ANIMAL SCIENCE
COLLEGE OF AGRICULTURE, FOOD & ENVIRONMENTAL SCIENCES
WINTER 2010

Cal Poly IS BULLISH ON STUDENT ENTERPRISES
Throughout the following pages, you will read about the commitment of the faculty and staff in the Animal Science Department to provide the conditions, the environment and the resources for our students to develop the skills they will need to become the next generation of leaders for California, the United States, and beyond. Enterprise projects have served as the foundation of Cal Poly’s learn-by-doing educational philosophy over the past 100 years. Today, we provide more projects than animal production, management and processing. We have expanded the enterprise system to include undergraduate research with nearly 150 undergraduates involved in research projects during the past year. I’m pleased we have more students than ever involved in enterprise projects.

Animal Science continues to change in an effort to address the many challenges facing society today. Challenges such as the availability and quality of water, food safety, appropriate animal health and well-being, sustaining rangeland resources, among others, need to be addressed. During the past year, we achieved key successes on the range management and food safety fronts.

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Dr. Marc Horney joined our team to provide leadership in rangeland resource management, an area many of our students are interested in. We believe we will become a key supplier of young leaders in this area for state and federal agencies looking to replace those moving on to retirement. With vast areas of the West under federal and state management, and increasing use of easements to protect private lands, there is great demand for rangeland resource managers.

Casey Callaghan, Jennifer Gisler and Greg Noland
We continue our efforts to expose our students to cutting-edge technologies to help ensure a safe food system. We received certification for the Hazard Analysis Critical Control Point (HACCP) program for our Animal Nutrition Center – the only university teaching and research feed manufacturing plant in the United States to have this certification. In addition, we will soon have U.S. Department of Agriculture certification of a Process Verification Program for age and source verification of Cal Poly’s cattle -- a first for a U.S. university, and one of only 34 organizations to earn this designation through the U.S.D.A.

Noah Nelson
No doubt these are tough economic times in the United States and throughout the world. But challenges such as clean and adequate water supplies and safe food will not disappear with these tough times. The Animal Science Department continues to re-engineer itself to ensure students are being prepared to address these challenges and provide solutions for the future. Finally, I must express my sincere appreciation to all the donors, stakeholders and friends of the department. We are truly grateful for your continued support, which allows us to develop future leaders to address the growing challenges facing animals and humans throughout the world.
NEW PROFESSOR HIRED TO TEACH, EXPAND RANGELAND MANAGEMENT

Assistant Professor Marc Horney (ASCI ’90) has traded a tent on a remote windswept hillside with stunning views of a crystal clear lake for a cramped cubicle with no windows in a multi-person office in the Erhart Agriculture Building.

And that’s fine with him. The animal science alumnus returned to campus in fall 2009 to teach and to ramp up the department’s rangeland management program.

Just what exactly are “rangelands?”

“I tell people that rangelands are basically like forestlands without the trees,” Horney said. “Livestock grazing is one of the main economic values coming out of rangelands, as are mineral and energy extraction,” Horney explained, “but our society is in the process of discovering other intrinsic values, such as habitat for declining wildlife species, for producing clean water, and as ‘windows’ to the natural world for ‘claustrophobic urbanites.’”

These large, diverse geographic areas are key to the economic and environmental survival of countless communities worldwide. “Urban residents will realize their fate is inextricably tied to the condition of those areas and to the welfare of the communities that more directly depend on their ecological and economic integrity,” Horney said.

Whether this will be socially recognized and acted on in time is a matter of vital concern. “Serious investigations of, and public discourse about, management of natural resources is important to be engaging in right now,” he emphasized.

At Cal Poly, rangeland management is offered as a minor to students in any department. One of Horney’s objectives is to create a program that can enable students to meet the rather specific entry-level requirements for federal rangeland management specialist positions. Cal Poly offers all the courses required except for about 20 units of rangeland specific content.

“Clearing that last hurdle will be challenging, but that is my focus,” he said. “It is important because our nation desperately needs skilled professionals to guide the practice and science of managing natural resources.”

“Cal Poly has an uncommon mix of instructional and experiential resources available to its students, who could become some of the best prepared professionals in the country,” Horney continued.

“This program won’t succeed without an active multi-disciplinary approach, and I am pleased with the support that has already come from other departments.”

The animal enterprise projects, which allow students to gain practical hands-on experience in managing animals, is one example of Cal Poly’s unique instructional resources that Horny plans to harness for the new range resource program.

Another is the nearly 10,000 acres of rangeland that Cal Poly manages. These lands include the Serrano, Peterson, Cheda, Esquela-Walters and Swanton Pacific ranches, plus the roughly 200 acres of rangeland associated with Chorro Creek.

Horney is preparing to conduct rangeland health surveys and ecological inventories on all those lands and establish long-term monitoring of management practices and soil and vegetation responses that students can learn from. “I can guarantee that this will keep a large number of students and I very busy for some years to come,” Horney says.
ENTERPRISE
Where Opportunity Awaits

At Cal Poly, enterprises provide students opportunities to truly embrace the learn-by-doing philosophy. Animal Science enterprise projects allow students to apply what they’ve learned in the classroom to real-world situations.

This practical approach is recognized as state-of-the-art and is repeated by student after student, quarter after quarter, year after year.

Many of the stories that appear in this Stock Report reflect the value in Cal Poly’s enterprise projects’ hands-on approach. Enterprise projects in particular allow students to learn the technical competence critical to success in their future professional careers. They also learn the value of communication, team building, conflict resolution, problem-solving and leadership. All this, while having the times of their lives.

Not just animal science students, but students from throughout the university, are invited to join enterprise projects ranging from artificial insemination and egg production to foaling, lambing, meat processing, animal husbandry and more. In all, the Animal Science Department offers 24 enterprise projects annually in which students can roll up their sleeves and get to work!
STUDENTS LINE UP FOR POPULAR ENTERPRISE CLASS

Three months, three weeks and three days. That’s 114 days from conception to birth — the typical gestation period for a Cal Poly sow. Or any sow, for that matter.

Students learn that and “sow” much more from the Swine Enterprise project, managed by Assistant Professor Allen Pettay (ASCI ’98), who returned to his alma mater to teach in spring 2004. The following year, he revamped and took over the Swine Enterprise.

“Enterprise projects used to be more about getting the students to learn how to make money,” Pettay said. “Now it’s about students getting more advanced experience.”

And that advanced experience can translate into new opportunities. Just ask junior Steven McLennan. Last summer he interned at the Prairie Swine Centre Inc., a top North American research facility affiliated with the University of Saskatchewan in Saskatoon, Canada.

At Prairie, he helped weigh designated feed rations for feed studies, took blood samples, and processed pigs for an energy study. He also worked in production, breeding and farrowing. “I fit right in,” he said.

“My job consisted of feeding, breeding and managing a herd of sows that produced piglets for research and replacement gilts.” (Gilts are young female hogs, generally under 12 months of age who have never had a litter of pigs.)

“I couldn’t have been dropped into a better internship. I learned a great deal about the swine market and research industry, and much about myself as an individual along the way,” McLennan said.

Cal Poly’s Swine Center keeps 25 to 35 breeding sows at the facility. The number of pigs can grow to a whopping 350 twice a year, though, when the sows farrow, giving birth to 10 piglets weighing three to four pounds each. When the pigs reach about 250 pounds, usually at five months of age, they are taken to market.

“Swine are a nice species for an enterprise class,” Pettay said. “In a short, 10-week quarter, students get to see a lot.”
A CALF IS BORN

It’s late, it’s chilly, and students doing the 1 a.m. heifer check are tired. But Courtney Hann and Alex Smiley perk up when they spot the restless pregnant heifer in labor.

They noticed the calf’s front hooves were barely sticking out, but labor wasn’t progressing as it should. Concerned, Smiley called Sarah McBeth, one of two student managers for the Heifer Calving Enterprise. She told them to give the heifer some distance and wait awhile.

Smiley’s second call to McBeth came at about 2:30 a.m. The heifer still hadn’t calved. McBeth called the other student manager, Kelly Leinbach, and said to meet her at the barn. Two other group members were also called to help.

McBeth knew she would be helping pull another calf that night. Although an old hand at this, she still feels the adrenaline rush. “We have to move quickly. We’ve got to get the buckets, halter, chains and the ‘calving kit.’” Time is of the essence.

‘IT WAS A GREAT EXPERIENCE – MESSY, BUT GREAT.’

The heifer, in obvious discomfort, is grunting and breathing heavy, but the students manage to move her to a corner where they put a halter on her to restrict her movement. “We tied the rope of the halter to a post in the barn and took the side gate from the adjacent pen to act as a kind of squeeze so she couldn’t walk away,” explained Leinbach.

“We want to keep her comfortable but need to have control. We have 30 minutes from the time she’s tied up to pull that calf.”

After McBeth and Leinbach give a crash course in pulling to the four students -- Hann, Smiley, Brittney Scott and Brittany Barrick -- the delicate work begins. “Brittney and I had to put the chains around the calf’s front feet and then pull the calf out,” Smiley said. “When it came time to pull, it was a lot harder than we both expected.

“The hardest part was getting the head and shoulders out,” Smiley continued. “After we got past the shoulders, it slipped right out. It was really a great experience -- messy, but still great.”

Leinbach agrees. “It’s a wondrous experience, and sharing it with other students makes it really special.” Helping bring healthy calves to life makes the Heifer Calving Enterprise a favorite of students. Managed by Professor Michael Hall, (ASCI ’73), the enterprise demands hard work.

“And dedication,” McBeth said, “Getting up in the middle of the night for those 1 a.m. and 3 a.m. checks is not easy, but the baby calves are worth it.”

Although Hall and his students watch the pregnant heifers around the clock, he tries to produce daylight calving. “When the heifers eat hay at night and have a nice full belly, it helps start the delivery process. It’s just easier to deal with birthing problems during the day,” Hall said. About 80 percent of the heifers give birth during the day.

“The other 20 percent didn’t read the textbook,” Hall smiled.
Ewe-nique EXPERIENCE

CAL POLY LAMBING ENTERPRISE

Cal Poly’s Lambing Enterprise doesn’t much resemble the project from which it evolved.

Professor Robert Rutherford remembers when the sheep were headquartered in the old barn on campus where the soccer fields now stand. The animals were fed supplements and were routinely de-wormed and vaccinated for critical diseases. According to Rutherford, the barn had an off-odor and “served as a terrific habitat for flies.”

Well, that’s not the case today. Call it “Mother Nature Knows Best,” or as Rutherford puts it, “working with the land instead of in spite of it.”

The exceptional good health of Cal Poly’s flock can be traced to grazing management plans that foster healthy microbes in healthy soils. “When our animals eat healthy plants, we have healthy animals,” Rutherford said.

Rutherford doesn’t vaccinate the ewes or lambs, Or de-worm them. He has no aversion to those steps; he simply hasn’t needed them.

Sheep don’t get internal parasites when they eat healthy grass that is free from infective stage worm larvae. “Parasites don’t exist if you give the grass a chance to re-grow and heal. In healthy grass, the roots are pulsing, like a heartbeat, into the soil. Once that plant has been bitten, we give it a chance to recover, and that’s where the grazing plans come in,” Rutherford said.

“We don’t feed the lambs any grain. We haven’t bought supplemental grains in three or four years. Corn is expensive, and the lambs don’t need it.” Rutherford claims.

Apparently not. Last year Cal Poly’s 120 lambs produced more than 280 lambs at birth. At weaning time, the number stood at 180.

That beats the heck out of the national lamb crop, which last year was about 100 percent, meaning 100 ewes produced 100 lambs. Rutherford credits the ewes’ good health and selection for their high-fertility level.

“Our breeding season is in line with Mother Nature’s cycle. If Mother Nature had her way, mammals would be born when an optimal feed supply is present,” Rutherford said. “Moms need lots of nutrition just before the lambs are born, and right after, to produce the milk to sustain them.”

Rutherford, who has been overseeing the sheep since 1974, moved Cal Poly’s breeding season to arrive at the optimum time. “We keep thinking we can overpower Mother Nature, but we can’t.”
TESTING THE BULLS: A CAL POLY TRADITION FOR OVER 50 YEARS

The air was chilly and the ground still damp on those 6 a.m. checks, as animal science students Jeff Clark and Caitie Evans rode through the bull pens, pulling out the sick and lame bulls. They would repeat that same sweep again at 5 p.m. “We would doctor those bulls every morning and afternoon if needed,” Evans recalled.

But as managers of the Bull Test Enterprise, it wasn’t anything they weren’t prepared to do. They had both worked on the enterprise in the past and knew it took hard work, determination, and a capacity for caring for large animals.

As a matter of fact, Clark was drawn to the project specifically because of “the amount of responsibility the enterprise instills in its members.” Clark and Evans’ work on the project began two months before the first bull even arrived on campus. They prepared the pens, mended the fence, cleaned water troughs, and whacked weeds.

They weren’t alone, though. Each year about 50 students sign on to help with the 50-year tradition known as the All-Breed Tested Bull Sale. Some have experience with large animals, but many do not. “They come for a love of animals, a love of science, and a willingness to learn,” said Professor Michael Hall, who oversees the Bull Test Enterprise.

And learn they do.

Cal Poly is the only university in California to provide this central bull test, where people from throughout the state and beyond bring their bulls to be fed, cared for and sold. The bulls are tested for performance on weight gain, among other things.

For a bull to qualify for sale, he has to finish in the top 50 percent in his breed. The bulls arrive in May, when they’re between nine to 11 months old and weigh 700 to 900 pounds. After the 100-day test, some bulls will have gained 400 pounds or more, tipping the scales at a hefty 1,300 to 1,400 pounds.

“Many of the bulls gain over 4 pounds a day with a ration that is balanced for a 3-pound a day gain,” Hall said. “The record this year was 5.41 pounds a day, which is amazing since the ration is very high roughage. Remember, beef cattle are sold by the pound, so weight is money.”

Weight gain is only part of the picture. The bulls are also scored by test index and conformation, which encompass their structural correctness, overall look, muscling and leanness.

The third criterion is the EPD profile, or expected progeny difference. That’s the bulls’ genetic transmitting ability for various traits such as weight gain and milk production, as well as carcass characteristics. “It’s the heritability of that particular trait being passed on to his offspring,” explained Hall.

The bulls’ stay on campus was strictly overseen by managers Clark and Evans. “I managed the enterprise students during the processing-weighing days, work days, and during the bull sale,” Clark, a senior, said.

He also oversaw the day-to-day management of the bulls, which included checking for sick cattle, doctoring sick bulls, checking the feed and water supplies, and making sure the electric fence was up to proper voltage.

Clark and Evans supervised teams of three feeders who fed the bulls twice daily. “Jeff and I helped organize the students and performed any maintenance work that was needed on the Beef Center,” Evans said. “After the project ended, we even delivered many of the bulls to their new buyers.” Evans said the enterprise helped her develop her leadership skills, learn more about feedlot animals, and fine-tune her cattle-handling and vet skills. “There’s a lot of pressure that goes with being responsible for 168 bulls, and I think Jeff and I stood up to the task.”

That’s no bull.
RESULTS GUARANTEED ... POSITIVELY

Chunky is a great quality in peanut butter, but not in bull semen.

That might be an indication that the bull could be, well, reproductively challenged, says William Plummer, professor of reproductive physiology and Cal Poly’s chief bull semen tester.

Plummer is in charge of the Bull Test Reproductive Enterprise program, and he knows a thing or two about the reproductive system of bulls and other living things. His expertise helps ensure that the bulls Cal Poly sells are able to breed.

Cal Poly takes in bulls from owners from all over the state and country, feeds and cares for them for about three months, and then auctions them off in an annual two-day event known as the Annual Field Day and Tested Bull Sale. (See related story, previous page.)

“The bulls are all treated the same; they eat the same food, live in the same environment,” explained Plummer. “In theory the only difference between the bulls is genetics.”

Most people don’t realize that it takes 25 moving parts for a bull to ejaculate, and something could go wrong with any one of those parts. Last year, Plummer couldn’t get semen from three bulls.

“It might’ve been something wrong with one of the moving parts, or it might have been an infection,” he noted. “If it’s an infection, we treat it until it clears up.”

Sometimes even a healthy bull’s semen is not the quality that it could be. Plummer judges the quality based on seven categories of semen. The first and only category not in need of treatment, has zero to fewer than 20 white blood cells in the semen.

“Anything over 20 gets treated,” Plummer said. “We sell only healthy bulls. We don’t want to transmit any diseases to the females through the sperm that is used to impregnate them.”

Plummer has been doing this for 30 years -- teaching, mentoring and conducting research. “Students actually get out and do things, and that builds confidence,” Plummer said.

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“Because we sell them as breeding bulls, we have to make sure they have sperm,” Plummer said. “And that means collecting semen, evaluating it and making judgments based on what we see under the microscope. We have to determine the number of normal sperm versus abnormal sperm.”

For the curious, semen has between an 80 to 90 percent normal sperm count; abnormal is between 10 to 20 percent.

“‘Students get out and do things, and that builds confidence.’

“Semen is collected with an electroejaculator, since it is not the bull’s idea to give us a sample,” Plummer jokes. “We look at it to see if it is clear of white blood cells and has adequate numbers of sperm.”

One of those students is senior Carli Grimbleby. She has been part of the Bull Test Reproductive Enterprise for two years, working both directly with the bulls and in the lab with the computer-assisted sperm analysis and microscope system.

“The knowledge and experience I’ve gained through these projects will be put to practical use after I graduate in December, as I will be interning with Pioneer Equine Hospital during the 2010 breeding season,” she said.
HAY IS FOR HORSES... OR IS IT?
How many students does it take to change a horse’s diaper, or more accurately, to change 11 hygiene harnesses? “At least 15, working around the clock, in three eight-hour shifts,” answered second-year animal science grad student Cassie Lockhart.

“To say working with 11 horses and hygiene harnesses is a lot of work is a huge understatement!” she said, but it’s critical to get the digestibility trials done that she and Animal Science Professor Mark Edwards are working on as part of the Equine Nutrition Research Enterprise.

Most of the horses in the trial are five to 15-year-old geldings that have been donated by community members. The enterprise takes students of all levels. The advanced students teach the novice students, while Edwards cultivates new students to keep the enterprise going.

Brianne Gonzalez, a senior, had never worked around horses before, yet she helps with everything from feeding and record keeping to cleaning the stalls, walking the horses, and working in the lab.

“Because I had never worked with horses, I found interacting with them a little strange,” Gonzalez admitted. “They are easy to handle when they feel like cooperating, but when they get angry or scared, you have to be careful.

“When I first saw the hygiene harnesses, I thought they were funny, but now they are just a normal part of collections. The horses tolerate them very well and have even learned to lift their left hind leg so that we can take the harnesses off easily.”

Edwards, Lockhart and a group of students are examining how well horses digest their food. As part of the trial, the students measure exactly how much feed the horses are given, how much the horses actually eat, and, well, how much the horses “give back.”

Yep. In those hygiene harnesses.

“It’s all carefully measured, recorded and analyzed to see, in part, what nutrients were broken down, what wasn’t digested, so we can adjust the feed to promote better health and better performance of the animal,” Edwards said.

They are also looking at the composition of the manure. “How does diet change the form and the texture of manure?” asked Edwards. “Because how it breaks down has implications for the horse, the species, the environment, even humans.”

Who knew there was so much to be learned from manure! And not just from manure, but from the scientific research itself. Students learn methods involved in research, development and evaluation of foods for horses. They’re learning about nutrition, supplements, feeding practices. About experimental design, validity, controlling variables, such as keeping all stalls identical, with the drinker always in the same position, the feeder in the same position, the food placed in same corner, and the feed put out at the same time every day.

Many of Edward’s research has been supported by industry and funds from The California State University Agricultural Research Initiative, a program that matches donations dollar for dollar.

Edwards ultimately would like to make Cal Poly a resource for industry and scientists interested in doing this kind of investigation. “Not many universities or private companies are able to provide all the resources needed in trials of this magnitude,” he said. “We have the horses, the expertise, the harnesses. “We can bring industry and scientists to campus to study horses, and at the same time, provide students cutting-edge experience in research and innovation to develop new products for the equine feed industry,” Edwards said.
INTERNATIONAL TRAVELER ANNA JELKS: AT HOME ANYWHERE

By the time animal science senior Anna Jelks graduated high school at 18, she had seen more of this world than most people see in a lifetime.

So when the opportunity arose to study abroad, she naturally jumped at the chance. Twice.

During her first international study experience in Thailand, from March to July in 2008, she was “super ‘Zenned’ out,” Jelks said, referring to how peaceful and at ease she felt in the Southeast Asian country. The transition was easy and, she said, it was there that she “came into her own.”

Jelks was back at Cal Poly a mere quarter before packing up again. This time she was headed “down under,” to Massey University at Palmerston North in New Zealand, where she lived in the International Hall with students from India, Fiji and Asia. “The university was fabulous,” said the energetic blond, and her classes in sheep production, plants in agriculture, and reproduction and lactation physiology were academically challenging. “I felt a little intimidated because it seemed like all the other students had grown up on dairy farms or sheep farms,” giving them an advantage this suburban Davis resident didn’t have.

And although the university was challenging, “there wasn’t much to do in Palmerston North,” Jelks recalled. So most weekends she sought refuge and culture in Wellington, a small, intimate town that offers a bit more in the way of good food, wine, music and surfing, a definite passion of Jelks.

It’s no surprise to learn that Jelks is a bit of an adventurer. In addition to surfing, she scuba dives, practices Bikram Yoga (also known as “hot yoga”), keeps a four-and-half foot-long ball python as a pet, and isn’t afraid to sample foreign countries’ more “exotic” fare.

“In Thailand I ate deep-fried mealworms, ant larva soup and lizard,” she smiled. In Australia, she tried kangaroo, emu and opossum. No doubt, the girl’s got guts ... and gumption.

Perhaps traveling has had something to do with that spirited openness. She says it certainly helped raise her maturity level and claims, “The more I leave, the better I understand myself. Study abroad is all about self evolution,” Jelks said, and she highly recommends it to all students. “Absolutely travel abroad,” she advises. “Get out of your comfort zone and evolve.”

Her travels have taken her to Australia, Austria, Canada, Costa Rica, England, France, Germany, Holland, Italy, Luxembourg and Mexico.

While studying in Thailand, she had the opportunity to visit Laos, Cambodia, Vietnam and the Islands of Thailand.

“I would love to go back to New Zealand,” she said, “perhaps for grad school. The people of New Zealand are the kindest – so generous and trusting.”
INTO THE WILD: INTERNS EXPERIENCE ELEPHANTS & MORE IN ZIMBABWE

The hardest part of students Alex Au and Molly Boyker’s internship in Zimbabwe, Africa, was convincing their parents to let them go. And for good reason. Zimbabwe has widespread poverty and unemployment, is awash in economic mismanagement, and reports of human rights abuses are common. Add to that, 30 hours of grueling travel time and no one to greet them at the airport when they finally do arrive, exhausted, at Victoria Falls. But those memories are nearly forgotten. After their five-week internship at the Wild Horizons Wildlife Trust Sanctuary and Orphanage, both students would return in a heartbeat.

“The wildlife trust focuses on the well being and health of Africa’s unique animals and tries to educate people about the negative effects of poaching,” Boyker said. The trust is managed by Zimbabwean Roger Parry and Cal Poly alum Jessica Dawson (BUS ’01).

Both pre-vet majors with an interest in exotics, Au, a junior; and Boyker, a senior; spent three weeks working mainly with elephants at the sanctuary and two weeks in the Hwange National Park, where winter was just ending and the daytime temperatures were mild.

In the park, the students spent their days darting and putting radio collars on a variety of species and helping Parry when he encountered a snared animal. Boyker recalled an incident in which an impala had been snared, and the dart used to sedate it hit a bone. “Alex pulled the dart out with a scalpel and forceps,” Boyker said. “I gave it an injection intravenously to help it breathe.”

At the sanctuary, the young women helped care for and monitor 16 resident elephants. “Elephants spend a majority of their day grazing in the vast brush on the trust’s property, so it is important to monitor and move them so they don’t decimate the flora," Au said. Au and Boyker also had to monitor the elephants’ nighttime behavior. They pitched a tent in an elephant stall, where they observed the animals every hour for a 12-hour period. Among other things, they discovered that elephants snore. Loudly.

They witnessed and endured a great deal during their time in Africa. They were charged by elephants, rode on top of a jeep and tracked a lion. Boyker had to hold down a hyena as its sedation was wearing off. “Did you know hyenas have the second strongest jaw in the animal kingdom, second only to the crocodile?” inquired Boyker. According to both girls, the people of Zimbabwe are very trusting. “No one locks their doors. Everyone knows everyone else. We could walk around late at night and not have to worry.”

About the people, that is. They did, though, have to watch out for the “five big scaries”: lions, leopards, elephants, cape buffalos and rhinoceros, which have been found in and around town. To avoid the most challenging aspect of the internship experience, Au and Boyker advise students to take the time to prepare their parents. “Do your research and come to them prepared. It took me two months of negotiations,” said Boyker.

“But the chance to bottle feed a baby elephant was worth the struggle,” Au laughed.
WE ARE WHAT OUR ANIMALS EAT

While the United States boasts one of the world’s safest food supplies, occasionally some Americans still fall victim to food-borne illnesses. Government agencies, consumers, and now Cal Poly are taking steps to change that.

About a mile north of Cal Poly’s main campus sits the year-old Animal Nutrition Center, where Manager Casey Callaghan (ASCI ’05) oversees the production of top-quality feed for the thousands of university animals.

The facility has the capacity to produce up to six tons of animal feed per hour with its state-of-the-art processing equipment. But simply processing top-quality feed for the animals isn’t enough. “You have to be able to document and verify that the product is consistently high quality,” Callaghan explained.

And so Callaghan, senior agribusiness major Greg Noland, and Cargill employee and Cal Poly alum Jennifer Gisler (DSCI ’02), set out to develop a Hazard Analysis and Critical Control Point (HACCP) program.

HACCP systems are intended to prevent hazards that could cause food-borne illnesses by using science-based controls throughout the manufacturing process. “It’s an excellent system, but it cannot guarantee that every item produced under an HACCP system will be safe,” advised Gisler, regional HACCP specialist at Cargill.

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The students working with Callaghan are learning how to do things the right way, in a high-class facility that is maintained with the utmost cleanliness and cutting-edge equipment. “With the HACCP plan in place, the Animal Nutrition Center will continue to serve as a learn-by-doing feed mill that is educationally and commercially viable,” Noland added.

FOOD SAFETY BEGINS

WE HAVE COMPLETE CONTROL OVER THE QUALITY OF THE PRODUCT.

Noland did much of the work himself for his senior project. “Through countless hours of research and discussions with Jen and Casey, I wrote the plan that is used now at the mill,” he said.

Gisler’s work on the project was generously donated from Cargill, a leading producer and marketer of food, agricultural, financial and industrial products and services worldwide. “It was a joy working with the team at Cal Poly,” Gisler recalled. “I’m a third generation Cal Poly graduate and enjoyed jumping back into the fast-paced quarter system to complete this project in record time.”

Nolans was also a part of the team that worked on the HACCP project. He said that the project was a great way to learn about the food industry and to gain valuable experience.

Callaghan said that the HACCP system has been a great success. “We have complete control over the quality of the product,” he said.

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Callaghan, Noland and Gisler

Nevertheless, the approach has been adopted by food processors and governments around the world.

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Noland said that the project was a great way to learn about the food industry and to gain valuable experience.

The students working with Callaghan are learning how to do things the right way, in a high-class facility that is maintained with the utmost cleanliness and cutting-edge equipment. “With the HACCP plan in place, the Animal Nutrition Center will continue to serve as a learn-by-doing feed mill that is educationally and commercially viable,” Noland added.
WHERE’S THE BEEF ... AND HOW OLD IS IT?

In the same vicinity just north of campus, Beef Operations Manager Aaron Lazanoff (ASCI ’91) is embarking on an ambitious Process Verification Program (PVP) that as of print time was just weeks away from earning U.S. Department of Agriculture certification -- a first for a U.S. university. Cal Poly is one of just 34 organizations to earn the designation.

Initially Cal Poly’s PVP will encompass source and age verification -- documenting where the cattle are born and how old they are. “This program certifies the accuracy and integrity of animal information and assures customers they are buying a consistent product supported by a documented quality-control and management system,” explained Lazanoff.

“Our cattle with this verification will be more marketable,” said senior animal science student Noah Nelson, who has worked on the project with senior Amanda Alford and Lazanoff. “It will allow us to expand into international markets.”

Age verification is especially important in marketing efforts overseas because of concerns about Bovine Spongiform Encephalopathy or BSE (also known as mad-cow disease). BSE has not been detected in cattle younger than 30 months of age. “We will now be able to export our beef to countries that have strict age requirements, such as Japan and South Korea,” Lazanoff explained.

In addition, PVP makes good business sense. In the event of a disease outbreak, the ultimate goal for animal health officials is to be able to trace animals back to farms or ranches within 48 hours. “If an animal is diseased, we want to find the source quickly so we can quarantine a small area instead of an entire state or even a country,” Lazanoff said. “In 2003 an incidence of BSE literally shut down Canada’s beef exports.”

“It was dubbed ‘The Cow that Stole Christmas ’03,’” Nelson noted dryly.

There’s talk in Washington, D.C., about implementing a national animal I.D. program. It’s a controversial measure, to be sure, but officials argue that with a source and age verification program in place, it would be much easier to locate where diseases like BSE originate. “You definitely don’t want to quarantine more animals than you need to,” Lazanoff said.

The Beef Program’s next goal is to be verified “natural.” To earn that certification, the cattle cannot be given antibiotics, growth promotants or animal by-products. Lazanoff expects it will take about year to achieve that.

In the meantime, initiating the PVP “has given organization to our training,” Lazanoff said, “and it’s where the industry is headed.” Alford, Nelson and Lazanoff are working with PVP specialist Vickie Robertson to compile the detailed PVP Quality Manual. Robertson donated much of her time and has been instrumental in helping Cal Poly understand the requirements. “It’s been a bit of a challenge,” Lazanoff said, “trying to write what you do in an articulate way and follow U.S.D.A. guidelines.”

“If the government does institute a national animal I.D. program, it will be easy for Cal Poly to be part of that,” Alford said.

“Plus,” added Lazanoff, “students need more training to learn about the process of verification. Sure, this program will boost our marketing efforts, but its benefits to our students in undeniable.”
Cal Poly President Warren J. Baker is retiring as president after more than 30 years. Under his visionary leadership, Cal Poly has earned an outstanding reputation for its learn-by-doing methodology that encourages students to explore real-world problems and develop practical solutions and for graduating students who are highly sought after by employers.

Since Baker became president in 1979, 20 new majors and 72 minors have been added, along with 15 new master's degree programs, and five new centers of excellence, designed to enhance applied research. During the past 30 years, Baker oversaw an expansive upgrade of campus buildings and facilities costing nearly $1 billion, raised from a variety of public and private sources.

President Baker has been a strong supporter of the Animal Science Department and the College of Agriculture, Food and Environmental Sciences. “During the past 10 years, he supported efforts to enhance our curriculum, the quality of our students, and especially our applied research efforts,” said Animal Science Department Head Andrew Thulin. “He generously supported the relocation of the Beef Center, the Animal Nutrition Center, and the new Meat Processing Center.

“We have benefited greatly from his vision and efforts to achieve excellence. He leaves a lasting legacy.”