Department of Animal Science

HIGHLIGHTS

UNIVERSITY OF CALIFORNIA DAVIS, ONE SHIELDS AVENUE, DAVIS, CA 95616, (530) 752-1250

Chair's Message

Gary B. Anderson

As the Animal Science Department enters 2005, given the choice, I would leave behind the budgetary uncertainties of the past few years. That being beyond my control, I opt instead to express appreciation for alumni and friends who spoke on our behalf as budget cuts loomed and who made gifts large and small to help sustain our academic programs during lean times. I am happy to report that, despite difficult budgetary circumstances for the state and university, our department continued to make important new advances toward building a strong future.

Several articles in this issue of *Highlights* emphasize the importance of our past to our prominence today. Vintage 2005 breakthroughs in poultry genomics were made possible by conservation of genetic lines of poultry developed at UC Davis decades ago. The Hog Barn that served Animal Science for 80 years was given new occupants and a visible new site. New awards and scholarships to support undergraduate and graduate students were established in memory of colleagues

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Animal Science Faculty Do Cutting Edge Research

Bovine Bio-bubbles Help Quantify Air Emissions

Hoping to track down the real numbers on how much of what kinds of gases cows emit, Dr. **Frank Mitloehner,** a Cooperative Extension air quality specialist, has put cows in plastic bubbles and is measuring what comes out of them.

> Good scientific data upon which to base governmental regulations are hard to find.

Last June, Dr. Mitloehner and his students—**Andrea Schnitz**, **Wendi Jackson** and **Kevin Eslinger**—built four big, airtight bio-bubbles on campus by covering 40 by 70 foot corrals with Quonset hut-type frames 15 feet high and then stretching white, high-tech plastic over them. Ten Holstein heifers or mature dry cows live in each one. Fresh air blows in and the animals consume carefully measured feed and water. All air that escapes is measured for gases and dust. Temperature, humidity, pressure and air volume are being measured as well.

As Gary Anderson, department chair, points out, "This project demonstrates how research in the Department of Animal Science changes with needs of our stakeholders. For example, over the past decade or two, research needs for the dairy industry have shifted from how to produce more milk to how to do it

Continued, Bio-bubbles, p. 8

Chicken Genome Sequenced!

An analysis of the chicken genome was published as the cover story of the December 9, 2004, issue of the prestigious international journal, *Nature*. Associate Professor **Mary Delany** took the cover photo of a newly hatched chick. Mary was one of 11 scientists who coordinated the analysis, the collaborative work of the International Chicken Genome Sequencing Consortium that involved dozens of people from 49 institutions and 13 countries. Mary's expertise in avian biology was essential to interpret the analysis. Her laboratory also determined whether particular repeated sequences, specifically telomeres present at the ends of chromosomes and ribosomal genes important for

-Debbie Aldridge photo, UC Davis

Professor Mary Delany admires a Red Jungle Fowl rooster, the species studied to sequence the chicken genome.

Continued, Chicken Genome, p. 6

Ralph Ernst Retires with Almost 40 Years' Service

Ralph Ernst retired from the department in June as poultry specialist in Cooperative Extension after 38 years of service.

Dr. Ernst grew up on a farm in Michigan where, from an early age, he was involved in the family poultry operation. He was an active member of the Future Farmers of America (FFA) and received both the Michigan Future Farmers' Award and FFA's American Farmer Degree. Undoubtedly these activities helped guide him toward his first postgraduate job as an ag teacher. Through the years, he has been a proponent of poultry youth programs. California's 4-H members and leaders and FFA students and advisors have all looked to Ralph for guidance when it comes to poultry judging.

Ralph received his bachelor's degree from Michigan State University Honors College in December 1959. After working a short time as a vocational agriculture instructor, he returned to Michigan State University, obtaining a master's degree (1963) in poultry management and a doctoral degree (1966) in poultry physiology. He began his career in Cooperative Extension at the University of California, Davis, in August 1966 and quickly advanced to the highest title and rank.

His farm background helped Ralph relate well to farmers and ranchers: he knows the hardships they face and the sacrifices they make. When his clients had problems, he was always there to help them, even on weekends, evenings or holidays. Characteristically, he spent the first week of his retirement helping game bird producers in Arizona. He could easily have said no, he had just retired, or have told them he would come in the fall (when the temperature would be below 110° F).

Ralph always seemed to be first in line to do the most difficult, time-consuming or routine jobs. It was he who developed the bulk of the curriculum for the California Egg Quality Assurance Program (CEQAP) and kept track of all the training records and member deficiencies. He has been a member of the Poultry Science Association since 1961 and edited their newsletter as well as the California Poultry Letter, in addition to publishing more than 35 papers in peer-reviewed journals. He remains an active member of World's Poultry Science Association (WPSA) and has served on the WPSA-USA Branch Board. When other CE personnel became exasperated and refused to talk to bureaucrats from D.C. and Sacramento, Ralph still patiently sat in on three-hour conference calls.

> "Ralph Ernst has been the glue that held the Poultry Workgroup and Poultry CE together."

When it came time for the accolades, Ralph always moved himself to the back of the line. Nonetheless, his efforts have been recognized many times. Most recently, he received a Hammer Award from then-Vice President Al Gore, given for "establishing innovative and unique programs to make government work better and achieve results Americans care about." He received the Poultry Science Extension Award (1978), California Poultry Federation Service Award (1998), Pacific Egg and Poultry Association's "Scientist of the Year" (1995), PePa Special Award for Contributions to the CEQAP (1996) and the National Association of County Agricultural Agents Manuscript Award (1991).

As a poultry specialist, Ralph had no obligation to do on-campus teaching, but he taught poultry production classes for years and guest lectured in many other courses. His dedication to students was obvious at his retirement party. One of his former students, now the CEO of a large layer company, flew all the way from Hawaii to honor him. Another former student, **Dave Emery**, sent this message from Canada:

> Dr. Ernst: You were always the supreme example of a gifted extension professional and knowledgeable instructor. I always appreciated your patience and guidance. I can only imagine how many students have benefited from your logic and kind demeanor since I left Davis. Thank you so much for all you did for me.

Ralph and his wife **Pat** have been generous hosts in the Avian Sciences/Animal Science group, often opening their home to students, faculty and departmental friends.

Fellow poultry specialist **Francine Bradley** aptly identified Ralph's importance to many people and organizations when she said, "Ralph Ernst has been the glue that has held the Poultry Workgroup and Poultry CE together."

-Julie Kroger photo

The retiring CE poultry specialist was honored by the Pacific Egg and Poultry Association and many colleagues at a party on September 17. At the end of a hilarious skit, (left to right) Travis Kroger, Bob James and Marta Kroger (former members of California State Poultry Judging Team) presented Dr. Ernst with a plaque recognizing his service to California's poultry youth.

Hog Barn Up and Moves

With completion of the new Swine Center (featured in the Winter/ Spring 2001 issue of *Highlights*), the old Hog Barn—which held pigs all these years right in the middle of campus, despite occasional complaints from less agriculturally minded members of campus—up and moved a block or so west to a new site and a new job.

It was a momentous day when the big, two-story Craftsman-style barn, jacked up on wheels, moved cautiously down the lane from just south of Crocker Nuclear Laboratory to its new home. With some careful engineering, the big barn successfully made sharp turns and missed most of the trees along the way. Some branches were trimmed just ahead of the moving barn.

-Debbie Aldridge photo, UC Davis

Cooperative Extension aquaculture specialist **Fred Conte** snapped photos as the main barn and the rest of the building, disassembled into six pieces, were moved. About three dozen faculty and staff witnessed the historic move. Dr. Conte's photo album can be seen at http://animalscience.ucdavis.edu/events/news. Select the "Hog Barn Move" button. Also available on that site is a professionally-made video about the old barn's history.

Animal Science teaching and research activities related to swine, which had been carried out in the 90-year-old building since its construction, were relocated four years ago to a modern swine facility near the campus airport. That move ended the old barn's claim to being the oldest building on campus still used for its original purpose.

Staff Development & Professional Services expect to move into the old barn in its new life when it is finally refurbished during the 2005 academic year. Instead of a wide open barn, the reincarnation will house two classrooms for staff training, a resource library and office space.

Plans are to keep the Craftsman styling of the exterior relatively unchanged, reusing the old windows and keeping the shingles so it blends with its new neighbors to the north, the John Muir Institute (formerly a horse barn and then offices of Architects & Engineers) and the Silo (until 1959 the campus dairy), which long ago gave up storing grain to become part of the student union. The spirits of **Hubert Heitman**, **Elmer Hughes** and others will surely watch over the old Hog Barn.

Show Teams Provide Animal Experience

The Department of Animal Science is proud of its science-based curriculum for undergraduates but also provides opportunities for experiential learning and extracurricular activities. Departmental show teams allow students to gain animal experience, sometimes with extraordinary results.

The 2004 State Fair Grand Champion Percentage Boer Doe, California Sweet Pea, was bred and raised at the campus Goat Barn. Sweetpea's sire, a South African Boer, was donated by Smith Boer Goats of Talpa, Texas. Her dam was a Nubian donated by Sandy Hunter of Roseville, California. Half-blood does like Sweetpea form the foundation of the Animal Science meat goat herd. Show teams participate with goats as well as dairy cattle, beef cattle, sheep, horses and pigs.

Sweetpea and student **Jolene Berg** graced the program cover for Goat Day 2005, the department's annual field day for goat enthusiasts. This year's Goat Day, held January 15, was attended by 350 people.

-Wendy Hall, CowPhoto

Jolene Berg shows California Sweetpea to Percentage Boer Doe Championship.

In Memorium

Glen Lofgreen, 1910-2004

I have lived simply, I have laughed frequently and I have loved deeply. What more can I ask?"

Glen Pher Lofgreen was born September 28, 1919, in St. David, Arizona. He was the tenth of 19 children. Growing up on a small farm, he loved sports, music, homemade ice cream and cattle. Following high school graduation in 1937, he enrolled in animal husbandry at the University of Arizona. After Pearl Harbor was bombed in 1941, he enlisted in the military, but in 1942 he was given a medical discharge when he contracted rheumatic fever. Returning to St. David, Glen worked as a high school janitor and met June McRae. Their marriage in 1945 was blessed with seven children. When he died on October 14, 2004, he left 38 grandchildren and 21 great-grandchildren.

Glen received his bachelor's degree in animal husbandry at the University of Arizona in 1944. Shortly after their marriage, Glen and June moved to Ithaca, New York, for his graduate studies. Mentored by Jack Loosli, Glen investigated nitrogen metabolism and theoretical nitrogen requirements of sheep and cattle, receiving his master's and doctor's degrees at Cornell University in 1946 and 1948, respectively. Glen started his teaching and research career at Montana State University during the winter of 1948. Quickly realizing a preference for the warmer climes of his youth, he joined the faculty of the University of California, serving on the Davis campus from 1948 to 1968 and subsequently at the University's Desert Research and Extension Center in El Centro until he retired in 1977. Then, Glen joined New Mexico State University, serving for 13 years as superintendent of the newly inaugurated Clayton Livestock Research Center.

Throughout his career Glen was a prolific scientist, authoring or coauthoring more than 133 peer-reviewed manuscripts. He made substantial research contributions in the areas of energetics, protein and phosphorus nutrition, forage evaluation (particularly alfalfa) and nutritional management of shipping-stressed calves. Glen will be remembered by science and industry most for his innovative insights that led to development of the California Net Energy System, a more rational approach to feed energetics in cattle that ascribed two net energy values to each feedstuff, one for maintenance and one for gain. These observations transformed cattle energetics into a practical tool for evaluating and predicting growth that is employed in commercial feedlots around the world.

> ...he preferred to be thought of as "just a cowboy" and to be addressed as "Glen."

In addition to his research and teaching, Glen's diverse professional service included serving as president of the Western Section - American Society for Animal Science (WS-ASAS); president of ASAS (1972-1973); National Research Council (NRC) subcommittee on Beef Cattle Nutrition; NRC subcommittee on Horse Nutrition; editorial board of the Journal of Animal Science; Director-at-Large of ASAS and Board of Directors of the Council for Agricultural Science and Technology. He received the ASAS Feed Manufacturers Association Nutrition Research Award (1963), WS-ASAS Distinguished Service Award (1976) and the ASAS Animal Industry Service Award (1985).

In his personal life, Glen was a deeply religious and devoted family man, serving for many years as a Bishop of The Church of Jesus Christ of Latter-day Saints. Shying from accolades and formal titles, he preferred to be thought of as "just a cowboy" and to be addressed as "Glen."

Do you know any alumni or other friends of the department who don't receive this publication? Have you had a change of address? We'd like to correct errors and add new recipients to our mailing list if you can give us names and addresses.

Animal Science Web Site

Check out our Web site:
http://animalscience.ucdavis.edu/

...where you can read past issues of *Highlights*, tour our facilities, see what classes are offered and find out about our faculty and staff. At the bottom of the list of available *Highlights* issues, you can even reach a handy form for making a donation to support some general or specific aspect of our program.

Scholarships

Oscar Lang Award Funded

The Department of Animal Science has reached its goal of raising $10,000 needed to establish an endowment fund to support an annual award in memory of Dr. **Oskar Lang**. Income from the endowment will provide a stipend to the annual award recipient.

Trained as a veterinarian in Vienna, Austria, Oskar managed the department's laboratory animal colonies from 1962 to 1984. During this time, the colonies came to be recognized, campuswide and beyond, for the superior animal care and superb quality of animals and as a place where students could learn about laboratory animals and their care. Oskar also was a lecturer in Animal Science; his encyclopedic knowledge of many animal species, his courtly European manner and his warm personality made him an immensely popular teacher.

Memorial gifts received at the time of Oskar's death were used to establish the Oskar Lang Award, given annually to a departmental undergraduate or graduate student with special interests in laboratory animal management. After the memorial gifts were spent, the department continued to sponsor the Oskar Lang award, in recent years through the generosity of **Bob Ramus** of Dean's Animal Feeds. Contributions by Dean's Animal Feeds were arranged by **Sandra Weisker**, the current manager of the Animal Science lab animal colonies.

Oskar's teaching and research activities in laboratory animal science were continued by his successor, **Kathy Bangs**, and subsequently by Sandra Weisker, the manager since 1990. With demand for laboratory animal models to support research in other species, laboratory animal science continues to grow, as does the number of students interested in the field. The teaching program that Oskar started now includes both formal courses and hands-on internships with graduates frequently accepting rewarding positions as colony managers in private industry.

In 2000, Oskar's widow and son, **Lillian Lang Carter** and **Andrew Lang**, proposed to make annual gifts to support the annual stipend, with **Dean's Animal Feeds**, and to establish a fund that ultimately would be endowed to provide annual earnings for permanent funding of the award. In addition to Lillian's and Andrew's annual gifts, others were received in response to an earlier *Highlights* article that announced the fund-raising effort, including a major gift from Kathy Bangs, who now works as a senior research scientist in private industry. She stated, "The Department of Animal Science has many fond memories for me, both as a student and as a former employee. I want to help support the department that enabled me to have a career as challenging and diverse as I have had."

Her gift put the fund-raising campaign over the top and allowed the department to establish an interest-earning endowment.

The Department of Animal Science and Oskar Lang's family thank donors whose gifts ensured the permanence of the Oskar Lang Award through establishment of an endowment. Future gifts to the fund will be used to increase the endowment fund's principal, which in turn will increase the annual earnings and award stipend.

With significant numbers of undergraduate Animal Science students specializing in laboratory animal science, applying husbandry and management skills, the Oskar Lang Award continues to increase in prominence.

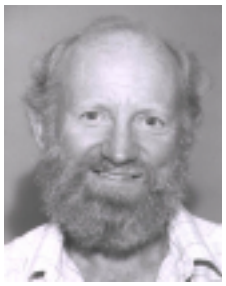
This former Lang recipient attributes his success to the training he received at the Animal Science Small Animal Colony.

Alan Ekstrand was the 2002 recipient of the Lang Award. He worked at the Animal Science Small Animal colony for four years after being introduced to laboratory animals in an ANS 49 class taught by the colony's manager, Sandra Weisker. There, he managed the teaching animals, a transgenic mouse colony, the rat and rabbit rooms and a mouse model for a human orthopedic disorder. To further his training, Alan enrolled in the Laboratory Animal Management internship. These experiences and his mastery of them made Alan an obvious choice for the Oskar Lang award.

Alan's current position is with Environmental Health and Safety at UC Davis, where he is staff representative to the Institutional Animal Care and Use Committee. He also inspects animal facilities and laboratory areas, reviews animal care protocols, develops programs for the UC Davis animal care program and works with regulatory and accrediting organizations to ensure that UC Davis complies with current laws and regulations.

This former Lang recipient attributes his success in obtaining the position to the training he received as an undergraduate at the Animal Science Small Animal Colony as well as to Sandra's courses in animal handling, husbandry, laws and regulations and facility management. Several other students who also were active in the running of the Small Animal Colony and were recipients of the Oskar Lang Memorial Award have also found rewarding positions in laboratory animal care.

David W. Robinson Award for International Agriculture Students



California's importance in the global economy has long been recognized, and animal agriculture contributes much to this prominence. Moreover, the cultural diversity of California and the UC Davis campus supports broad appreciation for people and their welfare throughout the world. In this spirit, and in memory of a beloved faculty member, the Department of Animal Science has initiated fundraising efforts to establish a student award in international agriculture to honor the memory of Dr. **David "Dave" Robinson**.

Dave Robinson was a member of the Animal Science faculty from 1968 until his untimely death in 1985. Born in England, he spent much of his first nine years in Spain and Morocco with his missionary parents. As a graduate student at the University of Nottingham, he was awarded a travel scholarship to visit research institutions in several countries. These early experiences no doubt contributed to his lifelong interest in travel and in people from other cultures.

At UC Davis, Dave was the first program director of the Small Ruminant Program, the first of the Collaborative Research Support Programs authorized by the U.S. Congress under the 1975 Famine Prevention and Freedom From Hunger Act. He developed a new kind of international agriculture based on collaborations between U.S. and host country scientists. The mechanisms established under his leadership provided a model for future international aid programs that contributed not only to more effective use of funds than traditional programs but also increased the probability that the research would continue when U.S. involvement ended.

Memorial gifts of almost $4,000 were received by the Department of Animal Science at the time of Dave's death. The funds were placed in an interest-bearing account with income over the years used to support student activities. The department now plans to add to the account as possible, and when a goal of $10,000 is reached, to establish an endowment fund to support a new student award in Dave's memory. This award, aimed at offsetting educational expenses, will be given to a full-time undergraduate or graduate student in the Department of Animal Science who has demonstrated by his or her activities and achievements a genuine interest in a career in international agriculture. (Erika Scharfen's article on page 7 reports one type of international experience that provided her with valuable agricultural career training and expertise.)

Gifts to the fund should be sent to the Department of Animal Science. For convenience, donors may use the insert and envelope included with this newsletter. Progress toward the goal of establishing the endowment in memory of Professor David W. Robinson will be reported in future issues of *Highlights*.

Chair's Message

Continued from p. 1

and friends who helped to build our department's excellence. I hope that you enjoy reading about two of our recent graduates who credit their career choices to undergraduate opportunities and experiences in our department.

We appreciate the alumni and friends who have come forward to express their support and help us maintain strong programs to serve our students and stakeholders. If ever we can help you, please call upon us. On behalf of the entire Department of Animal Science, may 2005 bring happiness to you and renewed stability to the world.

Chicken Genome

Continued from p. 1

growth, were correctly represented in the assembled sequence.

The chicken genome, the first to be sequenced from any species of livestock or bird, has already yielded rich comparisons with the genomes of humans, mice, rats and dogs. The chicken genome is only a third as large as mammalian genomes. Similarities and differences will help scientists understand how different types of DNA sequences function.

DNA for the first chicken genome sequence came from a female Red Jungle Fowl from the inbred UCD 001 line developed in the late 1950s at UC Davis by **Hans Abplanalp**, Professor Emeritus of Avian Sciences. The Red Jungle Fowl is the ancestor of all domestic chickens. During the 1990s, UCD 001 birds were used to create genomic resources that were essential when methods became available to sequence entire genomes. This illustrates how conservation of avian genetic stocks can support unforeseen research advances for this important agricultural species and research model. The Department of Avian Sciences, now Animal Science, has maintained endangered avian genetic stocks as living collections, since avian eggs and embryos do not survive freezing and thawing as is possible with mammals. The department established the Avian Genetic Stocks Conservation Fund to assist in this endeavor. Contributions may be made using the enclosed insert and envelope.

Goat Facility Work Leads Erika Scharfen to Study in France

One student's adventure in international agriculture

I definitely didn't grow up thinking I'd want to spend my life working with goats, having been exposed only to the occasional pygmy goats and sway-backed Nubians found in petting zoos. Yet I certainly want to do that now, and I have been hard at it for the past five years… so what changed?

I first began working at the Goat Facility as a freshman in Animal Science with less than a quarter of study under my belt. The animals themselves quickly won me over; it was here that I first made the acquaintance of the angular and stylish dairy goat. It was the people, however, who sold me on the idea of working with goats. The then newly arrived facility manager **Jan Carlson** encouraged my emerging interest. In addition to working as a student milker and getting in up to my elbows (literally) during kidding season, I found myself among the students on the UC Davis Goat Show team, tagging along on visits to local breeders and volunteering during industry training sessions in animal evaluation and judging. Thus developed my appreciation for both the animals and the industry, and I found myself envisioning ways of raising dairy goats as a career.

After four years of working almost daily at the Goat Barn, and having taken all available Animal Science and Food Science courses in dairy processing and milk chemistry, I decided to pursue cheese-making. With that as my goal, I chose to study the art of cheese-making in France. With the encouragement and assistance of some of the most successful goat cheese-makers in California, I contacted the international work exchange program Agriventure, which put me in touch with its French equivalent, SESAME, which found me a host site with a farmstead goat cheese-maker and helped me through the process of applying for a work visa.

I spent one year living in the rural village of La Peyratte in western France. The farm's primary source of income is its goat cheese, winner of multiple medals, including gold, in national competitions. Behind the success of this cheese are the skill and craftsmanship of Maryline Guilloteau and the rich milk of her herd of Poitevine goats. I became integrated into farm life and the community surprisingly fast, and the daily routine of twice a day milking and cheese-making was labor intensive but fulfilling. While visiting several neighboring goat dairies, I saw a spectrum from hand-milked animals kept on pasture to vast barns filled with goats with automated rotating parlors. The farm in La Peyratte fell in the middle, with animals pastured during the day but housed inside overnight. Surprisingly, it uses the same milking system I'd learned at Davis, which made me feel at home almost immediately. As my comfort with the language and culture increased, I found myself exploring farther afield, talking to cheese-makers wherever I traveled and always tasting new and more complex cheeses, searching for inspiration. I even had the opportunity to attend the International Cheese and Dairy Products Exposition held in Paris where I was introduced to some of the top producers and sellers in the nation.

After three weeks without customers being able to detect that the head cheese-maker was out, I [knew] I had truly found my calling.

Ten months into my stay, I took the reins of the entire cheese-making operation for three weeks while Maryline left the country to visit friends in Quebec. The responsibility was daunting, especially after having spent the last ten months learning how complex and delicate cheese-making can be. After three weeks without customers being able to detect that the head cheese-maker was out, I felt the relief and satisfaction of knowing that I had truly found my calling.

I have now returned from France and am now enrolled in the Master's degree program in Animal Biology (the new name for the Animal Science Master's program) at UC Davis, where I am studying dietary manipulation of milkfat in goats and the effects on cheese quality. The next step will be to start my own goat dairy and cheese plant!

-Erika Scharfen photo, Animal Science

Erika Scharfen's affection for goats, learned while working at the UC Davis Goat Facility, led to a year's study of cheese-making in France.

Bio-bubbles

Continued from p. 1

in an environmentally sustainable system. In response, the department recruited as a Cooperative Extension specialist an agricultural engineer who has established a research program to address air quality issues confronting dairy producers and feedlot managers."

What prompted Dr. Mitloehner's unusual research project is concern over air quality in the San Joaquin Valley, which ranks among the worst in the country. The valley has a high concentration of dairy farms that add dust and air emissions to the atmosphere. California has about 1.6 million cows producing milk and a similar number of dry cows and heifers. These animals are blamed for much of the bad air in places like the San Joaquin Valley, but no one knows exactly how much ammonia, fine particulate dust and volatile organic compounds can be blamed on a cow.

Good scientific data upon which to base governmental regulations are hard to find. In 1997, the San Joaquin Valley Air Pollution Control District used a flawed value to create an emissions limit for volatile gases produced by cows. Volatile organic compounds are precursors in the formation of ozone, the pollutant that most plagues Valley air. Dr. Mitloehner and others tracked down the origin of the mistake. A 1938 study on the nutritional physiology of ruminants determined that a mature cow emits 160 pounds of methane a year. Then in 1978, a scientist misquoted the number as the total organic gases produced, and other researchers perpetuated the error by citing that paper. To add to the confusion, methane is not reactive, although it is an organic gas (and doesn't form ozone).

"The emission factor that determines dairy emissions today is derived from a study that is not only critically outdated but that did not measure volatile organic compounds at all," Mitloehner says. "Nonetheless, this is how air-quality regulators are determining who requires a permit until better data are available." This situation illustrates how detailed data about the dairy industry's role in air quality are badly needed to give the industry and state agencies current information for regulatory decisions.

Mitloehner's $600,000 study is funded by the State Water Resources Control Board and Merced County, with additional matching funds from UC Davis.

His team of graduate students and staff researchers is investigating several methods to reduce dust, ammonia and volatile organic compounds. Rice straw bedding, for instance, may reduce ammonia emissions by mechanically separating urine from feces. It also keeps livestock pens drier in winter and reduces dust in summer, meanwhile creating a new use for an agricultural waste product.

Dr. Mitloehner knows dairy air. He studied ways to reduce stockyard emissions in Texas before becoming a UC Davis Cooperative Extension specialist in 2002. Last spring, he worked with more than 700 dairy producers in air-quality workshops throughout the San Joaquin Valley, educating them on air quality issues, helping them conduct on-farm assessments and walking them through the newly mandated permitting process. This educational effort is part of the California Dairy Quality Assurance Program, a collaborative program that includes industry, state regulators, environmental groups and the University of California. The research ongoing in the Department of Animal Science should yield solid data for use in future regulatory decisions.

-Wendy Jackson photo, Animal Science

Andrea Schnitz, graduate student, sprays urease inhibitor to the pen surface, a once-a-week treatments to block the reaction of urea from the urine mixing with urease in the feces. This mixing contributes to ammonia emissions.

Bronze Sales to Benefit Animal Science Cole Facility/Horse Barn

"The Jack," above, a bronze sculture of Action Jackson, is available for purchase to fund Animal Science facilities.

Sculptor Trent Meyer, below, left, shows the bronze to its model while his daughter Eliana enjoys a ride.

-Debbie Aldridge photos, UC Davis

What do you get when you combine a little girl, an artistic dad and a donkey with a sweet tooth? In this department, the result is a quarter-scale bronze bust, entitled "The Jack," created to raise funds to improve animal facilities.

For the past few years, **Eliana Meyer**, now 6 years old, has delighted in visiting a prized donkey named **Action Jackson** that belongs to the breeding herd in Animal Science where Eliana's mom, **Deanne Meyer**, is the Cooperative Extension waste management specialist. Nearly every weekend, Eliana brings Action Jackson a fistful of carrots and StarBurst candies to spice up his diet. (Warning: Those sweets are Action Jackson's limit!)

Action Jackson is on loan to the department by a private donor and stands at stud in the Animal Science Horse Barn. Over the past eight years he's bred 134 mares — more than any of the stallions at the barn — siring many mules that have gone on to excel both in the show ring and on the racetrack.

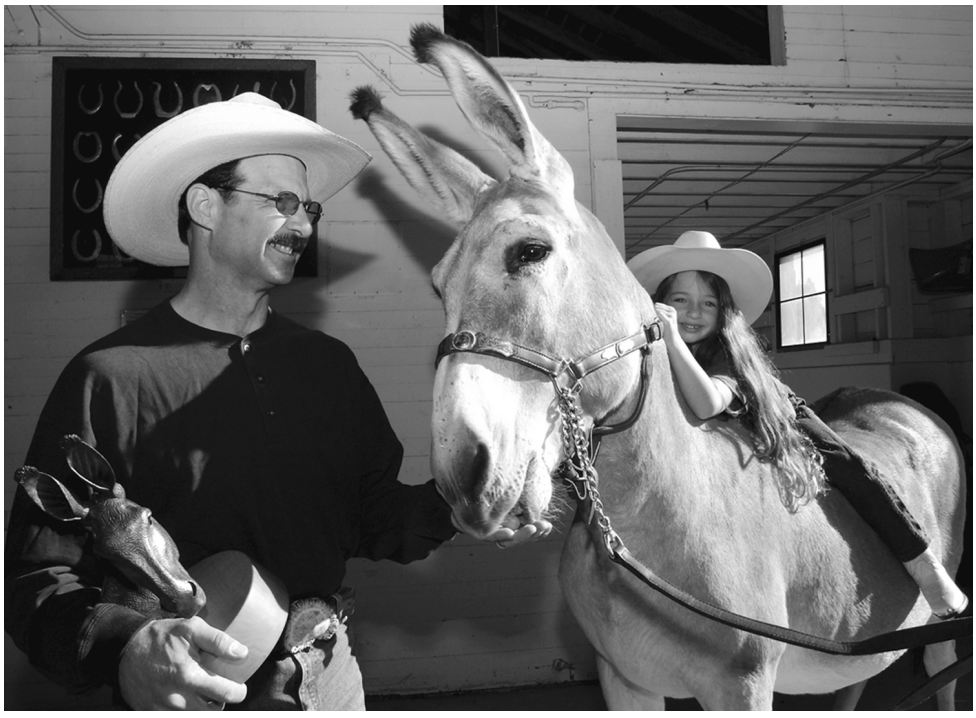
When Eliana's dad, **Trent Meyer**, an accomplished bronze sculptor, began to toy with the idea of creating a sculpture to be used as a department fund-raiser, Eliana was quick to suggest her old friend Action Jackson as the perfect subject. Trent decided to cast a signed, limited edition of 50 bronze statues.

Proceeds from the sale of Action Jackson's bronze likeness, at $1500 each, will be used to create a new and more welcoming public entrance to the Cole Facility, an Animal Science facility used to support departmental teaching, research and outreach. This area, which includes intensive research facilities for both large animals and laboratory species, the Meat Lab and the Horse Barn, is a popular destination for campus visitors.

Plans include developing an area where visitors can relax, perhaps even picnic, under a large oak tree in the southwest corner. An ultimate goal is to connect the Cole Facility with the Arboretum, which will immensely increase public access and promote education on agricultural, research and teaching animals.

Anyone interested in learning more about or purchasing one of "The Jack" bronzes can contact Dan Sehnert, Animal Facilities Coordinator, at (530) 752-1256 or djsehnert@ucdavis.edu.

-Based on a story by Pat Bailey, UC Davis News Service



Notable Notes

Joy Mench received the Poultry Welfare Research Award from the Poultry Science Association (PSA) at their 2004 awards banquet in St. Louis. Dr. Mench is an acknowledged national leader in teaching, research and policy concerning welfare of agricultural animals. She is the sole non-veterinarian to sit on the Council for Assessment and Accreditation of Laboratory Animal Care, the national oversight group for animals used in teaching, research and outreach.

Dana Van Liew, lecturer in the Department of Animal Science and manager of the Sheep Barn, received a College of Agricultural and Environmental Sciences Award of Distinction last October. He received the award as "Outstanding Staff." Dana has been the dedicated coach of the intercollegiate Livestock Judging Team for more than 20 years. He is known for encouraging high school students to attend UC Davis. He advises and attends numerous high school and collegiate agricultural field days and organizes and attends judging contests throughout California.

John Eadie received the Dennis G. Raveling Award at the California Wildlife Convention in August 2004. This award is given to an individual who has made vital contributions to waterfowl research. Dr. Eadie holds a joint appointment in Animal Science and in Wildlife, Fisheries and Conservation Biology, where he holds the Dennis G. Raveling Endowed Professorship.

At the October 2004 meeting of the Western Regional Aquaculture Center (WRAC/USDA) in Portland, Oregon, **Fred Conte** and **Serge Doroshov** received awards for their work with outreach and sturgeon, respectively. Dr. Conte has had a leading role in WRAC since its inception, working as chair and a leading member of the Extension Committee and participating in research projects, especially in California, working with the California Aquaculture Association. For the past ten years, Dr. Doroshov has chaired a workgroup on sturgeon broodstock development and worked with scientists from California, Idaho, Oregon, Montana and Washington. The USDA awards were made ".. for outstanding contributions to the growth and development of aquaculture in the United States."

James D. Murray, an Animal Science faculty member, and **Albert G. Medvitz,** the chair of our departmental Development Board, were elected fellows of the American Association for the Advancement of Science (AAAS) in September 2004. They were among the 308 new members that the AAAS Council elected who will be recognized for their contributions to science at the Fellows Forum to be held on February 19, 2005, during the AAAS Annual Meeting in Washington, D.C.

At the World Poultry Congress in Istanbul, **Francine Bradley** was re-elected to her third four-year term as Treasurer of the World's Poultry Science Association (WPSA). WPSA has more than 6,400 members in 80 branches around the world.

HIGHLIGHTS

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