study of Amphibians and Reptiles. His term lasts three years (2002-2005).

The Organizing Committee of the Society for Invertebrate Pathology honored **Donald R. Roberts** at its August 2002 annual

meeting in Brazil for his research contributions to insect pathology and microbial control in Brazil.

Dr. Robert W. Schunk was selected to present the Nicolet Lecture at the 2002 Fall AGU Meeting in San Francisco, California, 9 December 2002. His lecture was titled "Aeronomy-From Exploration to Data Assimilation." The Nicolet Lecture is part of the Bowie Lecture Series established by the AGU to honor leading scientists. This is the highest honor awarded in the Space Physics and Aeronomy Section.

Vijendra K. Singh was honored as one of 12 recipients of the prestigious O. Spurgeon English Humanitarian Award, 5 October 2002, Temple University, Philadelphia, Pennsylvania. Dr. Singh was identified as a pioneer for his research in neuropsychiatric disorders, in particular, autism. Other honorees included John Nash (Nobel Laureate), Betty Ford, (former First Lady), Joan Amtoft-Nielson (cancer and environmental medicine expert), and William Rea (world authority on environmental medicine).

Jan J. Sojka was selected as the 2002 *Utah Professor of the Year* by the Carnegie Foundation for the Advancement of Teaching (see article in this issue.) The Professors of the Year program salutes the most outstanding undergraduate instructors in the country. Dr. Sojka received the award last November in Washington, D.C.

Kimberly A. Sullivan is on the Scientific Advisory Board for HawkWatch International. She was also elected as treasurer of the Cooper Ornithological Society.

TRANSITIONS

25 YEARS OF SERVICE

Center for Atmospheric and Space Sciences
Shawna H. Johnson

Department of Mathematics and Statistics
Russell C. Thompson

30 YEARS OF SERVICE

Department of Computer Science
Donald H. Cooley

RETIRING FACULTY AND STAFF

Office of the Dean
Linda H. Finchum (December 2002)

Department of Biology
William A. Brindley (June 2003)
James Gessaman (June 2003)

Department of Chemistry and Biochemistry
George H. Emert (June 2003)

TENURE AND PROMOTION

Department of Biology
Brett A. Adams, Associate Professor
Joseph R. Mendelson III, Associate Professor
Carol D. von Dohlen, Associate Professor

PROMOTION

Department of Mathematics and Statistics
James A. Powell, Professor

IN MEMORIAM

Department of Mathematics and Statistics
Konrad Suprunowicz, Emeritus Professor
(passed away on 18 October 2003)

Joseph Elich, Emeritus Professor
(passed away on 19 November 2003)

ALUMNET RESPONSES

1940s

Jack L. Francisco (BS 1947, Mathematics), Redlands, California. Jack was a science and math teacher for several years, in Utah, Wyoming, and California, before making a switch to work "in support of electrical parts for our Country's space vehicles."

1950s

Dwayne P. Wright (BS 1953, Geology), Austin, Texas. Dwayne had a successful career in the U.S. Air Force (now retired as a Colonel), where he attended the Top Gun School and was highly decorated. He also earned an MS degree in public administration from George Washington University (1970). Currently, he is self-employed in the field of personal/financial health and wellness.

1960s

Dennis H. Gordon, MD (BS 1963, Premed), Salt Lake City, Utah. Dennis received an MD degree from the University of Maryland in 1966 and now works as an orthopaedic surgeon in Salt Lake City. He served as the president of the Utah State Orthopaedic Society from 2001-2003 and as the Utah Councilor to the national association from 1996-2002.

1990s

Woodrow Johnson (BS 1992, Mathematics, Philosophy), Eugene, Oregon. Woodrow earned an MS degree in mathematics from the University of Tennessee (1994) and a PhD in finance (2002), with distinction, from Columbia University. He is currently working at the University of Oregon Business School as an assistant professor.

2000s

Paul C. Ustach (PhD 2002, Biology), Arlington, Texas. Paul is teaching biology at the University of Texas, Arlington.

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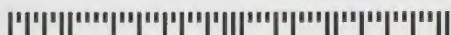
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Insights is the alumni newsletter of Utah State University College of Science. Its purpose is to inform alumni and friends of current events, projects, and changes within the College. The newsletter also provides a forum for alumni to follow one another's careers and professional development.

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