

SPECTRUM

INGRAMS DONATE \$5 MILLION FOR ENGINEERING SCHOOL

Bruce and Gloria Ingram of New Braunfels have donated \$5 million to Texas State University-San Marcos to establish a school of engineering. The new school will be named the Bruce and Gloria Ingram School of Engineering, in honor of the Ingrams. The gift will also endow the following: two professorships (\$1.2 million), the Bruce and Gloria Ingram Merit-Based Endowed Scholarships (\$500,000), the Bruce and Gloria Ingram Endowed Scholarships (need-based scholarships - \$500,000), and the Bruce and Gloria Ingram Faculty Development Endowment (\$600,000). The Ingram's gift also provides \$200,000 for program development.

"We chose to contribute to Texas State in an effort to support the San Marcos community where we lived for 34 years. Texas State is a wonderful university, and we believe its engineering programs have a bright future. Our contribution is given in appreciation of all the support we have received from many friends over the years," said Bruce Ingram.

"We are enormously grateful to the Ingrams for their generosity," said Texas State President Denise M. Trauth. "This is a transformational gift for the university. It will allow us to expand and greatly enhance our engineering curriculum and will help us serve a vital mission—providing more engineers for the Texas workforce."

Texas State began offering a program in engineering technology in 1989, followed by manufacturing engineering in 2000, and industrial engineering in 2004. The university plans to begin offering a curriculum in electrical engineering in 2007. A national search for the director of the Bruce and Gloria Ingram School of Engineering will begin immediately.

MELL MATHEMATICS CREATES CROSS BORDER INITIATIVES BETWEEN MEXICO AND TEXAS TO BRIDGE GAPS IN MATHEMATICS ACHIEVEMENT FOR SECOND LANGUAGE LEARNERS

Texas and Mexico share the challenge of teaching mathematics to students who are second language learners. Currently, Texas students who are ELL are scoring poorly on the mathematics portion of the Texas Assessment of Knowledge and Skills (TAKS) exam, with negative implications for the students and the future of Texas in general. One way that the Texas State Mathematics for English Language Learners (MELL) Mathematics Team, guided by Dr. Joyce Fischer, is bridging these gaps in mathematics learning is by creating cross-border initiatives between Texas and Mexico that enable teachers, mathematics educators, and mathematicians to study issues related to mathematics as it is taught in both countries.

One initiative is between Texas State University-San Marcos and Tecnológico de Monterrey at Guadalajara. This project is called META Matemática (Mexico Empowering Texas Achievement) when Mexico's teachers host the Texas teachers and TEMA Matemático (Texas Empowering Mexican Achievement) when the Texas teachers host Mexico's teachers. Supporting these efforts are the Texas State University System's (TSUS) Educational Policy Implementation Center (EPIC), directed by Dr. Leslie Huling and Dr. John Beck, and the Curriculum and Instruction (C&I) MELL Team, guided by Dr. Violetta Lien.

The MELL Math META-TEMA Initiative features a team of teachers from Mexico and Texas engaged in sharing ideas on mathematics curricula, pedagogy, and content methods through joint conferences and research projects in order to help second language learners in both countries. Knowing exactly what and how content and topics are taught will enable teachers in both countries to tap into a student's prior knowledge by means that do not necessarily involve language.

Another cross border program is between Texas State and the Universidad Autónoma de Nuevo León in the city of Monterrey. Officials from this university have asked Dr. Fischer to teach courses in curriculum development, pedagogy, and content methods to their pre-service and in-service Mexican teachers.

These projects reveal a focused effort by both countries to support students who face learning mathematics and language concurrently. For additional information, contact Dr. Joyce Fischer at jf10@txstate.edu or visit the Texas State University System website at tsusmell.org.

This picture was taken at a mathematics conference in Mexico.



FROM THE DEAN



As I write these words, it is just one day before Christmas Eve. Campus and town are eerily quiet, except perhaps in the Outlet Mall. Two things happened this morning, which remind me about why I chose to become a biologist. Just an hour ago, I put my older dog, Yana, to rest. She was almost 9 years old, beautiful, stubborn, a ball of white fur when I adopted her at 8 weeks old, yet she seemed to know it was her time. The last living being dear to me whom I saw die was my grandfather, and I was present in the hospital with my dad when my grandfather passed away. Although I was just beyond my teens, over 30 years ago, experiencing the loss of any loved ones in our lives remains some of our most difficult hours. Facing death is sad and scary; it is a mystery we will probably never understand. But life is an even greater mystery, and it is one that we can all share, enjoy, and even try to unravel. The latter journey can be fun, mystifying, frustrating, and can even become a career for the likes of me. The mystery is never boring or ceases to cause wonder – and always elicits hope.

When I returned from the veterinarian, I picked up the front page of the New York Times and read that a group of scientists reported finding the smallest form of life to date (pending confirmation by other biologists, of course). It is a group of microbes found in an abandoned mine in California, slightly larger (200 nanometers) than the largest virus. The microbes live in acid slime, where not too many other forms of life can prosper, let alone survive. The link between Yana's death this morning and the Times article is, of course, a coincidence, but it is not at all uncommon. We all have almost daily reminders of the tenacity of life and the stubbornness of the hope that life always represents. No one said it better than Charles Darwin, who concluded his "Origin of Species" with a sentence that has resonated with me since I read it for the first time in college:

"There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning, endless forms most beautiful and most wonderful have been, and are being, evolved."

What a gorgeous, poetic statement coming from a much maligned synthesizer of thought and fact. Whether we attribute the original "breathing" to a higher being or to natural selection, the sense of wonder remains to coax us, prodding ever-evolving approaches to understanding this thing called life (and its sad companion). And so, many of us become "professional" students of life, whether we focus on biofilms, like my colleague, Bob Mclean, or my long gone friend, Ruth Satter, who spent many a thousand hours following the sleep of leaves. Some of us also choose to communicate what we find, at a place like Texas State. As you read these lines, I will be teaching a course for the first time in several years. A scary thought now, while I organize my books, dust off my old notes, and write down new ones...not that this Dean's job doesn't keep me busy enough, you better believe it does! Still, I have missed sharing what I think I know with young minds eager to learn and to challenge me, as much or maybe more than imagining and carrying out more experiments. So, I look forward to this course on plants and people that I started many years ago at Penn State, which keeps my love alive for the field I chose to follow, plant biology, but also allows me to indulge in my other loves, such as cooking. There is nothing that conjures up the notion of the classic complement between grains and legumes better than warm a plate of rice and beans, with its cool post-Columbian signature. And maybe, just maybe, I and my students will wonder why Yana was so fond of grapes (and tomatoes!) and why Dante, my other dog, would pass them up for a good chunk of smelly, moldy-green gorgonzola. Farewell, Yana – and a great semester to you all!

RUSSIAN ACADEMY OF SCIENCES BEGINS COLLABORATIVE RESEARCH WITH TEXAS STATE UNIVERSITY

The Russian Academy of Sciences and Texas State University are beginning collaborative research in the area of past global warming and its effects on vegetation. Dr. Sergey Vikulin, Senior Research Scientist at the Komorov Botanical Institute, Russian Academy of Sciences, is visiting Texas State University as Senior Research Fellow under the Fulbright Fellowship Program. He is the first Fulbright Scholar ever to visit Texas State University and is working in the laboratory of Dr. Garland Upchurch, Associate Professor of Biology, who also specializes in the study of fossil plants. Drs. Vikulin and Upchurch are investigating polar forests of the distant geologic past. These forests once occupied extensive areas of Siberia, North America, and the European Arctic during global warming of the Early Tertiary Period (65-33 million years ago). Today, the Arctic is covered with ice, tundra, and bare rock; but during the Early Tertiary, it was lushly vegetated and had little or no ice on either the land or ocean.

The Early Tertiary is an important period for scientists who study past global change, because it marks the transition from greenhouse climates of the Mesozoic (or dinosaur) Era to the cooler climates of the modern era. Plant biologists study these fossil forests to understand how individual lineages of plants came to be distributed on widely dispersed continents, because the Arctic once consisted of a nearly continuous land mass that interconnected Europe, Asia, and North America. (Continued on page 7)

FEATURING FACULTY

Biology

Dr. Dana Garcia has been awarded an NSF grant in the Career Advancement Award program to study the diurnal rhythms of gene expressions in the eye. The grant is called "FISH and Chips" after the techniques employed to undertake this study.

Chemistry and Biochemistry

Dr. Patrick Cassidy presented a paper at the National American Chemical Society meeting in San Francisco in September entitled "Patents to Products to Profits" in the Entrepreneurship Symposium, discussing the intellectual property issues and process at the university following the receipt of the patents from Shell Oil Company. His paper entitled "Fluorinated Polymer Nanocomposite Membranes for Gas Separation" was presented at "FLUOROPOLYMER 2006" in Charleston, SC in October.

Dr. Chang Ji received a grant of \$35,000 (09/01/06 to 08/31/08) entitled "Synthesis of Thionitrites Using Electrogenerated Cobalt (I) Salen as the Mediator", which was awarded by the American Chemical Society (ACS) Petroleum Research Fund. He also presented a paper titled "Determination of Henry's law constants by an internal standard method" at the 232nd ACS National Meeting in San Francisco on Sept. 13, 2006. **Walter Rudzinski** presented a lecture on *Mass Spectrometric Characterization of Polyaromatic Organosulfur Heterocycles and Naphthenic Acids in Petroleum Products* at the 17th International Mass Spectrometry Conference in Prague, Czech Republic in August, 2006, and an invited paper on *Aptamer-Quantum Dot Binding to Bacillus thuringiensis Spores* at the Chemistry at the Boundary of Biology Session at the 19th Rocky Mountain Regional Meeting in Tucson, AZ in October, 2006.

Computer Science

Jawad Drissi presented a paper, "Localized broadcast authentication in large sensor networks," at the *International Conference on Networking and Services*, July, 2006, in Santa Clara, CA. The paper, co-authored by **Qijun Gu**, was published in the refereed conference proceedings. **Mina Guriguis** is a new Texas State faculty member in Computer Science. He completed his Ph.D. work at Boston University in August, defending his dissertation, "Reduction of Quality Attacks on Adaptation Mechanisms". His research interests are in Security Aspects in Computing Systems and Networks, Internet Traffic Management and Quality of Service, TCP over Wired/Wireless Networks, Sensor Networks, Overlay and P2P Networks. Dr. Guriguis presented a paper, "On the Impact of Low-Rate Attacks," at the IEEE International Conference on Communications (ICC'06), Istanbul, Turkey, June 2006. The paper by **Khosrow Kaikhah**, "Discovering Trends in large Datasets Using Neural Networks," published in the February 2006 issue of the *Journal of Applied Intelligence*, is listed as the most viewed article on the journal website. **Rodion Podorozhny** presented a paper, "Business Process Learning for Real Time Enterprises" at the 1st International workshop on "Business Intelligence for the Real Time Enterprise" (BIRTE) as part of "Very Large DataBases" conference (VLDB'06). The paper, coauthored by **Anne Ngu** and Dimitrios Georgakopoulos, was published in

the refereed conference proceedings. **Jeff Slomka** and **Carol Hazlewood** presented a paper, "Work in Progress: Project La Costa: IT experiences for 8-10 graders in South Texas", at the 2006 *Frontiers in Education* conference in San Diego, California, October 28--31, 2006. Project LaCosta is funded by NSF grant ESI-0423115. The paper, co-authored by Ruth Welborn and Marco Montoya from the College of Health Professions and Cruz

Mathematics

Alejandra Sorto presented a paper at the Seventh International Conference on Teaching Statistics (ICOTS 7), Brazil, July 2 -7, 2006 entitled "*Identifying Content Knowledge for Teaching Statistics*". **Max Warshauer**, **Hiroko Warshauer**, **Terry McCabe**, **Alejandra Sorto**, and **Alex White**, as part of a Park City Math Institute grant to Texas Mathworks, provide a year long bi-monthly professional development by facilitating mathematics inquiry group with McAllen ISD middle school mathematics teachers via Internet Television (ITV). **Hiroko Warshauer** led the Texas Mathworks team of four Texas middle school students to Hong Kong for the Po Leung Kuk Primary Mathematics World Competition in July, winning the top non-Asian team award for the fourth time. **David F. Snyder** made a presentation called "Knots as Processes" at the 25th Annual Western Geometric Topology Workshop held in Corvallis, Oregon at Oregon State University, in June 2006. On November 9-11, 2006, **Dr. Nathaniel Dean** presided over *Undergraduate MATHFest XVI* on the campus of Howard University in Washington, DC. This research conference sponsored by the National Association of Mathematicians (NAM) hosted approximately 60 undergraduate mathematics majors (mostly juniors and seniors) and approximately 30 accompanying mathematics faculty from approximately 35 Historically Black Colleges and Universities and Minority Institutions (HBCU's/MI's). The purpose of Undergraduate MATHFest is to engage in concrete efforts on an annual basis to increase the number of underrepresented American minorities who pursue graduate study leading to a graduate/doctoral degree in mathematics. As President of NAM Dr. Dean governed the organization of the meeting, and met with NAM's Board of Directors to discuss funding, future conferences and other business. "Not a Fishing Expedition: Posing Questions for Understanding" was the title of the talk **Hiroko Warshauer**, **Terry McCabe**, **Max Warshauer** and **Alejandra Sorto** presented in St. Louis, MO at the National Council of Teachers of Mathematics 2006 Annual Meeting and Exposition, April 28. **Dr. Selina Vasques-Mireles** was appointed the leader of the College Reading and Learning Association's Math Special Interest Group, which focuses on current issues in developmental mathematics around the nation.

Technology

Dr. Asiabanpour is PI on a research grant received from EH Systems in the amount of \$11,720 for improving the tooling and productivity of their wall and roof panel production line. In November, 2006 he served on a panel at NSF reviewing unsolicited proposals submitted to the Manufacturing Machines and Equipment program.

ALUMNI ANNOUNCEMENTS

1941

Earl Lumpkin (BS, Chemistry, Physics) is retired for 26 years after a career as a mass spectroscopist at Exxon Mobil Research and Engineering Company in Baytown, TX. He is enjoying gardening, traveling abroad, and rearing great-grandchildren.

1943

Dorothy Long (nee Burke) (BS) is retired after 40 years teaching in the Houston Independent School District.

1948

Jay A. Buxton (BS, Biology) is now retired, but he is 87 and says his clock is still running! He attended here when the campus was known as Southwest Texas State Teachers College.

1951

Gwen Tipton (nee Whitt) (BS) retired in 1989 after 37 years of teaching.

1952

William Cramer (BSEd, Math) is a retired Lt. Col., USAF, and always likes to hear from SWT friends and friends from active duty period. **Richard Haller (BS, Math)** is retired from General Dynamics Corporation as engineering chief and now spends his time farming and ranching.

1957

Ralph M. Rice, Jr (BS (Biology, Chemistry) is a retired teacher, coach, administrator. He says retirement is great and herding cattle is similar to public schools.

1958

Edna Patteson Thompson (BS, Math) is retired and is celebrating 91 years of age.

1970

David Flores (MA, Chemistry) is retired from Dow Chemical after 31 years. He published memoirs, "The Open Cage," in September of 2006 under the pseudonym Gregorio R. Torres.

1971

Nancy Savage Smith (BSEd, MEd, Math) currently works at San Marcos High School as a technologist and also lectures at Texas State in the Department of Management.

1973

Joyce S. Hartwell (nee Stanford) (BA, Math) retired in May 2004 from teaching mathematics. She has 9 grandchildren, and her daughter Theresa graduated from the University of Tennessee with a degree in criminal justice.

1977

Dan Ellis (BS, Biology) is retired from the USAF with the rank of Lt. Col.

1982

Roland Holloway (BS, Computer Science) is currently a manager at Cisco Systems.

1983

Malcolm Bynum (BS and MS, Biology) is currently a manager for Special Investigations with the Texas Commission on Environmental Quality.

1984

John Eric Szendry (BS, Marine Biology) is a registered nurse for the Nevada Department of Corrections. He is currently in school again, pursuing a Bachelor of Science in Nursing.

1990

Rodney Rohde (1990 BS, Microbiology; 1992 MS, Biology) is co-author of a publication in *Emerging Infectious Diseases* in the August 2006 issue: "Emergence of a Novel Bat-associated Rabies Virus among Skunks", M. Leslie, et al. He presented a study he completed in collaboration with the Department of State Health Services on the prevalence of Methicillin Resistant *Staphylococcus aureus* (MRSA) in a Texas prison at the national conference of the American Society of Clinical Laboratory Scientists (ASCLS) in Chicago in July, 2006.

1992

Rusty Keen (BA, MA, Information Systems Technology) is a F-16 pilot in the USAF and a graduate student at the Navy War College. He just finished a two year tour with the USAF Thunderbirds (flew #2 left wing position).

1994

Lenore DePagter (BS, Biology) is a clinic physician at TSU Student Health Center and has been practicing medicine in central Texas for four years now.

Heidi Knowles (BS, MS, Biology/Microbiology) is an emergency department physician at Palestine Regional Medical Center and recently opened a chiropractic clinic in Athens, TX (relocated from Houston).

1996

Travis Rothwell (BS, Biology) is regional manager for south central US with Atlantis Components (dental implant devices).

1999

Kayla Feathers (BS, Biology) is a loan officer and housewife.

2005

Rebecca Ruddock (BS, Chemistry) is currently a Corrosion Chemist at Baker Petrolite: division of Baker Hughes (oilfield company).

2006

Steven Bitner (BS, Computer Science) is pursuing a Ph.D. in Computer Science at the University of Texas at Dallas.

COLLEGE OF SCIENCE SEMINAR SERIES KICKOFF



In order to help catalyze the development of new research and teaching initiatives, the College of Science has started a College-wide Seminar Series focusing on diversity and interdisciplinary programs.

The first speaker in this series was Dr. Paul Kennedy (left), former professor of Mathematics at Texas State and currently at Colorado State University. Dr. Kennedy, who was a Professor of Mathematics at Texas State for many years, has been at Colorado State University since September of 2003. During that time, he has established a very successful and nationally recognized program in Mathematics Education. His address to the College entitled "Access to Mathematics: Interventions that Work," included a discussion of the National Science Foundation Center for Learning and Teaching in the West doctoral programs in math/science education. He also highlighted some of the online courses and research that he is working on at Colorado State.

On November 3, the College of Science hosted the second event in its College Seminar Series. Steve DeCaro (right) teaches high school and advanced placement physics at Mattituck HS on Long Island, NY. He is also the head baseball coach and coached high school football for 19 years. He received his BS in Physics from New York Institute of Technology and his MA in Applied Physics from State University of New York at Stony Brook. He has had numerous articles written about his unique talent for merging sports and physics in the classroom, most recently in *The New York Times* (May 2006). His address was entitled "Bringing Sports into the High School Science Class and Science to High School Sports".



Dr. Valerie Otero's (left) seminar on December 4 was entitled "Sharing Responsibility for Preparing Teachers" and focused on the Colorado Learning Assistant Model. In this presentation, she described the Colorado Learning Assistant Program and discussed its success in recruiting and preparing new K-12 mathematics and science teachers. The Learning Assistant program has led to increased subject matter knowledge among learning assistants, increased interest in K-12 teaching as a career, and increased appreciation and understanding of student-centered and inquiry-based learning throughout the university. Data to support these claims was presented. Dr. Otero is a professor of Science Education at the University of Colorado at Boulder. She is involved in focused efforts to create pathways for undergraduate mathematics and science students to integrate content, pedagogy, and practice through collaborations among mathematics, science, and education faculty. Dr. Otero is a co-developer of the Physics for Elementary Teachers (PET) curriculum and the Colorado Learning Assistant Model. In addition to studying the efficacy of the Learning Assistant Model, Dr. Otero investigates pre-service teacher cognition in highly interactive science learning environments such as PET. She studies how mediating features of learning environments enhance or reduce opportunities for participation, identity, and conceptual development among students of all ages.



Upcoming speakers this year will be Dr. Maria Elena Zavala, Professor at California State University (Northridge) and former President of the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS); Dr. Moshe Vardi, George Professor in Computational Engineering and Director of the Computer and IT Institute at Rice University; and Dr. Robyn Hannigan, an Aldo Leopold Leadership Fellow and the 2007 American Chemical Society Medal awardee.

YOU'RE INVITED TO SUPPORT THE COLLEGE OF SCIENCE

We try to feature different accounts in each newsletter, so if you don't see your favorite one listed, and would like to contribute, just give us a call.

- ◇ Mariel Muir Science Scholarship #
- ◇ Stan Israel Memorial Fund *
- ◇ Sally Karnau Biology Scholarship #
- ◇ Key-Parks Scholarship in Chemistry and Biochemistry *
- ◇ Don and Helen Cude Computer Science Scholarship *
- ◇ Tulloch Math Scholarship #
- ◇ Robert and Fran Anderson Scholarship in Physics #
- ◇ William L. Deck Scholarship in Technology *
- ◇ Smith-Willms Scholarship #
- ◇ Harold Sellars Scholarship*

◇ Department of Computer Science Scholarship#

*Make check payable to Texas State University
Make check payable to Texas State University Development Foundation

Send checks to:
Mr. Kent Hamilton, College of Science Development Officer
HSC Room 201H
601 University Drive
Texas State University-San Marcos
San Marcos, TX 78666

Be sure to include a note along with your check that your contribution is for the College of Science. Please specify which fund or department you'd like to support. For questions, contact Kent Hamilton at 512-245-1722 or kent.hamilton@txstate.edu.

DISCOVERY CORPS SENIOR FELLOW



Dr. Linette Watkins, Texas State University—San Marcos, is a Discovery Corps Senior Fellow for the 2006-2007 academic year. The Discovery Corps Fellowship Program is a pilot program seeking new postdoctoral and professional development models that combine research expertise with professional service. Discovery Corps Fellows leverage their research expertise through projects that address areas of national need. Their projects enhance research capacity and infrastructure and contribute to workforce development and job creation. Watkins' project will initiate and support a year-round undergraduate research community at San Antonio College (SAC), a two-year college with a strongly diverse student population. Projects will be developed collaboratively between SAC and Texas State faculty. Graduate students from Texas State will be trained to supervise undergraduate research at SAC as they complete their own research projects alongside the undergraduates. Research themes include determining the enzymatic mechanism of C-S bond cleavage, synthesizing and characterizing boron-containing polymers for specialty materials applications, and synthesizing surface-modified clay platelets. The project seeks to strengthen the research infrastructure at the community college, increase two-year college students' access to research experiences, and increase the quality of interactions between the two campuses.

AQUATIC SCIENCE ADVENTURE CAMP

More than 300 students participated in the Edwards Aquifer Research and Data Center's (EARDC) Aquatic Science Adventure camp over the summer of 2006, which introduces young people to a variety of activities centered on the study of water. Kids in this camp made detailed analyses of aquatic life they discovered in the San Marcos River. Some sessions of the camp were one or two weeks long and residential, with students living on campus while other sessions were day camps with as few as two days.

During the last camp of the summer, Lendon Gilpin, Assistant Director of Education for the EARDC, took his 20-plus charges to a San Marcos dive shop for an introduction to scuba diving. After lunch, the group waded into the San Marcos River to collect aquatic life, then returned to the campus laboratory and put their collection under the microscope. The examination of the specimens was high-energy for the kids, as they bounced around the laboratory looking at specimens that "can look like little monsters under the microscope," Gilpin said.

Later that afternoon, the kids toured a city of San Marcos wastewater treatment plant. Once they gotten past the aroma, they gained a new appreciation for the effort that goes into protecting the environment.

EARDC has been offering the camp since 1988, and Gilpin says that he has seen some campers return to Texas State as students, and they've dropped by the center to show that the lessons they learned are still a part of their lives.

SPOTLIGHT ON STUDENTS

The American Chemical Society (ACS) Student Affiliates chapter at Texas State has been selected to receive an Honorable Mention award for its chapter activities conducted during the 2005-06 academic year. Drs. Benjamin Martin, Gary Beall, and Chad Booth are especially commended for their dedicated efforts and commitment of time and energy as faculty advisors. Our award winning chapter will be honored at the 233rd ACS National Meeting in Chicago on March 25, 2007.

Zachariah Gompert, biology graduate student in the Population and Conservation Biology masters program, became the first Texas State student to have a paper published in the preeminent journal, *Science*, on August 18th, 2006. Published with his supervising professor Chris Nice, the paper explores how the genetic diversity of plants impacts the species diversity of insects, spiders and other arthropods and how that combined diversity affects the overall health and biological vigor of a given ecosystem.



Veronica Huerta (microbiology) won First Place in the Life Sciences poster presentation competition and **Valerie Valencia** (biochemistry) won Third Place in the Life Sciences poster presentation competition at the 2006 Houston-Louis Stokes Alliance for Minority Participation National Undergraduate Student Research Conference at Texas Southern University in Houston in November. Veronica and Valerie are HLSAMP scholars at Texas State. They are pictured here with Dr. Mario Molina, 1995 Nobel Prize Winner in Chemistry, who was the keynote speaker at the conference awards presentation. Five of the twenty-five Texas State undergraduate students who attended the conference presented posters on their research.

MATH AND SCIENCE “MIX IT UP”



Dr. Selina Vasquez-Mireles (Math Department) and Dr. Sandra West (Biology Department) received a \$714,762 grant from the Department of Education. They are working to improve student performance in science and math, which is the highest priority in secondary education at all levels – national, state, and local. The strong link with teacher quality requires a major rethinking in two areas: how teachers and students are taught math and science as well as the production and retention of high quality, experienced science and math teachers.

“Mix It Up” is a program aimed at (1) providing intense, sustained, systemic, correlated math and science content knowledge and skills to undergraduates (majors and pre-service teachers) and graduates (majors, in-service teachers, and career change candidates); and (2) recruiting, strengthening, and maintaining middle school math and science teachers through an innovative model. This model utilizes collaboration and mentoring and produces deliv-

erables – especially custom-made, research-based, correlated math and science lesson plans using best practices and aligned to national, state, and local standards. In order to accomplish these goals, will continue to develop, implement, and evaluate the correlated math and science curriculum model to determine if the use of correlated math and science curriculum by trained middle school teachers improves student performance.

Vasquez-Mireles and West’s data indicate the correlated math and science curriculum was effective in improving middle school science and math teachers’ understanding of both math and science. Additionally, the instructors, research and lab assistants delighted in their efforts to correlate the physics and math concepts and are excited about continuing the collaboration on and evaluation of the curriculum.

RUSSIAN ACADEMY OF SCIENCES BEGINS COLLABORATIVE RESEARCH WITH TEXAS STATE UNIVERSITY

Climate scientists study these fossil forests to learn the magnitude of climatic warming and its causes. Drs. Vikulin (left) and Upchurch (right) are investigating: (1) the evolutionary relationships of the redwoods and other plants that formed these unique Arctic forests; and (2) the extent to which high levels of atmospheric carbon dioxide caused this global warming.

The study is being conducted in two phases. First, fossils of the dawn redwood (*Metasequoia*) and other conifers will be compared to modern species to determine whether the fossils represent living species or extinct species. *Metasequoia* has been considered a “living fossil” because its appearance has changed little over its 100 million year history. Cuticle micromorphology will determine the extent to which this is true, because microscopic details of the plant surface often distinguish varieties of plants that appear identical in their leaves and cones.

Second, the density of leaf stomata—or breathing pores—in fossil conifers will be used to reconstruct levels of atmospheric carbon dioxide for the Early Tertiary. In modern tree species, the density of leaf stomata decreases with increasing levels of atmospheric carbon dioxide, but details differ between individual species. By studying stomata in ancient species and understanding their relationship with modern species, scientists can learn whether the levels of atmospheric carbon dioxide being generated by the burning of fossil fuels exceed those experienced by the Earth over the past 65 million years.

Drs. Vikulin and Upchurch are paleobotanists—scientists who study plants of the past. They bring complementary expertise to the problem of ancient Arctic forests and past global warming. Dr. Vikulin is an expert in plant classification, biogeography, and the use of leaf micromorphology for identification of fossils. Dr. Upchurch is an expert in the use of plant fossils to reconstruct past climates and the physical interactions between past vegetation and the atmosphere.

The Fulbright Program, the U.S. government’s flagship program in international educational exchange, was proposed to the U.S. Congress in 1945 by then freshman Senator J. William Fulbright of Arkansas. In the aftermath of World War II, Senator Fulbright viewed the proposed program as a much-needed vehicle for promoting “mutual understanding between the people of the United States and the people of other countries of the world.” His vision was approved by Congress and the program signed into law by President Truman in 1946. Fulbright grants are made to U.S. citizens and nationals of other countries primarily for educational activities: university lecturing, advanced research, graduate study, and teaching in elementary and secondary schools. Since the program’s inception, more than 273,500 participants—chosen for their leadership potential—have had the opportunity to observe each other’s political, economic, and cultural institutions. Of these participants, 45,400 have been overseas academics and professionals who have conducted research or taught in U.S. universities as Fulbright Visiting Scholars, and more than 43,600 U.S. faculty and professionals who have engaged in similar activities abroad.



Texas State University-San Marcos
College of Science

601 University Drive
San Marcos, TX 78666-4616

Phone: 512-245-2119
Fax: 512-245-8095
Email: bp01@txstate.edu
Website: www.science.txstate.edu

Non-Profit
Organization
U.S. Postage
PAID
Permit No. 29
San Marcos
Texas 78666

Mailing Address Line 1
Mailing Address Line 2
Mailing Address Line 3
Mailing Address Line 4
Mailing Address Line 5

Spectrum is published twice each year by the Texas State College of Science. If you are getting more than one copy of Spectrum, please let us know. We welcome your correspondence, comments, and changes of address. Mail to Barbara Pascoe, College of Science, Centennial Hall 201, Texas State, 601 University Drive, San Marcos, TX 78666; fax to 512-245-8095 or email to bp01@txstate.edu. Visit the College of Science website at www.science.txstate.edu.
Dr. Hector Flores—Dean, College of Science
Barbara Pascoe--Newsletter Editor

ALUMNI—LET US HEAR FROM YOU

Please keep us informed about what you are doing and offer suggestions for future issues!

Current Name: _____ Name when at TXState: _____

Is the address to which your newsletter was mailed correct? YES NO (please circle one)

If NO: CHANGE ADDRESS to: _____

Street City State Zip

Home phone number: () _____ Business phone: () _____

Is spouse an Alumnus? Y N If YES, name when at TXState: _____

Year of your graduation: _____ Degree earned at Texas State: _____ Major: _____

Your current position: _____

Current company name and description _____

Comments or Professional news of interest to share with classmates: _____

Address Referral: Do you know of any alumni who are not on our mailing list but should be? Is one of your classmates living in another state or abroad? Help them keep in touch by sending us their information:

Name at TXState: _____ Address: _____

Please cut out and mail to Barbara Pascoe, College of Science, Texas State University, 601 University Drive, San Marcos, TX 78666-4616. Thank you!