Colorado State

MAGAZINE

SPRING 2007

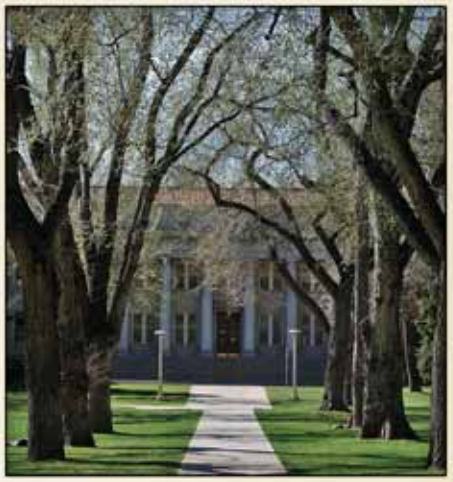
Global Challenges

How innovative Superclusters unite research with solutions

Inside:

- *Immersing faculty and students in the world's societies*
- *Discoveries in computer science and archaeology*
- *Thriving University Center for the Arts*

Colorado State University



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LETTER FROM THE

President

Whenever I meet with faculty and students on campus, inevitably I'm impressed by the high level of enthusiasm and skill they demonstrate in helping to resolve some of the great global challenges facing our world. Daily we hear about disease, famine, poverty, and environmental crises that plague people on every continent – and daily, the people of Colorado State University are doing their part to address those problems.

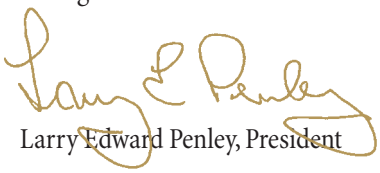
This issue of *Colorado State Magazine* touches on key research and outreach efforts that begin right here on campus and have positive effects throughout the world.

- Our innovative Supercluster model, which joins the University's brightest minds with the global marketplace, is now in place to help answer challenges such as infectious diseases and to advance biomedical research and development. The alliances of academic researchers, economists, and business experts under the Superclusters umbrella are energizing collaborations and merging the worlds of business and academia.
- Colorado State faculty and students are deeply involved in the global community by helping to increase knowledge and create and maintain mutually beneficial relationships with our international partners. Examples of those reciprocal relationships and agreements can be found on almost every continent in a wealth of areas ranging from health science to structural engineering to textiles and apparel.
- Within our renowned business and engineering schools, students are learning to use entrepreneurial, sustainable approaches to address worldwide challenges. As just one example, business and engineering students have visited India to test an innovative cook stove they helped develop that captures thermal energy and converts it to electricity.

Through efforts such as these, the short- and long-range benefits for civilization are limitless. Helping to improve the lives of countless people who live in poverty and poor health is the ultimate goal of this and many other programs at our University.

Whether at home or abroad, the people who are the foundation of our 21st century, land-grant college are looking well into the future and working toward securing better lives for humanity.

Through persistence, innovation, and the advancement of knowledge, Colorado State is continuing its commitment to increase prosperity and quality of life throughout the world.



Larry Edward Penley, President

Class Notes has moved

The Class Notes department is featured in the members-only *AlumLine* e-newsletter and *Around the Oval* publication. For more information on becoming a member of the Alumni Association, visit www.CSUAlum.com or call 800-286-2586. ◆

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New vice president, dean join the University

Senior higher-ed administrator named vice president

Colorado State University's new vice president for Finance and Administration is Bob Rizzuto, a longtime senior administrator in Colorado's higher education system. He joined the University in early April and will serve on the President's Cabinet and as a member of the Cabinet Finance Subcommittee.

Rizzuto most recently served as interim president of Pikes Peak Community College. He also served as chief administrative officer for Colorado Northwestern Community College from 2004 to 2006.

"Bob brings vast knowledge of financial systems at institutions of higher education in the state," says President Larry Edward Penley. "He is well aware of the funding challenges we face in Colorado and will provide strong leadership as we build a stable financial future for Colorado State."

Rizzuto obtained his M.B.A. from the Colorado division of the University of Phoenix, his associate of arts degree at Otero Junior College in La Junta, Colo., and his bachelor's from the University of Northern Colorado. ◆

Dean of the Warner College to join CSU in May

Joseph T. O'Leary, a professor and department leader at Texas A&M University, will be the Warner College of Natural Resources' new dean starting in May.

O'Leary is department head of the Department of Recreation, Park and Tourism Sciences at Texas A&M, where he served since 2001. Prior to that, he was a professor at Purdue University's Department of Forestry and Natural Resources.

His professional affiliations include the Academy of Leisure Sciences, the American Academy of Park and Recreation Administration, the IUCN World Commission on Protected Areas, and the Education Committee for the World Tourism Organization. He received the prestigious Franklin D. and Theodore Roosevelt Excellence in Recreation and Park Research Award from the National Recreation and Park Association. Additionally, he received the Renewable Natural Resources Foundation Outstanding Achievement Award.

His doctoral degree is from the University of Washington, and his master's is from Yale. ◆

Collaboration reaps renewable benefits

To help boost the development of more renewable energy in rural Colorado, Colorado State University in February signed an agreement with two other state universities and the National Renewable Energy Laboratory to create the Colorado Renewable Energy Collaboratory.

Endorsed by Colorado Gov. Bill Ritter and members of the Colorado delegation, the Collaboratory emphasizes development of new technologies and the advancement of existing technologies for rapid transfer to private industry for commercial development. Colorado School of Mines and the University of Colorado also signed the agreement.

The collaboration is expected to attract new renewable energy enterprises to Colorado, adding to the state's economic prosperity.

"Colorado State has unique capabilities and an outstanding track record in renewable energy research – from developing specialized energy crops to creating a more robust, integrated, and renewable electrical power system," says President Larry Edward Penley.

Regionally, CSU is also part of the Northern Colorado Clean Energy Cluster, a group of businesses, economic development, and government leaders dedicated to promoting clean energy technologies and job growth. ◆

Living and learning in the Academic Village

by Kay Rios

Living and learning will go hand-in-hand when the new Academic Village opens on the south side of campus this fall. The $42 million project will incorporate academic studies in a residence hall environment by integrating laboratories, classrooms, and faculty offices along with residential rooms.

"We want to incorporate learning into every part of our students' lives," says Jim Dolak, executive director of Housing and Dining Services. "Living areas and academics traditionally have been on opposite sides of the campus, but we hope to bring them together to enhance student experiences."

The new complex includes the four-story Engineering Building, three-story Honors Building, two-story Dining Commons, several courtyards, and two signature features: a fireplace lounge for Honors and an electronic classroom for Engineering.

When completed this fall, Academic Village will integrate residential rooms with laboratories, classrooms, and faculty offices to provide a study environment in the residence hall.

Photos: Bill Cotton

Mary Ellen Sinnwell, director of Residence Life, says most of the rooms are set up for two people and offer a private bath. "These are the largest rooms in the system right now," Sinnwell says.

The Engineering Building also has a limited number of single rooms for upperclass engineering students and a two-story faculty apartment. Each hall, Sinnwell says, has multipurpose rooms, classrooms, and study lounges.

In the center of the village is the 44,000 square-foot Dining Commons that will open in 2008. Deon Lategan, director of Residential Dining Services, says, "We wanted to create a space that would offer students more than just meals – they need a place where they can congregate and find everything they need."

From the outside plaza, a split-level entry leads to a sports grill on the lower level with televisions and seating for 200. The second level seats 500 and offers a variety of dining venues in a style called Marché, which uses open kitchens. "You see the food being prepared in front of you instead of in the back of the house. It's very dynamic," Lategan says.

Another dynamic element is the interior design of the Dining Commons and other buildings, which is based on warm earth tones with wood, brick, stucco, and glass, giving the facility a distinctive and inviting look.

The complex was designed with students in mind and based on student input, Dolak says. "Older halls have double-loaded corridors (rooms on both sides of hallways) and community bathrooms. Today's student body is different. Students are looking for privacy and for a place to study.

"We need facilities at a level that will attract high-caliber students to CSU," Dolak says. ◆

Computer Science Building fulfills student needs

A new Computer Science Building on campus will key in on student needs with a more central location and extended hours. Cost of the new 44,000 square-foot, student-funded building planned for construction west of the Natural Resources Building will be about $13 million, says Jim Stoddard, project manager.

"The plan features computer labs, conference rooms, and collaborative space on each of its four floors," he says.

The Department of Computer Sciences will move from the University Services Center on Howes Street to the new facility, says Darrell Whitley, Computer Sciences department chairman. "The new building will provide up-to-date computer labs for computer science majors and a lab that will be open to all CSU students 24/7."

James Sites, associate dean for research in the College of Natural Sciences, adds: "It will house the University's Information Science and Technology Center and have state-of-the-art videoconferencing capabilities as well as space to house visiting researchers."

Student need drove the building design, Sites says. "Students have been highly involved in the planning process, and consequently, they will have a large student lounge, expanded space for their research activities, and areas for collaboration."

Stoddard says groundbreaking is scheduled for August with project completion within 14 months. ◆

Digital collections at CSU Libraries support scholars worldwide

by Judea Franck

Research and scholarship are open to the world, thanks to instantaneous electronic communications. And to do its part to keep the flow of knowledge current and relevant, Colorado State University Libraries Archives and Special Collections offers online access of materials from six key collections to scholars around the globe.

Creating and supporting digital collections began in the early 1990s with the digitization of poster images from the biennial Colorado International Invitational Poster Exhibition, or CIIPE. (Poster samples are shown at right.) Approaching its 15th installation this fall, the CIIPE is an unparalleled presentation of poster art from around the world and the only exhibition of its kind in the United States.

Since 1991, CSU Libraries has been a home to posters entered in each show. The poster collection, which represents notable advances in graphic design and printing techniques, pays homage to popular culture, visual communication, and international politics. The library includes a substantial number of posters from past exhibitions on a sophisticated, searchable Web site.

"The images have international significance," says Patty Rettig, archivist for the poster collection. "And it makes sense for us to provide the images to artists and scholars worldwide."

CSU Libraries supports five other digital collections that can be searched and accessed online. Those collections are:

- the Garst Wildlife Photographic Collection, 1,300 digital images of wildlife captured by Warren and Genny Garst for *Wild Kingdom*;
- the Germans from Russia Collection, a range of material on the migration of Germans to Russia beginning in the 1760s and the subsequent move to the United States in the 1800s;
- Colorado's Waters Digital Archive, CSU's contribution to the Western Waters Digital Library detailing life along the Colorado, Platte, Columbia, and Colorado river basins;
- the Celebrate Undergraduate Research and Creativity Digital Showcase; and
- the Dot Carpenter Virtual Exhibit, which features material from Delpheus E. Carpenter, the father of Western water law.

More details on the digital collections are on the Web at http://digital.library.colostate.edu. ◆

The 15th Colorado International Invitational Poster Exhibition, a biennial event that brings world renowned poster artists and designers to Colorado State and northern Colorado, runs from Sept. 14-Oct. 19. Visit www.colostate.edu/Depts/Art for updates on the event.

World politics, chaos, and learning

Commentary by Kris Kodrich

Chile's volcanoes and mountains are rugged and gorgeous, the wines are supple and aromatic, and the seafood is weird but tasty. The long and narrow South American country gets high marks for its wondrous natural resources – but its higher education system is less than awe-inspiring.

As politicians, experts, and educational leaders debate the deficiencies of Chile's higher education system, I experienced it first-hand last semester as a Visiting Fulbright Professor at the Universidad de Concepción, generally recognized as Chile's top regional university.

Adapting to lengthy lunches, mountainous bureaucracy, nonworking equipment, and an occasional stray terrier wandering through classrooms was the easy part. Adjusting to students who showed up late to class and preferred talking about soccer matches was much more challenging.

Many Chileans themselves acknowledge the deficiencies of the higher education system, and studies point toward misdirected resources, a lack of professors with Ph.D.s, the poor quality of elementary and secondary education in the country, and even the attitudes and behaviors of students themselves.

That for me was the most frustrating part. Students always were late to class – even if I scheduled quizzes at the start, they didn't seem to care about losing points. And they did tend to converse among themselves throughout the class. While I had some limited success using various strategies to get them to pay attention, I realized after visiting other classrooms that my students were rather courteous and well-behaved by comparison.

Experts, too, weren't surprised when one international study listed no Chilean university among the 200 best in the world and only two in the top 500 – the University of Chile and Catholic University. "That means Chileans who want to be educated in excellent educational institutions have to leave the country," wrote University of Chile scholar, Alfredo Jocelyn-Holt, in *La Tercera* newspaper.

> Chilean students were refreshing because they cared about world politics, not just Chilean politics.

Efforts, meanwhile, are being made to address the problems. A new national law, for instance, is creating a National Accreditation Commission, which will help establish minimum standards in higher education and help oversee and strengthen the accreditation process. But many acknowledge that more ambitious steps are needed, including revised criteria for allotting national resources to universities. "This law can be an opportunity to improve the standards of higher education and provide the public with more information about the system and its management, but it would be a mistake to think that this step will be the decisive one in the achievement of a quality system," said Chile's main national newspaper, *El Mercurio*, in an editorial.

Before anyone thinks this grumpy gringo didn't enjoy the semester, I must say I had a delightful time in Chile. Despite the cultural differences, I believe my Media Management class was a success. The students learned about leadership, decision making, strategic planning, and day-to-day management of mass-media entities. They put up with my Spanish, too, which I know wasn't easy.

In many ways, Chilean students were refreshing because they cared about politics. Not just Chilean politics, but world politics. And they all wanted my opinion about world affairs – something that many U.S. professors have learned to avoid discussing for fear of being accused of brainwashing students. The students seemed to enjoy taking a class from a foreign professor, especially when I cooked spaghetti for them at my house or when they grilled Chilean sausages for me.

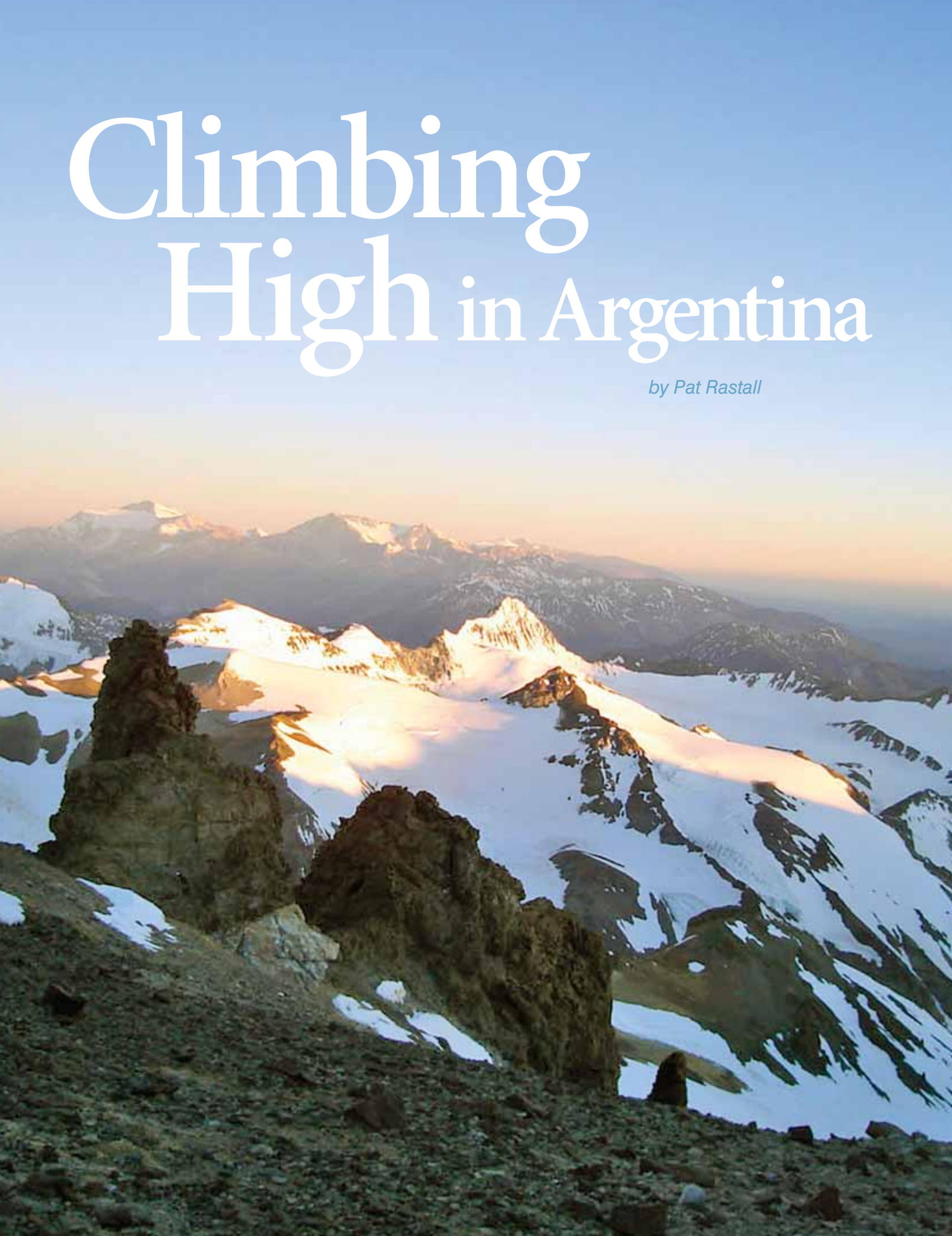
I often shared my view of U.S. politics while they shared their views of "U.S. and Zionist domination of the world," including some preposterous theories about the terrorist attacks on Sept. 11, 2001. Of course, Chileans have their own 9/11 in their collective memory: the 1973 military coup, with U.S. support, which overthrew the elected socialist president, Salvador Allende, and led to 17 years of repressive military rule by Gen. Augusto Pinochet.

When the 91-year-old dictator died late in 2006, my students joined others who took to the streets in celebration. I let them turn in their final projects late. ◆

Kris Kodrich is an associate professor of journalism.

Climbing High in Argentina

by Pat Rastall



In the world of mountaineering, summits are the goal. But what we leave behind on high peaks often is carried with us the rest of our lives.

During winter break 2006-07, I helped organize an expedition to climb Argentina's 22,840-foot Cerro Aconcagua for CSU's Outdoor Adventure Program. Because the overall success rate for reaching the top of Aconcagua is only 30 percent, we discussed in pre-trip meetings how important it would be to stay cohesive as a team to reach our goal. Although a crucial part of climbing lies deep within each team member, we needed to work together to succeed – but that included having a great time, too.

Just days after a major blizzard hit Colorado in late December, we were basking in the summer season in the Argentine Andes. My wife, Jan Rastall, assistant director of Off-Campus Student Services; and Seth Webb, Study Abroad coordinator, were our co-leaders who stayed busy with trip logistics. The rest of the team bound for the rugged peak were current CSU undergraduate students Megan Voiles, Kirstin Nelsen, Katherine Damby, Andy Zimmerman, Jordan White, and James Werning. Researchers and instructors were Greg Newman, Austin Krcmarik, and Erik Beke.

Photos: Pat Rastall

Above: Climbers work around ice formations called penitentes on the way to Camp 1 at about 15,800 feet. Opposite: The view from high camp (White Rocks) at 19,400 feet. The mountains in the distance are Cerro Ramada and Mercedario.

We were met at the airport by Francisco Seufferheld, climber and professor at the Universidad de Congreso in Mendoza. He helped arrange our mule service and a clean-up project, which involved carrying trash left from previous expeditions off the mountain.

We made last-minute purchases in town and set off on a three-day hike to base camp. On the morning of Day 2, we faced one of the greatest challenges of our trip. A narrow metal bridge across the Vacas River suddenly collapsed, sending two team members into the cold, turbulent water. Fortunately, the climbers had only minor injuries, but it was a humbling experience and brought home to us how close catastrophe can be.

On the morning of Day 2, we faced one of the greatest challenges of our trip when a narrow metal bridge across the Vacas River suddenly collapsed.

We arrived at Plaza Argentina base camp at 13,800 feet and prepared our gear for the ascent. We would spend the next 10 days climbing to the summit, then traversing the peak and descending through the Rio Horconnes Valley on the opposite side.

On our first carry to Camp 1 at 16,300 feet, Erik had problems breathing. He had

A storm at 19,200 feet at the base of the Polish Glacier pinned down the team for about 24 hours.

Below: Climbers on the morning of the summit day include (from left) Megan Voiles, Kirstin Nelson, and Kathryn Damby.

congestion in his lungs, which had the potential to be life-threatening. By chance, a helicopter was arriving the following morning, and Erik could be flown out. The next day, we waved goodbye to Erik (he would recover), leaving 11 climbers to move to Camp 1. From there, we moved upward, acclimatizing to the thin air, cleaning up refuse from other expeditions, and sitting out storms.

In the early morning on Jan. 8, we began climbing the last 3,400 feet to the top. We had plenty of reasons to push ourselves higher. Greg was a cancer survivor, so for him to make the top would prove he was all the way back to good health. Seth, our co-leader, carried his mother's ashes. And one year before, Jordan had been in a climbing accident that killed his father, and he was making the climb in memory of his dad. We all dug deep into our energy reserves and places of spiritual strength.

The last section of the climb, called the Canaletta, tested us with a gully full of loose rock. But at about 1:15 p.m., the difficulties stopped – there was nothing left to climb. We were on the summit. We stood and embraced at the top of the Western Hemisphere on a calm, clear day, and congratulated Greg for his strength to overcome cancer and stand as high as he'd ever been. We watched Seth as he solemnly consigned his mother's ashes to the winds.

Finally it was time for Jordan, who is on the CSU Ultimate Frisbee team, to honor his father by letting a disk fly, and with it sailed our thoughts and prayers that Jordan's healing would continue. The Frisbee flew out into the thin air, and we all stood and watched for a long time. The disk soared out of sight, dropping toward the valley 9,000 feet below, a world away from where we had started. ◆

Pat Rastall is associate director of Colorado State's Pingree Park Mountain Campus.

The team on the 22,840-foot summit includes (back row from left) Greg Newman, Jan Rastall, Austin Krcmarik, James Werning, Seth Webb, Andy Zimmerman, Kathryn Damby, Megan Voiles, and Jordan White. In front are Kirstin Nelson and Pat Rastall. Not shown is Erik Beke.

Valley of life

Archaeologists survey 13,000 years of habitation near Fort Collins

by Nik Olsen

On a cool afternoon in early spring, the air is being warmed by Chinook winds blowing over the rolling hills that surround the Lindenmeier Valley.

Similar warm winds and temperate climate led humans for more than 13,000 continuous years to occupy the Laramie Foothills prairie about 30 miles north of Fort Collins, at a time dating back to the last years of the Ice Age.

The discovery of the Lindenmeier Valley has roots at Colorado State University. The site was discovered in 1924 by Judge Claude Coffin and later explored with his brother, Roy Coffin, a professor of geology and chemistry at Colorado A&M. The last major study and excavation of the Lindenmeier Valley was conducted from 1935-1940 by the Smithsonian Institution.

In the summer of 2006, a CSU team, headed by Jason LaBelle, director of the Laboratory of Public Archaeology and assistant professor in the Department of Anthropology, conducted the first archaeological survey in more than 60 years of the Lindenmeier Valley, a National Historic Landmark. That effort led to the discovery of additional archaeological resources spread over about 6,000 acres of land.

LaBelle and his team noted evidence of an expansive occupation of the area. Several new sites were located in arroyos – valleys covered with dirt that had been exposed through erosion over the past century. Sites within the valley are well preserved, LaBelle notes.

Photos: Erin Parks

The temperate climate and rolling hills of the Lindenmeier Valley have been home to humans for a time dating back to the last years of the Ice Age.

LaBelle's team, including graduate students from CSU and other volunteers, recorded a rich array of resources including chipped stone scatters, stone-circle (tipi) villages, hearths and earth ovens, and animal butchery sites. More recent discoveries such as cowboy camps, historic engravings, and items from 1920s and 1930s excavations also were documented.

Artifacts span 11 millennia in age, some dating back to the Folsom culture, a name based on the New Mexico village where the first evidence was discovered of the people who roamed this region more than 13,000 years ago.

LaBelle, who has participated in earlier field studies in Folsom, N.M., holds a Folsom point in his hand, running his finger across the edge of the sharp blade. About 2 or 3 inches long and made of stone that had been meticulously chipped away, these points were set into the tip of a long, straight stick. The result was a formable spear that could be jabbed into the thick hide of a bison or other animal. Often, the tip of the Folsom point would break off inside the animal's body, giving archeologists ample evidence of how ancient people hunted prey. Such evidence was found at Lindenmeier, where the tip of a Folsom point lay embedded for thousands of years until unearthed by the renowned naturalist Loren Eiseley during excavations in 1935.

Other notable finds include a Native American camp site dating to the late 18th or early 19th century, where traders made stone tools for processing hides while at the same time using European tools such as brass kettles and flintlock guns.

"Excavations between the 1920s and 1940 found an incredibly rich array of archaeological resources at the Lindenmeier site, but we don't know much about the lands surrounding Lindenmeier," LaBelle says. "In our survey this summer, we were able to identify many additional resources outside of the half-mile area originally explored."

The Lindenmeier Valley is located on lands recently protected as part of the Laramie Foothills Mountains to Plains Project, a partnership between the city of Fort Collins, Larimer County, The Nature Conservancy, Legacy Land Trust, private landowners, and Great Outdoors Colorado. The project protects more than 29 square miles of shortgrass prairie and foothills shrublands and includes Soapstone Prairie Natural Area and Red Mountain Open Space.

The main goal of the survey effort is to collect and interpret data that will inform management plans for the properties, ensure protection of these sites, and provide information for education purposes. "My main mission now is to detail the late Ice Age record of Larimer County," LaBelle says.

In May, LaBelle and his team will return to conduct further research. "Of all the Folsom sites that have been identified, nothing covers as much space as Lindenmeier," he says. "It's as though it was New York City during the sunset of the Ice Age." ◆

The survey is gathering and interpreting data to help manage and protect the area north of Fort Collins.

Heading off the hackers: Research predicts software vulnerabilities

by Chris Casey

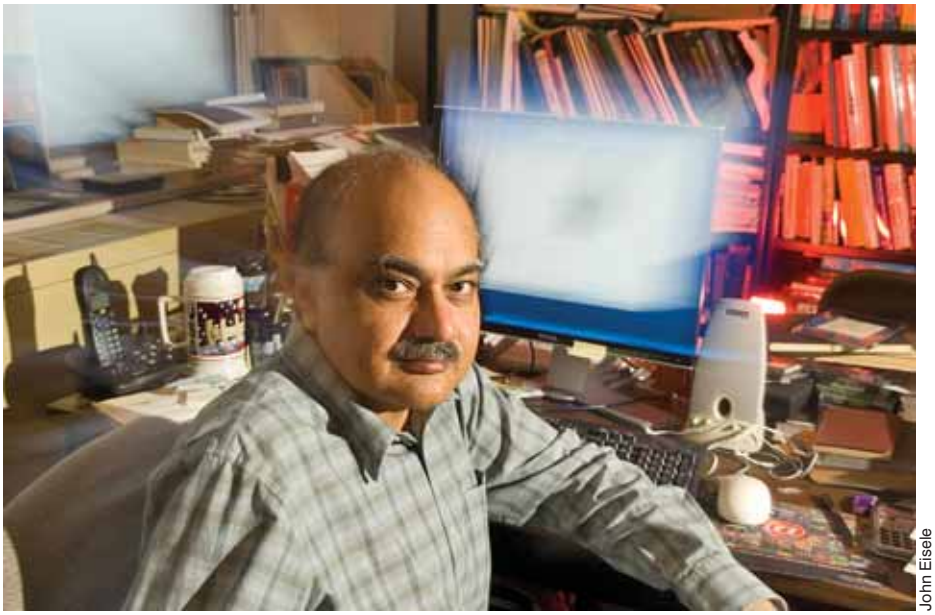
With nearly every business' fortunes tied to computer networks, the stakes are greater than ever that cybersecurity hold firm against the constant threat of hackers.

A computer science research team at Colorado State is on the front lines of this growing threat. They have developed a model that helps companies schedule security patches and assess the risks of using specific software.

In 2006 alone, 8,064 newly discovered vulnerabilities were reported by the U.S. Department of Homeland Security's Computer Emergency Readiness Team, an increase of 35 percent over 2005. Such vulnerabilities can be exploited by hackers if not quickly fixed through patches, which are updates used to fix security problems.

Several years ago, a CSU team of Yashwant K. Malaiya, professor in the Department of Computer Science, and Omar Alhazmi, then a Ph.D. candidate, began researching ways to project vulnerabilities in computer operating systems and software applications.

Their work resulted in the Alhazmi-Malaiya Logistic model that promises risk assessments for users ranging from software developers to banks to airlines.



John Eisele

Computer science Professor Yashwant Malaiya is helping to reduce risks posed by computer hackers by researching system vulnerabilities.

They discovered that some elements of vulnerability had been studied, but nothing beyond looking at individual events at any one time, Malaiya says.

"We wanted to see if there can be a model that can project how many vulnerabilities will be expected in the near future – for example, in the next year or whatever time period you would take," he says.

Companies such as Microsoft devote sizable resources to develop patches to safeguard their systems. If the company knows how many vulnerabilities to expect, it can deploy sufficient resources to the problem.

"It is critical for them to be able to develop patches as quickly as possible, so our model will tell them how many people they should allocate," Malaiya says.

The battle between hackers and security specialists began in the early days of computing and has been on the rise ever since, Alhazmi says. And because hackers are using cutting-edge technology, engineers must counter with better security measures.

It's impossible to completely debug operating systems, Malaiya says.

He and Alhazmi developed a measure called vulnerability density that calculates a specific kind of defect – vulnerabilities are one kind of defect –

In 2006 alone, 8,064 newly discovered vulnerabilities were reported by the Computer Emergency Readiness Team – vulnerabilities that can be exploited by hackers if not quickly fixed through patches.

The battle between hackers and security specialists has been increasing since the early days of computing. And because hackers are using cutting-edge technology, engineers must counter with better security measures.

that crop up in operating systems such as Windows.

"We found that, for the same line (of operating system), the vulnerability density tends to be in the same range," Malaiya says. "So that kind of confirmed our hypothesis that this could be a valid measure."

For example, their model predicted that the number of vulnerabilities found in Windows XP would grow rapidly, approaching the rate for Windows 98. It has in fact grown from 88 in January 2005 to 173 by the latest count, making the vulnerability density of XP comparable to the earlier version of Windows.

The density measure provided some surprising findings.

"One astonishing surprise is that there are widespread myths that some proprietary software systems are less secure than some open-source systems," Alhazmi says. "However, in most cases, the numbers of vulnerabilities are comparable. In some cases, more vulnerabilities can be expected in open-source systems. However, open-source developers tend to develop the patches faster."

The issue of cybersecurity isn't relegated to private industry. Colleges are breeding grounds for breaches, *USA Today* has reported. The newspaper's review of public reports found 100 computer-related breaches at 76 campuses since January 2005. At Ohio University in Athens, for example, data involving intellectual property, alumni relations, a health center, and vendors had been compromised.

USA Today found that campuses tend to be decentralized, making it harder to ensure overall security.

Alhazmi said software companies should put safeguards at the forefront of product development.

"Engineers struggle to improve the reliability of their software. There is a need to re-evaluate how software systems are designed for security," he says.

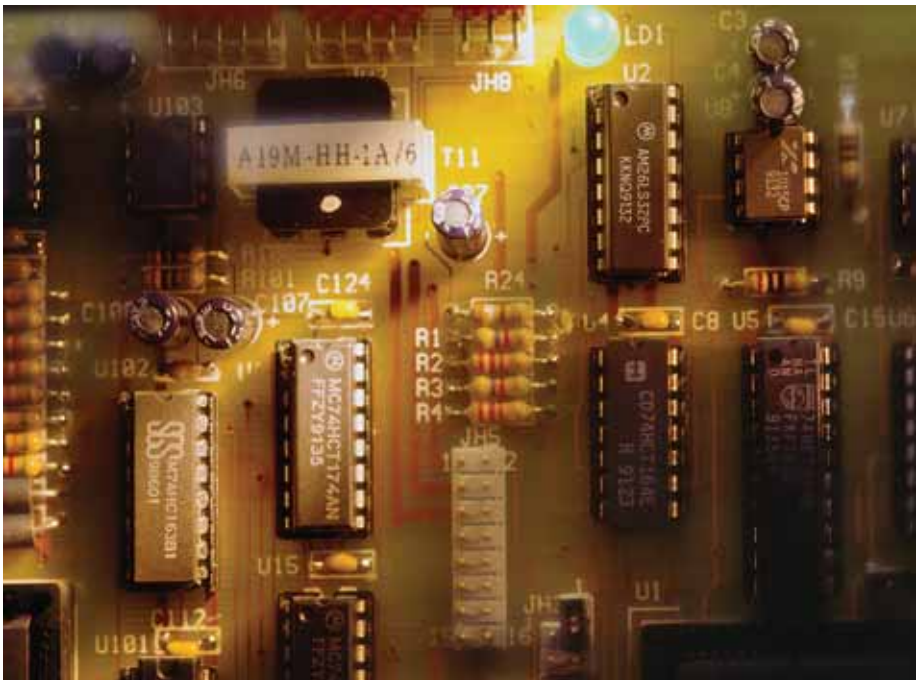
Malaiya and Alhazmi so far have researched operating systems and Web servers. They are branching out into vulnerability projections for Web browsers.

Because software programs are constantly being updated, they study how mixes of code can affect security.

"We're trying to refine methods for more accurate predictions, even in the inheritance of code, adding code to existing programs," Malaiya says. Malaiya and Alhazmi also are developing methods that project levels of vulnerability – such as low, moderate, and severe – that will further help clients assess risk.

Now that their model has been developed and well received, including interest from Bank of America, the CSU computer scientists plan to apply for grants to continue their research.

Alhazmi, who defended his doctoral dissertation in fall 2006, plans to specialize in cybersecurity in his career. "Designing more secure software systems is crucial for the more-connected-than-ever world of this new century," he says. ◆



Peter Heacox

A positive force for change

Innovative collaborations between business and engineering reduce pollution by delivering cleaner energy sources

by Emily Wilmsen

Colorado State University mechanical engineering student Sachin Joshi remembers a recent trip overseas when he stepped into a fragile, one-room home in Gatlang, Nepal, then immediately backed out.

"I don't know how they manage to live in that room and work and eat," Joshi says of the smoke that poured from the building. "They keep the fire going all day and night because they need to warm their houses."

Joshi and fellow students were in Nepal in January to help resolve the problem by installing efficient, clean-burning cookstoves to reduce emissions as well as provide electricity and light.

CSU students increasingly tackle such tough global dilemmas as air pollution through multidisciplinary collaboration at the University, including a new program developed through the colleges of Engineering and Business. Under the Global Innovation Center for Energy, Health, and the Environment, business and engineering students work together to address global challenges that may be out of reach for relief organizations.

Engineering students develop the technology, and business students figure out how to get it to people who need it. They work with international microfinance organizations and others who can help deliver those solutions to people cheaply while also sustaining profitable business enterprises.

Working in tandem with the center is the College of Business' new Global Social and Sustainable Enterprise master's degree program, a three-semester program that teaches students to develop sustainable business solutions to serious problems affecting the globe, largely in the developing world. Students assess market needs, build production and distribution systems, and create enterprises that eventually could become profitable.

"The new Global Social and Sustainable Enterprise degree empowers students to use business as a positive force for change," says Paul Hudnut, business instructor who helped create the degree program.

The multidisciplinary academic approach embraced at CSU has proven itself already: Technology developed at the University

In Nepal, people were surprised when they saw they could have light in their homes from the cookstoves – without the choking smoke.

led to the creation of Envirofit, a private, nonprofit company that is retrofitting two-stroke taxis in the Philippines with cleaner, more efficient engines.

And now, efficient cookstoves are being tested in 14 homes in Nepal, India, and Nicaragua.

"This cookstove project brings electricity to people, which allows them to improve their lives and increase their income," Hudnut says. "The light can be used to extend their work day, run a small radio, or for reading and education."

Dan Mastbergen, doctoral student in mechanical engineering, accompanied Joshi and Hudnut on recent trips to test the stoves in India and Nepal. As a graduate student in the College of Engineering's Engines and Energy Conversion Laboratory, Mastbergen helped develop the technology for a cleaner-burning cookstove that generates electricity.

Mastbergen says he better understood challenges facing the developing world during a trip to India, where he went from vendor to vendor hunting for parts for the stove.

Bill Cotton

Paul Hudnut, director of CSU's Venture Development and co-director of Global Innovation Center for Energy, Health, and the Environment, collaborates with Dan Mastbergen, mechanical engineering Ph.D. student, on a cleaner-burning stove Mastbergen developed to convert heat to electricity for lighting.
Above: Engineering student Sachin Joshi (at right) demonstrates a stove to an Indian family.

"Parts would be hanging from strings from the ceiling, and hardware would be in coffee cans," Mastbergen says. "Many of the shops are just three walls with a garage door that opens into the street. There's tons of commotion – cars, tricycles, bikes, buses, cows, horses, camels. It's really crowded.

"Just the experience of going there, trying to start a business, and working with people to develop a new technology – you realize how difficult that task really is," Mastbergen says.

Students are learning how their technologies and business plans improve lives. For example, in Nepal, people were surprised when they saw they could have light in their homes from the cookstoves – without the smoke, says Joshi, who is from Nepal. Smoke from traditional stoves that use fuels such as wood and dung is a serious health threat to women and infants.

"They didn't have to tell you – you could see it in their faces," he says with a laugh. "They were really happy. They had been living for generations with kerosene, with these really dim lamps. They just couldn't believe their eyes."

The cookstove project, called Bright Light Innovations, was a class project for entrepreneurship students in the College of Business during the 2005-2006 school year. Now, students are working side-by-side with families overseas and creating relationships with microfinance organizations and companies to build, distribute, and service the stoves.

Students also benefit in personal ways from such projects.

"It gives me the opportunity to apply many of the skills I've developed in my schooling toward a really huge problem," Mastbergen says. "It allows me to focus on developing a product that hasn't been developed yet." ◆

Volleyball coach is CSU's service ace

Photos: John Eisele

Tom Hilbert succeeds on and off court

by Tony Phifer

Tom Hilbert just might be the most successful coach Colorado State University has ever known.

Since arriving from the University of Idaho in 1997, Hilbert's name has been synonymous with winning. His teams have advanced to the NCAA Tournament in each of his 10 seasons and extended CSU's run of consecutive NCAA appearances to 12. Along the way, he has coached four All-Americans, 10 conference players of the year, 41 all-league selections, and 28 academic all-conference players.

The Rams have won five of the eight Mountain West Conference regular season titles and four MWC Tournament titles. They have won a remarkable 87.1 percent of their matches at Moby Arena under Hilbert's direction and 80.3 percent overall.

Hilbert is tough, extremely intense, and highly competitive. He demands hard work and dedication from his players and doesn't accept anything less than their best.

Despite all that, Hilbert can be transformed in an instant into an oversized teddy bear. All it takes is one light-up-the-room smile from Myles, his 6-year-old daughter.

"I never thought Tom was mean, but he is very intense," says Angela Knopf, a two-time All-American for Hilbert and a 2006 inductee into the CSU Sports Hall of Fame. "When Myles came along, though, he changed. When he was with Myles, it was like he was a totally new person. He's still intense, but his face lights up every time he sees her."

Myles' arrival in 2000 was the beginning of a new era in CSU volleyball. The program soon became a haven for young children as several assistant coaches also added children to their families.

Hilbert and wife, Leslie, had been somewhat hesitant to start a family. Both were career-driven achievers, and the very nature of the volatile coaching business made them reluctant to add a child to their hectic lives. But when Tom got his first multi-year contract from CSU in 2000, they welcomed the opportunity to become parents.

Quiet hour: Coach Tom Hilbert relaxes with his daughter, Myles, one of his biggest fans. "I'll look at Myles after a loss, and she won't even know the score. She just wants to hug me. That puts everything into perspective."

"I've always wanted a program that is family-oriented," Hilbert says. "I've wanted the players to know that I have their backs, no matter what. I think having Myles around shows them a different side of me.

"I think being a father has made me wiser, and it has given me an appreciation for what my assistants are going through as new parents."

Leslie Hilbert says this softer side of her husband has always been there. He's an accomplished cook with a taste for fine wine, and he enjoys reading. He inspires his players with various sayings from accomplished athletes, writers, or famous men and women of history.

Seeing him as a father, however, has surprised even her.

"He's no less intense, and he's still emotional, but I think he lives in the moment more," says Leslie, a director in Communications and Creative Services at CSU. "I think that's natural because kids live in the moment. He celebrates his successes more and lets go of things that don't go well much easier than before."

Hilbert, who was given the CSU Sports Hall of Fame's Hall of Honor Award in 2006, admits that he used to wear almost every loss on his sleeve. When success has followed you everywhere – he ranks 11th among active coaches with his 18-year record of 435-136 and 76.4 winning percentage – defeat isn't easy. And while every setback still stings, the impact isn't as great.

"I'll look at Myles after a loss, and she won't even know the score. She just wants to hug me," he says, smiling. "That puts everything into perspective for me. Having a child really allows you to step back. Once you do that, you see what's truly important."

While Hilbert admits to being more gentle overall since Myles' arrival, that doesn't mean he's lost his drive to succeed. He still works as hard as ever and gets as much out of his team as any coach in the MWC.

This past season was a perfect example. The Rams, considered to be in a rebuilding mode after losing several key seniors, lost their first two league matches. As the season progressed, though, the Rams kept improving, and they won their third MWC Tournament title in four years, knocking off heavily favored Utah after falling behind 2-0 in the best-of-five finale. They were rewarded with their 12th consecutive NCAA berth – an unparalleled achievement in CSU's athletic history.

Even though the Rams have been a model of consistent excellence, Hilbert is convinced he can do more.

"I don't think just chugging along is good enough; we need to be better," he says. "I want to take this program to a higher level. I want us to reach the Final Four. We've still got a lot of work to do."

CSU Athletic Director Paul Kowalczyk counts among the believers.

"Tom is the consummate professional," he says. "He's driven and successful, but he keeps things in perspective.

"Do I believe he can take this program to an even higher level? Absolutely. I wholeheartedly believe he's the guy who can take us there." ◆

Life-saving research unites business and academia

A star player in global health solutions is the emerging dynamo known as the Supercluster model

In a first-of-its-kind enterprise, Colorado State University is speeding the transition of life-saving research on infectious diseases from the academic world into the global marketplace.

MicroRx, which was officially launched in early February, is the first of the University's "Superclusters" – alliances of academic researchers, economists, and business experts designed to encourage collaboration and bridge the vastly different worlds of business and academia.

"University research scientists often try to double as entrepreneurs to transfer their discoveries into useful products and medical remedies," says President Larry Edward Penley, who is co-creator of the Superclusters model along with Tony Frank, senior vice president and provost. "Our Superclusters model encourages their direct collaboration with industry experts, enabling them to focus on what they do best – innovation and research into the great global challenges – and taking advantage of the corporate drive to market that research for the benefit of the public."

Superclusters, which CSU began developing in 2004, will focus on research areas where the University has demonstrated international prominence and where a potential for growth is evident.

MicroRx, the business arm of the first Supercluster, is a private, nonprofit entity focused on infectious disease and biomedical research and development. The University is known for infectious disease discoveries, including diagnostic tests and vaccines for West Nile virus, leprosy, bubonic plague, and tuberculosis. The Colorado State Foothills Research Campus is home to advanced research techniques, facilities, equipment, and some of the world's leading researchers in the field of infectious disease.

Interdisciplinary research

"MicroRx will translate groundbreaking scientific research from Colorado State so that public health solutions are developed faster for the people who need them," Frank says. "Our primary goal is to expeditiously commercialize intellectual property for society's benefit."

Collaboration between government entities and CSU have helped support the University's work in infectious disease research and the pursuit of biosecurity and long-term global health. "CSU's new Supercluster concept is a significant step forward in this effort – encouraging more interdisciplinary research and delivering it to the marketplace where it can be applied to our world's most pressing challenges," says Colorado Sen. Wayne Allard.

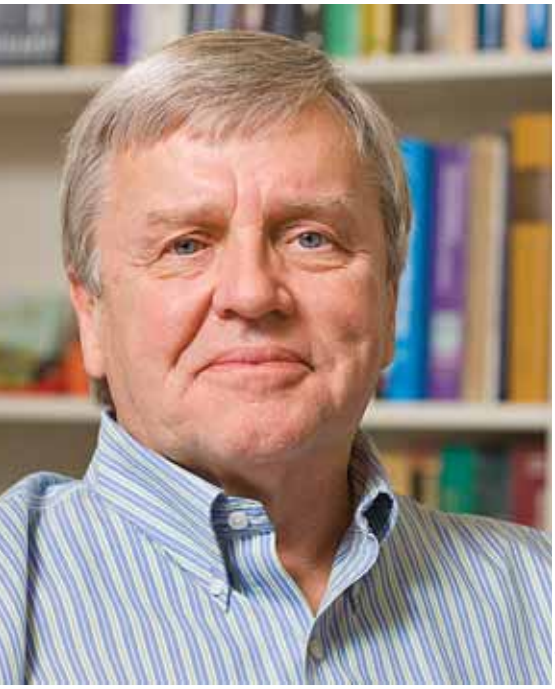
Many research universities have technology transfer programs that guide scientists through the process of patenting and other complexities encountered in delivering discoveries to the global market. Colorado State's Superclusters model is unique in its multidisciplinary structure that enables groundbreaking research to move to market more quickly by mimicking business practices.

Bill Cotton

Biochemistry student Brandon Bader and biology student Andrea Gomez, both Beckman Scholars, research hormonal regulation of crustacean endocrine glands.

"Our Superclusters will look and act like businesses and will be managed by people who have been successful leaders in the for-profit sector," Penley adds.

Each Supercluster, organized under a specific research area, will appoint a chief scientific officer to oversee research activities. A chief operating officer will focus on forging business alliances and developing new opportunities for the



Bill Cotton

Barry Beaty, professor of microbiology, immunology, and pathology and a University Distinguished Professor, is leading the first Supercluster at CSU.

"MicroRx, with Dr. Barry Beaty at its scientific helm, will speed the transfer of innovative discoveries to organizations like InViragen. These entities will provide the expertise and resources required to develop needed products to improve global public health."

– Dan Stinchcomb, InViragen CEO

results of that research. The Supercluster's technology transfer specialist will seek opportunities for patents, licenses, and startups. The team also will seek private equity investors for new business opportunities.

Medical interventions save lives

University Distinguished Professor Barry Beaty will serve as the MicroRx chief scientific officer. Beaty, a member of the National Academy of Sciences, specializes in arthropod-borne infectious diseases such as West Nile virus. "We'll develop medical interventions to save and improve lives faster and with more precision to fill gaps in current medicine," Beaty says.

Business leaders in the biomedical field have welcomed the Superclusters model, which will make accessing new research and technology more streamlined.

"MicroRx, with Dr. Barry Beaty at its scientific helm, will speed the transfer of innovative discoveries to organizations like InViragen," said Dan Stinchcomb, chief executive officer of InViragen, a biotechnology company in Fort Collins that develops vaccines for new, emerging markets worldwide. "These entities will provide the expertise and resources required to develop needed products to improve global public health."

Based on a competitive proposal process, Colorado State will select additional Superclusters in research areas such as cancer, environmental sciences, alternative energy, and agriculture.

Future choices, similar to the current MicroRx Supercluster, will be guided by the University's strengths, global challenges, and interest in increasing economic prosperity and quality of life.

MicroRx and all future Superclusters will be governed by a new not-for-profit entity called Colorado State University Ventures. This business enterprise is a subsidiary corporation of the existing Colorado State University Research

Bill Cotton

Department of Microbiology, Immunology, and Pathology research associate Cynthia Meredith releases adult mosquitoes from a cup of larvae and pupae in CSU's Arthropod-Bourne Infectious Disease Laboratory insectary.

Foundation, a private, nonprofit foundation that aids the University in overall research and educational efforts.

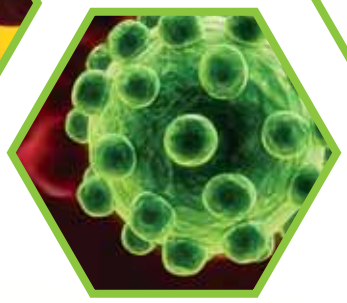
Colorado State's Board of Governors approved initial funding for MicroRx, and University officials anticipate growth into an annual operating budget in excess of $1 million. Revenues generated by MicroRx will come from shares of patents, licensing agreements, startup companies, or other partnership arrangements that evolve from CSU research. The not-for-profit structure will ensure that proceeds are funneled into future research at the University.

Doubling results

"The Superclusters enterprise will allow Colorado State University to more than double the number of inventions and startups resulting from all scientific findings in the next five years under this new economic development model," said Mark Wdowik, chief executive officer of CSU Ventures.

The Superclusters model is part of Colorado State's overall strategy to help transform Colorado with renewed emphasis on the economic benefits provided by higher education.

The University has experienced double-digit growth in research dollars in recent years with total annual research expenditures topping $267 million in fiscal year 2006. ◆



An overview of Colorado State University's Superclusters model

Global solutions: Each Supercluster will be organized around areas where the University has preeminent expertise and where global challenges exist. The University's goal is to use its growing international connections to strategically link its Supercluster expertise to similarly interested government, academic, research, and corporate partners outside the United States to play a central role in creating solutions to global health, environment, and energy challenges.

Academic research: Researchers can focus on their area of expertise while leaving the issues of transfer, patenting, and licensing to other experts. The academic structure of the Supercluster will encourage researchers to collaborate to address the broad challenges of a research problem and increase the likelihood of external funding for the research. In addition, researchers eager to have information in the global marketplace can see the technology adopted more quickly to better solve global problems.

Business development: Businesses that thrive on commercializing cutting-edge technology can more easily work with CSU through its ally – CSU Ventures – for licensing, collaborative research, and partnership opportunities. The not-for-profit structure at the edge of the University will facilitate and encourage the involvement of industry expertise, and the design will ease the challenges traditionally experienced when moving research from academia into the marketplace. ◆

Staying a step ahead of animal disease outbreaks

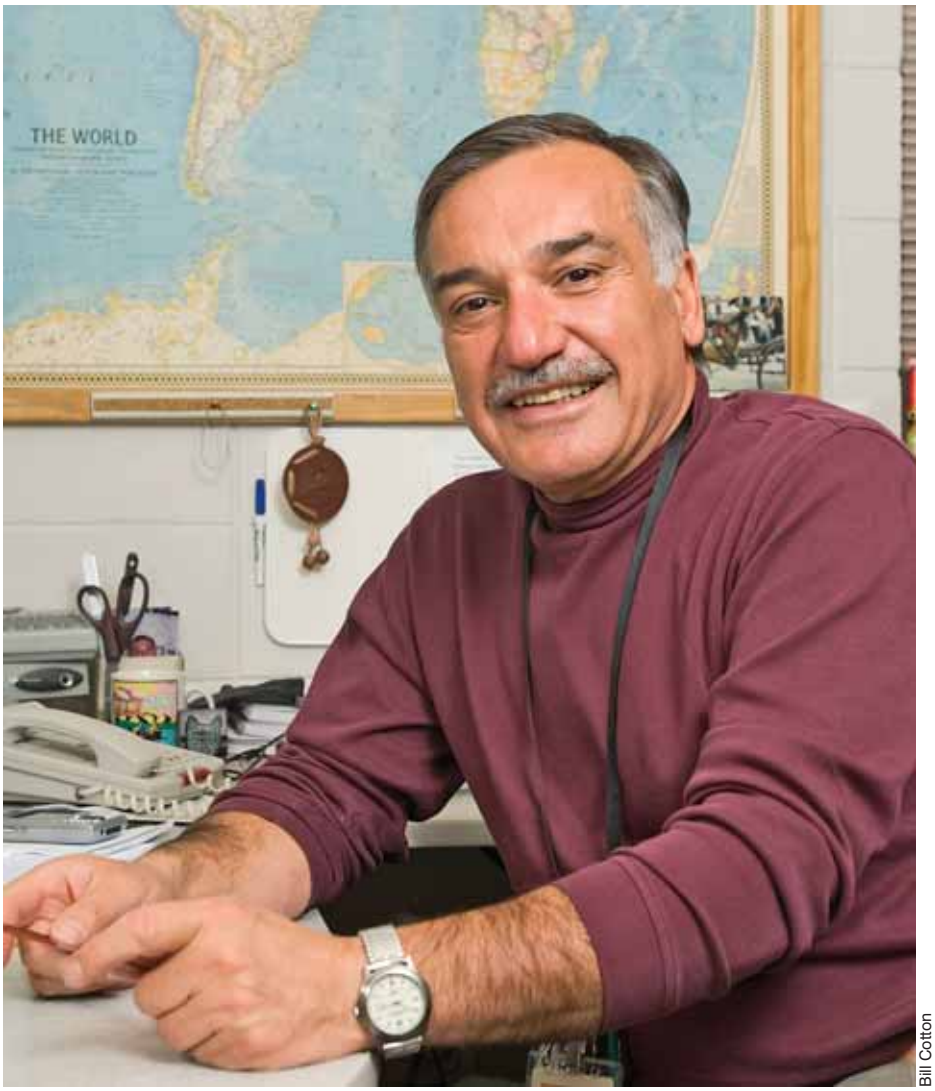
Remote and sometimes dangerous places require researchers to know their own blood types, too

by Paul Miller

Over the course of his 22 years at Colorado State, Dr. Mo Salman, veterinary epidemiologist and director of the Animal Population Health Institute, has traveled throughout the world to help nations with animal health risk programs and to monitor disease outbreaks. Salman recently was named to a three-year term with the European Food Safety Authority, the only American named to the post and one of 191 scientists selected from a pool of 874 leading experts. The EFSA assesses risk regarding food and animal feed safety for the European Union.

Jorge Hernandez, a 1990 Ph.D. graduate of CSU and a leader in veterinary epidemiology at the University of Florida, first met Salman in 1982. "I was a veterinary student then, and through Mo, I discovered the world of epidemiology, a very powerful tool to control and prevent diseases in animals and people."

In late 2006, Salman spent 10 days in Indonesia at a bird influenza training workshop, then in January he spent a week jetting between Switzerland, Italy, France, and England for EFSA projects – and that represents only a fraction of his typical travel itinerary. As a member of EFSA's panel devoted to animal health and welfare, Salman helps scientists worldwide provide the most complete information on existing and emerging health risks.



Bill Cotton

"As just one example, we knew the moment West Nile virus hit the eastern United States, and we tracked it closely as it moved across the country," Salman says. "We were able to stay ahead of the disease in terms of diagnoses and mobilizing veterinarians and medical doctors to know about and look for the disease.

In spite of the danger, intense heat, and sand storms, the team was able to help develop ways to enhance Iraq's animal health efforts by integrating government, academic, and private veterinary capabilities.

"Animal diseases will continue to affect food supplies, trade, commerce, and human health in every part of the world," he says. In addition to West Nile virus, Salman notes that outbreaks of avian influenza, foot-and-mouth disease in swine, and mad cow disease are concerns not only as significant economic threats but also as potential health risks if the diseases cross over from animals to humans.

In addition to the threat from disease, Salman, who was born in Baghdad (his brother and sister still live there), knows about the risks of travel. To pursue his health programs, he's been escorted by U.S. armed forces into volatile areas including Bosnia, Afghanistan, and Iraq.

"We're escorted by the Army because it's too dangerous for Americans to be in some places overseas, no matter how beneficial the work is," Salman says. "The projects I do are related mainly to farm animals, and you don't find them in secured areas. You have to go to villages and remote places."

Dr. Paula Cowen, a former student of Salman's and now director, Professional Development Staff, Veterinary Services, Animal Plant Heath Inspection Service at the USDA, recently returned from Iraq, where she helped Salman with an epidemiology workshop. She recalls one of the first questions she was asked when boarding an armored vehicle in Iraq: "What's your blood type?" In spite of the danger, intense heat, and sand storms, the team was able to help develop ways to enhance Iraq's animal health efforts by integrating government, academic, and private veterinary capabilities. About 90 Iraqi veterinarians from 16 of the 18 provinces in Iraq faced personal risk traveling to Erbil, the site of the workshop, but in the end, participants managed to craft a five-year vision plan for a National Animal Health Program.

"It was one of the most incredible experiences I've ever had," said Cowen, who is a 1985 CSU alumna. "We were amazed at how enthusiastically the Iraqis embraced the plan. They truly want a better life and to be proud of their profession and its contributions to the health and welfare of animals and humans alike."

Although the trip to Iraq ended well, Salman has experienced close calls during other trips. In Sudan in 1994, a local scientist took him on a driving tour to see where the Blue and White Nile rivers meet. The driver got lost and ended up on a private road, where armed men pointed their guns at the car and ordered the driver to stop. Hearts racing, Salman and his companion were closely questioned, but they eventually were released unharmed.

Mo Salman in October 2005 with a farmer from a village in Afghanistan. Opposite page: The veterinary epidemiologist at home in his campus office.

Although Salman enjoys traveling – his passport is as thick as a Bible, he says – he's just as dedicated to teaching. "I have a full load of teaching, not because it's required but because I enjoy the students. They keep you young."

"Mo has been a source of inspiration from the time I met him," Hernandez says. "As a mentor, Mo's approach is quite unique: pragmatic, idealistic, skeptical, demanding, responsible, and humble."

Cowen adds that Salman's leadership and credibility play important roles both on campus and internationally.

"He challenges people – veterinarians, citizens, and students alike – to think in new ways and to make real change happen." ◆

Vice president embodies the heart of student life

Bill Cotton

by Paul Miller

When Blanche Hughes left Colorado State in 1998 after serving as director of Black Student Services for 11 years, her goals were to take time to grow personally and professionally – and ultimately return to the University. She spent two years as a sociology professor and co-chairwoman of the Sociology Department at Pikes Peak Community College in Colorado Springs, then she fulfilled her promise by returning here in 2000 as an assistant to the vice president for Student Affairs.

It didn't take Hughes long to become vice president for Student Affairs, a post she accepted in January 2007. Considering her history at CSU, it was a natural progression: In 1984, she received her master's in college student personnel administration, worked as a graduate assistant coordinating diversity programs for the College of Applied Human Sciences, then received her doctorate in sociology in 1995. She helped create the Multicultural Curriculum Infusion Project, taught in the School of Education, and directed Black Student Services. Small wonder she considers CSU her home or that her passion is working with students.

"She is truly a role model for many people, not just African American women," says Jennifer Williams Molock, director of Black Student Services. "It's really encouraging to know that she's been able to parlay the skills and talents she developed as the former director of BSS to end up becoming vice president."

"CSU has been very good to me," Hughes says. "I haven't had to go to a lot of other places to advance my career, because people here have recognized my potential. That's truly an honor."

Although she's modest about the effort she's put into her career, she's quick to credit her parents as the source of her work ethic. The youngest of three children, Hughes grew up in a poor but devoted family in Lexington, Ky.

"My parents were domestic workers," she says. "My father had traveled a lot as a jockey and horse trainer when he was young, but then my parents had three

John Eisele

kids, and my mother told him he had to be home to help raise us. He worked as a bartender, housekeeper, janitor – whatever he needed to do to make ends meet. My mother stayed at home, but she did babysitting and ironing for people."

Hughes saw firsthand the effects of segregation and busing efforts to integrate schools, but she never saw her family's principles waver.

"It was a unique experience, growing up in a segregated community and world, but I was taught early on that just because I was black didn't mean I couldn't succeed. My parents always said the world's going to change, and it's going to get better, and we'd have more opportunities through education than they ever had. And we needed to be ready for that."

Hughes has witnessed the changes in diversity efforts on campus over the years, from a topic that wasn't seriously discussed to becoming a strategic goal of the University. "I've seen great improvements, but I also see a need to keep working on it at all levels," she says. "We still have work to do. We can't become complacent."

As vice president for Student Affairs, Hughes' priority is to continue building partnerships with the rest of the University to help further student success.

"We're professionals and specialists in terms of working with students," she says. "Through our services and programs, we're helping the University in general to connect better with students and maintain a welcoming environment.

"We're all part of the same University family, and we have the expertise to achieve our goals in teaching and learning. We can all be successful."

Although Hughes' major work is in administration, she's never far away from the classroom. She co-teaches Student Affairs in Higher Education classes and freshman seminars in the Key Academic Community. "The work she does teaching those classes is extraordinary," Molock says.

"Teaching is what I do for fun, on top of everything else," Hughes says. "I love connecting with students and understanding what makes them tick. Teaching also keeps me grounded and excited about what I do and why I do it."

Hughes' successes include raising four children with her husband, Wayne. Dana Hughes, a 1996 CSU graduate, is an associate producer for the Brian Ross unit at ABC News. Allison is a sophomore here in global tourism and works as a presidential ambassador. Marcus teaches physical education and coaches football at Northglenn High School. ("He and Erin have two gorgeous daughters, my only grandchildren," Hughes says.) Matthew, a sixth grader, is a talented athlete who enjoys football and basketball. ◆

Joe Mendoza

"Through our services and programs, we're helping the University in general to connect better with students and maintain a welcoming environment."

– Vice President Blanche Hughes

The skilled team in the Student Affairs office includes (from left) Donna Bescheinen and Susan Henry, administrative assistants; Linda Ahuna-Hamill, executive assistant to the vice president; Vice President Blanche Hughes; Nora Oakson, program assistant; and Assistant Vice President Paul Thayer, who also serves as assistant to the vice provost for Undergraduate Affairs.

Visual and performing arts moving under one roof

Left to right: University Center for the Arts; the lobby of the UCA's Griffin Concert Hall; Walt Jones, CSU's new director of theater; Linny Frickman (below), director of the Hatton Gallery, with architectural plans.

Photos: Bill Cotton

by Marianne Provenza

Once spread throughout campus, the music, theater, and dance degree programs now are being consolidated in the grand University Center for the Arts, a facility that many people know as home of the striking Edna Rizley Griffin Concert Hall.

"The facilities for the Department of Music, Theatre, and Dance have been scattered for decades," says Michael Thaut, co-executive director of the School of the Arts and chairman of the department. "So we're excited to finally match the quality of our programs with a state-of-the-art facility for teaching, performance, and research." As department head, Thaut has been involved for the past six years in most aspects of planning, design, and development of the facility, which is located in the former Fort Collins High School building at 1400 Remington St.

"All classes in the department will be taught in the UCA," Thaut says. "That's the only department that will hold regular classes in the building, but related disciplines, such as art and design, will be able to use teaching spaces."

Some areas of the facility are now in the beginning stages of renovation, which creates an almost haunting mood in the building.

"The interior is dark and somewhat spooky at this stage of construction," says Linny Frickman, art instructor and Hatton Gallery director. "But the end result will be a beautiful, new art museum." The museum – a name is still under consideration – will house Colorado State's permanent art collection along with objects from traveling exhibits. The 4,000-

square-foot facility will be equipped with climate and lighting control to preserve sensitive objects. One area will be used to store and prepare objects coming in and going out of the museum.

"We'll be able to show some of our permanent collection that we can't show at the Hatton Gallery because of lack of space," Frickman says. "Some of the collection is now stuffed in three closets and my office, which is far from ideal."

The facility also will include CSU's Center for Biomedical Research in Music, a world leader in brain research and neurological music therapy.

Walton Jones, director of theater, said the UCA will host design labs to teach scenic, costume, and lighting design, as well as space for "new media" including sound design and video projection design.

"The finished facility will match the high quality of our programs and become a benchmark of excellence for the performing and visual arts in the region."

"We're excited and thrilled to be coming in at the ground floor," Jones says.

The former high school gymnasium, built in the 1930s, will undergo major renovation to transform it into a dance performance space. The area will include special lighting, sprung (resilient) flooring, and audience seating for more than 200 with the capability to expand into larger studios.

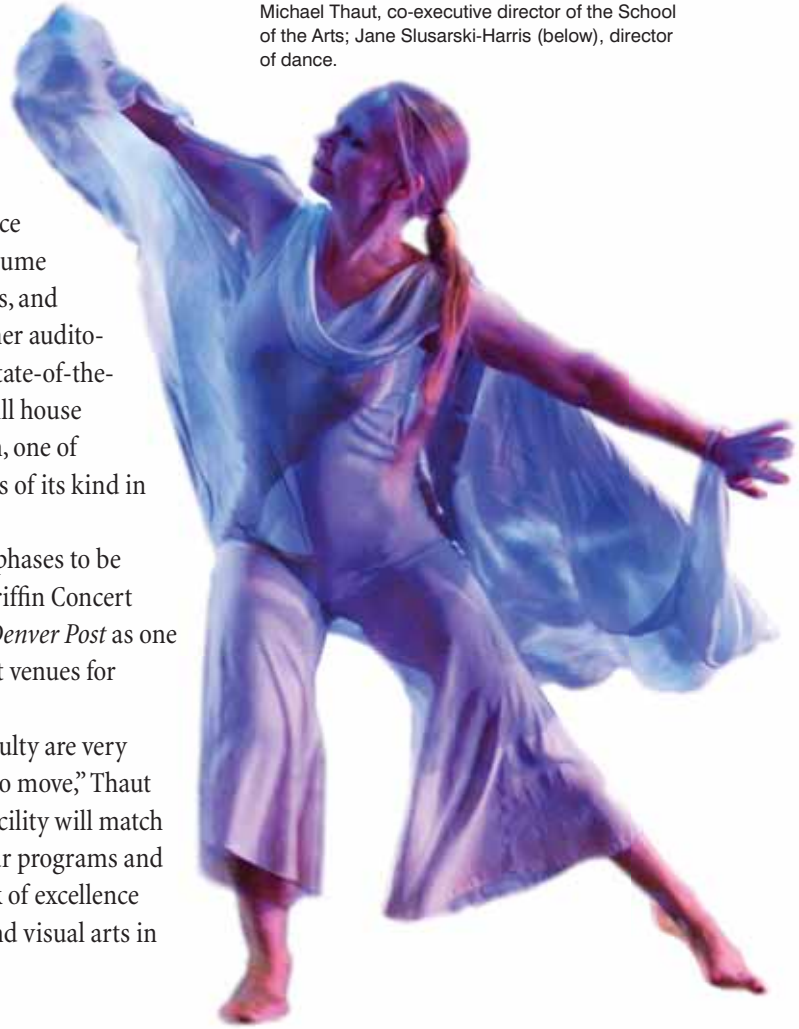
"We've watched the concert hall and theaters come to life, and now we're in the process of building one of the best spaces for dance in the state of Colorado," says Jane Slusarski-Harris, dance director. "This dance theater will be fully equipped with the latest technology and engineering to present both traditional and contemporary work by CSU students, faculty, and guest artists." Additional facilities will include dressing rooms, offices, and two substantial studios.

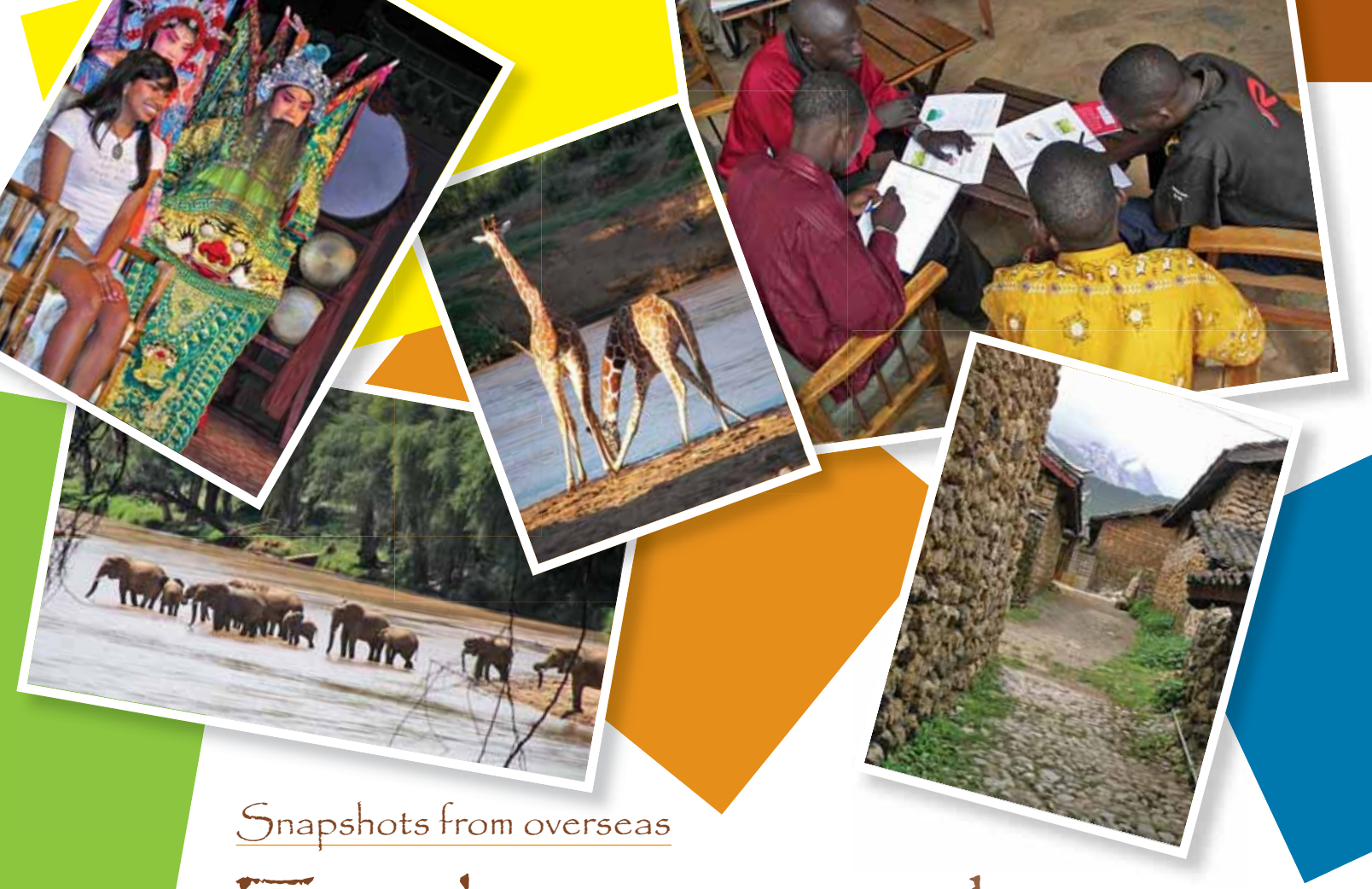
In addition, the UCA plans to house up to 40 music practice rooms, a historic costume gallery, various offices, and classrooms. The former auditorium will become a state-of-the-art recital hall that will house CSU's Casavant organ, one of the finest instruments of its kind in the country.

The first of three phases to be completed was the Griffin Concert Hall, ranked by *The Denver Post* as one of Colorado's five best venues for music.

"Students and faculty are very excited and anxious to move," Thaut says. "The finished facility will match the high quality of our programs and become a benchmark of excellence for the performing and visual arts in the region." ◆

Michael Thaut, co-executive director of the School of the Arts; Jane Slusarski-Harris (below), director of dance.





Snapshots from overseas

Faculty and students immersed in activities abroad

by Paul Miller

Traveling overseas to experience the vitality and color of other cultures is rewarding on its own. But when teachers and students at Colorado State visit nations abroad, there usually are more significant reasons – and far-reaching results.

International programs work toward creating and maintaining mutually beneficial relationships with partners around the globe. Examples of those reciprocal relationships can be found in a wealth of topics ranging from health science to biomedical engineering to textiles and apparel.

"International activity is at the heart of the University's land-grant mission, and the time is right to develop a targeted, distinct internationalization strategy," says Jim Cooney, associate provost and director of International Programs.

About 300 visiting scholars and researchers from other countries are actively involved at CSU. And since the late 1800s, when the first students visited from other countries, the University has been expanding its program and now enrolls about 900 students from nearly 100 countries.

While Cooney has long-range plans to increase the number of international students at CSU and the number of undergraduates who are involved in international learning programs, he also enthusiastically discusses ongoing projects overseas. "The range of expertise represented by this University overseas is, quite simply, staggering," he says.

The University's Strategic Plan set China, India, and Latin America as priorities for CSU. Memorandums of Under-

standing recently were signed with Beijing Normal University, China Agricultural University, the Graduate University of the Chinese Academy of Science, and the Academy of Agricultural Sciences in China. Critical collaborative agreements also were forged in Mexico with Universidad Autonoma de Yucatán, el Colegio de

la Frontera Sur, and the University Autonoma de Nuevo Leon in Monterrey.

A Memorandum of Understanding was finalized with the Indian Space Research Organization during a recent trip to India by Tony Frank, provost and senior vice president, and a small CSU contingent. The agreement, which will advance collaborative studies of remote sensing of precipitation, addresses the work of V. "Chandra" Chandrasekar and V.N. Bringi, electrical and computer engineering professors at CSU. The research is a key component of global mapping of precipitation and water resources.

"The College of Engineering has a lot of collaborations in India," Chandra says. "Colorado State is helping to ensure that the United States continues to be globally competitive."

Other disciplines also play key roles in India-United States collaborations.

A group of educators from CSU and throughout the nation returned early this year from a trip to India to explore the culture, history, and artisan enterprises of that country to help enrich the curricula of U.S. schools and universities. The Fulbright-Hayes project is a yearlong, joint effort between CSU and the International Textile and Apparel Association, says Mary Littrell, professor and chairwoman of the Department of Design and Merchandising.

> ***"The range of expertise represented by this University overseas is staggering."***
>
> – Jim Cooney, associate provost and director of International Programs

"The timing for the trip couldn't have been better," Littrell says. "We visited and interacted with artisans in small villages and big cities alike, and it was a truly rewarding experience that will help bring home to students the richness of the culture and the technological expertise found in India. India also is on the crux of a middle-class consumer explosion, and we need to understand the implications of that change." The University will be working closely with the National Institute for Fashion Technology in India and its seven campuses across the country.

In another part of the world, CSU has been facilitating cooperative academic activities with the University of Canterbury in New Zealand. Areas of shared interest include biology, natural resources, human systems science, and biomedical and structural engineering, says Richard Gutkowski, professor of civil and environmental engineering and the main contact at CSU on behalf of faculty and students who are facilitating initiatives between the two universities.

"We've created a framework to work together in sharing physical and electronic resources as well as strengthening educational opportunities for students," Gutkowski says. "Overall, it's an exciting venture for everyone involved. It's delightful to work with universities overseas and to experience different ways of teaching and research with a new community of people."

Massimo Fragiacomo, professor and structural engineer at the University of Canterbury, says that the Memorandum of Understanding between CSU and the University of Canterbury will make exchanges of staff and students easier, and that synergy will lead to increased research outcomes at both institutions.

"For me, the agreement will help enhance the cooperation, already ongoing for many years, with Professor Gutkowski and his colleagues on timber-related projects, such as the development of wood-concrete composite deck systems for use in bridges and building floors," says Fragiacomo, whose specialty is timber engineering.

Another key component of the research, Gutkowski adds, will be the exploration of structural integrity of wood-based material during natural disasters such as hurricanes, tornados, high winds, and tsunamis.

"The beauty of collaborative work is that it benefits everyone," he says. "Scholarship and research don't depend on nationalities or borders."

"Colorado State's international efforts," Cooney says, "are pulling together the outstanding connections that already exist and concentrating them in ways that will be more effective for institutions – and for societies – across the globe." ◆

International partnerships anchored with Memorandums of Understanding

by Paul Miller

A key part of the University's toolbox to create and expand worldwide partnerships is the international Memorandum of Understanding.

As part of its strategic plan to address global challenges, Colorado State is dedicated to strengthening areas of study and research in concert with international partners. Through IMOUs, the University works with like-minded institutions in China, India, Central and South America, Southeast Asia, and many other nations to share universal visions and values.

"Every day, Colorado State tackles some of the world's most chronic problems such as poverty, hunger, pollution, and infectious disease," says President Larry Edward Penley. "But we know those solutions aren't confined to laboratories and classrooms in Fort Collins. Today's global economy means problem-solving must come as the result of international partnerships and outreach."

The heart of IMOU originates with faculty and students who want to participate in international activities and research that ultimately help address those problems, says Peter Dorhout, vice provost for Graduate Affairs. "IMOUs show solidarity in research and scholarship between two or more institutions. It's an agreement to work in key areas that are mutually beneficial to those institutions and to society."

The University has more than 200 IMOUs across the globe (except Antarctica) that represent an array of scholarly activities, says Martha Denney, director of International Education. In just South and Central America, the University has IMOUs with 53 institutions, 16 of which are in Mexico. Most are in biomedical sciences, agricultural sciences, and natural resources.

Faculty and graduate students who are involved in research projects either travel abroad from CSU or come here from other countries, an exchange that underscores the reciprocity of IMOUs.

"Working with international teams provides students the kind of on-the-job training that can't be replicated anywhere else," Dorhout says. "We believe that students involved in such programs are more successful in the job market – employees really pay attention to experience like that. It shows that students are not just narrowly focused, but that they're also very involved and interested in helping to address global issues."

"The best IMOUs spell out definitive goals and include significant, on-the-ground research activities," Denney says. "Those activities can range from biomedical engineering to occupational therapy to textiles." ◆

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