

Department of Animal Science

HIGHLIGHTS

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

Chair's Message



Gary B. Anderson

We are happy to send *Highlights* to update you on the people, programs and activities of the UC Davis Department of Animal Science. The year has been one of high anxiety as we dealt with enormous budget cuts that threatened our research and outreach programs. In the past two years, funds to the Agricultural Experiment Station were cut 20% and to Cooperative Extension 30%. Consistent with the campus philosophy for surviving budget cuts, we minimized personal hardships created by layoffs, used reserves to preserve top-priority research and outreach programs and shifted expenditures to non-state sources (e.g., financial gifts from alumni and friends). We have been unable to replace faculty as they retire, and our remaining faculty have found themselves needing to close ranks to deliver the high-quality education our students expect and deserve, to conduct research that will keep California animal agriculture at the forefront and to sustain the principle of outreach to our

Continued, Chair, p. 6

Animal Science Faculty Recognized for Excellence Calvert Joins Animal Science Distinguished Teacher List



Distinguished Teaching Award recipients: Professors Ed DePeters (1998), Tom Adams (2000), Gary Anderson (1992), Chris Calvert (2003), Tom Famula (1999) and Anita Oberbauer (2002). Photographer: Debbie Aldridge.

Five past Animal Science recipients of the campus Distinguished Teaching Award attended a dinner in honor of the most recent awardee, **Chris Calvert**. No other department can boast five of these awards to its faculty in a period of six years. These awards reflect the high value that Animal Science places on students and teaching.

Oltjen Receives ASAS Extension Award

Dr. **James Oltjen**, Cooperative Extension specialist, received the American Society of Animal Science Extension (ASAS) Award for 2003. The award, sponsored by Pfizer Animal Health, was presented to Jim at the ASAS annual meeting in Phoenix. Jim is an internationally recognized authority on systems analysis for animal production. He is a leader in applying mathematical models and computer techniques on farms and ranches. He stresses the need to integrate disciplinary knowledge, economic considerations, and practical experience into research and extension programs. His efforts are in animal enterprise management, natural resource monitoring

Continued, Oltjen, p. 6

Gall Recognized as Founder

At the 21st anniversary meeting of the International Association for Genetics in Aquaculture (IAGA) in Chile in November, 2003, Dr. **Graham A.E. Gall**, professor emeritus in the Department of Animal Science, was recognized as the organization's founding father and one of its most active members. In 1985, while organizing an aquaculture symposium at UC Davis, Graham drafted a simple constitution for an organization to ensure the symposium would continue into the future and gave the group its current name. Those in attendance (about 125) accepted the draft, and IAGA was formed. Graham was subsequently elected secretary/treasurer, a position he held until 2000.

Faculty Recognition

Genetics Symposium Honors Professor Abbott

The Ursula K. Abbott Symposium on Developmental Genetics and Teratology was held on February 20, 2004, at the Walter A. Buehler Alumni and Visitors Center at UC Davis. The College of Agricultural and Environmental Sciences and the Department of Animal Science hosted the symposium honoring Professor Emerita Abbott. Presentations given by an internationally recognized panel of speakers related to research accomplishments from Dr. Abbott's distinguished career in avian sciences at UC Davis. Several of the speakers were her students and others continue to have active collaborations with her.

Gifts to help support genetic lines of birds (see p. 3) may be made to the

Avian Genetic Fund in the Department of Animal Science.



Professor Emerita Abbott enjoyed visiting with Roger Sawyer (left), her first postdoctoral researcher many years ago, now at University of South Carolina, and Paul Goetinck (right), from Harvard University, her first graduate student, at a conference held in her honor.

Meyer's Work with Dairy Regulations Recognized by EPA

Dr. Deanne Meyer from our department and Dr. Mike Payne, a colleague in the Department of Environmental Toxicology, were selected from more than 150 nominees and awarded the Environmental Protection Agency's 2004 Environmental Award for Outstanding Achievement for Region IX for their work to create and maintain the California Dairy Quality Assurance Program (CDQAP). Their program brings together a diverse group of 16 government, university, industry and environmental interests. Dairies are regulated by a complex and overlapping array of federal, state and regional/local requirements that are constantly evolving.

The effort seeks to help California dairy producers meet environmental requirements relating to manure management. Drs. Meyer and Payne work with members of the partnership to develop educational programs designed to achieve compliance. Dairy producers can participate in

this voluntary program, which includes the Environmental Stewardship Short Course, work with their creamery field staff or trade association staff to develop an "environmental stewardship farm management plan" and then go through an inde-

pendent on-site evaluation by a third party. Dairies now have a "one-stop shop" where they can go to find out what they need to do and get assistance in doing it. For more information about CDQAP environmental stewardship, call 866-662-3727.



Cooperative Extension Specialist Deanne Meyer samples a dairy treatment pond.

Research

DePeters Feeds Cows Additive to Reduce Saturated Fat in Milk

Animal Science's Professor Ed DePeters, working with Moshe Rosenberg, a Cooperative Extension specialist in the Department of Food Science and Technology, developed a highly palatable diet for milk cows that can block a significant amount of cholesterol-elevating saturated fat from their milk. Using a heat-treated supplement of whey protein and oil, the two faculty members thwarted a bovine digestive twist that takes feed high in unsaturated fat and transforms it into the saturated kind in the cow's milk. The food supplement prevented that conversion by shielding the unsaturated fats from the action of microorganisms and protozoa in the cow's largest stomach, the rumen. High levels of saturated fats in human diet have been linked to elevation of cholesterol and to heart disease.

The two scientists ran multiple 21-day tests involving more than 1,500 milk samples for a year. During the tests, researchers recorded as much as an eight-fold increase in the levels of unsaturated fats in cows' milk. The formula, submitted for a US Patent, does not require approval by the U.S. Food and Drug Administration because the processes and food used are already permitted. Pilot projects will be followed by larger-scale milk and feed production.

"This is a technology that can be used commercially on any dairy in the U.S.," said DePeters, noting that it was developed without genetic modifications and using ingredients safe for consumers. The two scientists hope their findings will lead to an even healthier glass of milk within the next year.

Delany Decries Research Poultry Losses

Professor Mary Delany, poultry geneticist, reported in *Science* in June 2003 that poultry genetics is suffering from a serious decline of research stocks on university campuses. Understanding poultry genetics has not only led to plumper, tastier chickens and turkeys but also has shed light on human health problems ranging from birth defects to cancer. The nation's vast poultry-producing industry puts millions of turkeys on Thanksgiving tables, but the birds that make such bounty possible — the flocks of "research turkeys" and other fowl studied at universities — are not in such ample supply.

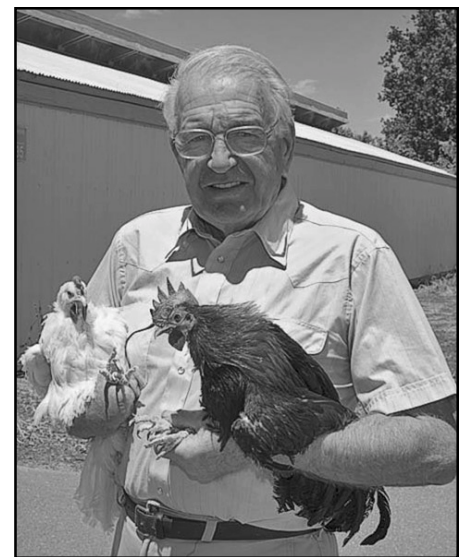
These research birds, bred for unique genes for color, deformities and disease resistance, are threatened with extinction by universities seeking to save money. Without them, researchers and farmers are likely to have far less information about everything from illnesses to breeding. "Once they're gone, they're gone," said Professor Delany, who is working to save the birds. "They are genetic treasures," she said, "representing decades worth of research."

The *Science* article summarized data from the Avian Genetic Resources Task Force survey (a 1999 University of California publication) that documented the elimination of more than 238 poultry research stocks from 1984 to 1998 — a loss of 40% of U.S. stocks and more than 60% of the Canadian stocks. The eliminations included entire collections of birds, as well as individual stocks within collections. Typically, there was little warning to the U.S. research community that the lines were being eliminated.

Some of the loss is driven by changing trends in science. Agriculture used to get more attention, but

in this era of biotechnology, the care and feeding of noisy, hungry, messy birds have dropped as a priority for university administrators, say poultry geneticists. Funding is re-allocated to genomics, molecular biology and other high-tech fields. However, since information on the chicken genome is now available, these collections including stocks with very diverse phenotypes are now even more valuable because they can contribute to the understanding of how genotypes contribute to phenotypes.

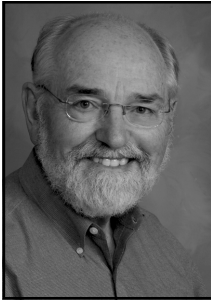
The Department of Animal Science holds one of the most unique collections in the US. Its chicken stocks include highly inbred lines (such as UCD 001 and UCD 003 shown in the photo), chromosome-variant lines and developmental and physiologic mutant lines. Other stocks include Japanese quail, zebra finch and two small parrot colonies.



Hans Abplanalp, Professor Emeritus in Avian Sciences, holds chickens from two inbred lines he established in the 1950s: UCD 001 (Red Jungle Fowl, the progenitor species for the domesticated breeds and the genome recently sequenced by NIH) and UCD 003 (Single Comb White Leghorn). These two lines were crossed to create the population used worldwide to map the chicken genome.

New Faculty

Dr. Jerry L. Hedrick recently joined the faculty of the Department of Animal Science as a Research Professor of Biochemistry, but he's not new to the university. With



some sabbatical breaks in England and Japan, he has been a UC Davis faculty member for 39 years. He received his B.S. in chemistry from Iowa State University and his Ph.D. from University of Wisconsin. He was chair of the Department of Biochemistry and Biophysics at UC Davis from 1982 to 1984 and Associate Dean of Graduate Studies from 1998 to 2001, heavily involved in Academic Senate matters. He was on Graduate Council, the faculty committee that oversees all graduate education at UC Davis, for a total of 13 years and chair of the Council three times. He received the UC Davis Academic Senate's first annual Distinguished Graduate Mentoring award in 2002.

Jerry's academic interests in animal biology include teaching biochemistry, both laboratory and lecture courses, and a specialty course for graduate students in the biology of animal fertilization. His research in animal biochemistry focuses on the molecular mechanisms of the fertilization process, particularly the proteins and glycoproteins on egg and sperm surfaces. In Animal Science, he will continue to pursue his research interests in the fertilization process with studies on fish, frogs, mice and pigs. His research strategies include some trendy tactics of animal science including proteomics, functional genomics and creation of transgenic animals. His teaching activities will focus on graduate students and postdoctoral

scholars. He is currently program director of a cross campus training grant from the National Institutes of Health (fertilization and early development) involving 11 faculty (3 in Animal Science), three graduate student trainees and two postdoctoral trainees. He is also program director of an NIH career development award for 12 postdoctoral scholars whose career goals are to be faculty at universities and colleges. He and his wife Karel, a former Animal Science staff member and Dairy Goat Teaching and Research Facility supervisor, are life members of the American Dairy Goat Association.

Dr. Kenji Murata recently came to the department as assistant research biochemist from the Department of Molecular and Cellular Biology. Kenji graduated with a B.S. in biology from



Toho University in Chiba, Japan, before going to Sophia University in Tokyo for his Ph.D. He worked in a nursing school in Saitama, Japan, and as a research fellow at Sophia University, then came to the Lawrence Berkeley National Laboratory in 1996 and later to the California Pacific Medical Center in San Francisco. He arrived at UC Davis to work with Dr. Hedrick in 1999.

Kenji is interested in the cellular and molecular mechanisms of sperm-egg interaction during the fertilization process, especially the egg envelope glycoproteins surrounding the oocyte called the zona pellucida (chorion in the fish), and the enzymes modifying its structure and functions as well as egg lectins in the egg cortical granules of the fish. His

long-term goal is to determine the maternal genes and gene products involved in sperm-egg interactions during fertilization. His research is funded by the USDA.

Dr. LeAnn Lindsay also recently joined the department as an assistant research biochemist. A graduate of California State Polytechnic Institute at San Luis Obispo (B.S.



in Biochemistry, 1983) with a year of undergraduate research at the Edwards Air Force Base Rocket Propulsion Laboratory, she earned a Ph.D. in Biochemistry at UC Davis in 1988 with Dr. Hedrick, studying sperm-egg interactions. She completed a postdoctoral fellowship and worked as a research biochemist with Wally Clark, former Animal Science professor, at the Bodega Marine Laboratory (BML), studying fertilization in shrimp. She then did a postdoc at UC San Francisco at the Hormone Research Institute, studying Type I diabetes. In 1995, she returned to the UC Davis campus as assistant research biochemist in the Section of Molecular & Cellular Biology (MCB) at BML, returning to studying fertilization. Since 1997 she has been teaching the MCB biochemistry laboratory course.

LeAnn's research focuses on the structure and function of the egg envelope, a glycoprotein coat that surrounds all animal eggs and plays crucial roles during fertilization and early development. She is also interested in egg and oviduct proteases that modify specific egg envelope components to regulate sperm interactions. Her research is funded by NSF and NIH.

Memorial Scholarships

Ian Garnett Award Funded

The Ian Garnett Award has been established by the Department of Animal Science in memory of a beloved faculty member who passed away unexpectedly in 2001. Ian joined the Animal Science faculty in 1990 with the charge to develop a professional master's degree program in animal management. He also accepted a heavy load of undergraduate teaching and advising. In 1999 he was named the Outstanding Faculty Advisor in the College of Agricultural and Environmental Sciences. Memorial gifts totaled more than \$10,000, the minimum required to establish an interest-bearing endowment that will be used to fund this annual award.

In agreement with wishes of Ian's family, the Ian Garnett Award will be made to an undergraduate or graduate student with interests in agricultural enterprise management and plans to enter a career in agribusiness. The stipend associated with the award may be used to help defray the recipient's educational expenses. Family and friends of Ian attended the spring Animal Science awards barbecue to witness the presentation of the first award. The Department of Animal Science acknowledges and thanks the many former students, friends, and family whose memorial gifts made it possible to establish this annual award and memorialize a faculty member who contributed so much to the Department of Animal Science.

Additional gifts received will be added to the endowment, thus increasing annual earnings and the amount of the award.

Doc Johnson Fellowship Established

The Doc Johnson fellowship was established as a result of generous donations from Robert and Beverly Gilbert and the A.L. Gilbert Company. Some people remember Doc (Richard) Johnson's trademark buff-colored cowboy hat and indomitable presence. Some remember him sitting near the front center at presentations and always having questions. Many remember friendliness and a great sense of humor.

Doc Johnson was an effective communicator with dairymen who purchased feed from Gilbert Feeds. He listened and worked with the dairy producers to solve their problems. He did not push magic pills, and dairy producers could count on him for straight talk.

Doc Johnson was active in the American Dairy Science Association and may have never missed an annual meeting. He was also a leader in the American Registry of Professional Animal Scientists and the California Animal Nutrition Conference. Both organizations were instrumental in providing sound nutrition and management information for use by private nutrition consultants and feed industry personnel. Doc Johnson set the industry standard for nutrition consultants. The fellowship was established to support a graduate student working in dairy nutrition and byproduct feeding. The first Doc Johnson fellowship was awarded to Mike Ballou, a nutrition Ph.D. student in Animal Science.

Frank G. Rue Memorial Award

The Frank G. Rue Memorial Award is given annually to an Animal Science student from an endowment established in the memory of Frank Rue. The generosity of the Rue family in establishing this endowment and providing annual gifts has provided many students with much needed financial assistance.

Frank Rue received his B.S. in Animal Husbandry at UC Berkeley in 1939, after studying at the University Farm in Davis. Though he was strongly encouraged by professors and peers to continue his studies, he chose instead to become a cattle rancher. Frank never regretted this decision. He ran cattle near Superior, California, and in surrounding states from 1946 onward. A well-known horseman, his working cowhorses won many titles at horse shows and rodeos throughout the western states. Recipients of the Frank G. Rue Memorial Award are students in an Animal Science-related major, have demonstrated leadership in extracurricular activities and show a continuing interest in livestock, particularly beef cattle.

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.

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.

Sainz Promotes Brazilian-US Ag Student Exchanges

Dr. Roberto Sainz has developed a partnership of UC Davis and Cornell University with several Brazilian universities to facilitate exchanges of students among all the partner institutions. With a four-year, \$203,764 grant from the US Department of Education and matching funds from the Brazilian government, the "Brazil-US Consortium in Sustainable Ruminant Livestock Production Systems" plans to send US students to Brazil and to receive Brazilian students in the US during the second half of 2004. Under the exchange agreement, students will spend one quarter or semester away and receive full credit for course and internship work done abroad. In addition, the program provides a travel allowance and a stipend for living expenses. The program is geared toward juniors and seniors and includes a Portuguese language training component for the US students and English for the Brazilians. Along with providing a valuable educational opportunity, the program aims to take full advantage of the benefits of exposure to a different culture, language and customs.

Chair

Continued from p. 1

state's citizenry. We have resisted closure of departmental animal facilities, a risky route taken during times of tight budgets by some other land-grant universities that since have found it impossible to restore the lost facilities. Instead, we reviewed operations at our animal facilities and, by reducing and shifting of expenditures to non-state sources, intend to keep them open for use by students, staff and faculty. We truly appreciate the many individuals who stepped forward with gifts to the department to help us

Meat Lab Offers New Programs and Products

The Animal Science Meat Science Lab, located across from Meyer Hall on the UC Davis campus, provides daily teaching, outreach and research activities in the department. Students may take a handful of classes and internships related to the meat industry including meat processing, USDA guidelines and food safety. The lab also provides a convenient and economical outlet for departmental food animals.

This year's Meat Judging Contest during the Ag Science Field Day, hosted by the Meat Lab, was a great success. More than 65 high school students competed in a variety of classes to determine who had the best eye for quality, yield and overall carcass composition. Though challenging and competitive, the contest was well received, and students left the Meat Lab with a better understanding of carcass composition.

The Meat Lab has seen a few additions in the past year, including the arrival of our new facility manager, **Matthew Livingston**, who brought fresh ideas and new recipes with him from the University of Illinois. A recently purchased smoke house will permit the lab to offer new products such as ham, bacon, summer sausage, snack sticks and beef jerky. Additional hours and new seasoned products have added to increased sales. Products are available for sale to the public on Thursdays and Fridays from 1:00 to 5:30 p.m.

emerge intact from the budget crisis. We also acknowledge the donors of gifts large and small to establish a new memorial fellowship for graduate students in dairy nutrition and a new memorial award for undergraduate and graduate students interested in agribusiness.

Despite the gloom of the past fiscal year, the Animal Science Department worked hard to maintain excellence of our academic programs. As recognition of how we value students, yet another member of the Animal Science faculty received this year's Distinguished Teaching Award, an unprecedented fifth recipient from one department in six years. Our Cooperative Extension faculty were honored for excellence in outreach, and our graduate students joined faculty as recipients of national and international awards for research. With only modest cuts to instruction and no further cuts forecast to research and outreach, we view the future with optimism. We are here to help. If ever we can assist you, please do not hesitate to ask.

Oltjen

Continued from p. 1

and modeling, and livestock quality assurance programs, with simultaneous computer decision aid development.

Jim holds a B.S. with honors in physics (1975) and an M.S. in animal science (1978) from Kansas State University. He received the Ph.D. in nutrition at UC Davis in 1983. After seven years on the faculty at Oklahoma State University, he returned to UC Davis as a specialist in Cooperative Extension in 1990. He has authored more than 100 limited distribution papers or abstracts, presented 19 national or international invited papers and published more than 65 refereed journal articles. He is a past president of the Western Section of the ASAS, chaired the national ASAS Extension Committee (1995) and acted as local chairman in charge of the highly successful Western Section ASAS meeting that was held at the University of California, Davis, in June 2000. He received the Western Section ASAS Extension Award in 1997.

In Memorium

Pran Nath Vohra 1919-2004

Pran Vohra was born in Gwalior, India. He attended the University of Punjab in Lahore, where he received a B.S. in 1940 and an M.S. in 1942, both in chemistry.



From 1942 to 1949, Pran was a research assistant at the University of Punjab and the Council of Scientific Industrial Research at Delhi. He came to the United States as an international trainee at Joseph E. Seagram and Sons, Inc. in Louisville, Kentucky, from 1949 to 1950. He attended Washington State College where he received a second M.S. in 1954. He received his Ph.D. in nutrition at UC Davis in 1958 and continued on as an assistant research nutritionist for a year afterwards.

Pran worked with a feed company in England for a year and was a poultry specialist at the US Agency for International Development office in Delhi for a year before being hired as a faculty member in 1962 by the Department of Poultry Husbandry at UC Davis.

Avian nutrition was Pran's chosen field of study. He studied amino acid and vitamin metabolism, protein requirements, the function of toxic components of feeds, mineral availability and the energy and nutritional values of many feedstuffs, using chickens, turkeys, game birds and Japanese quail.

At UC Davis Pran taught comparative nutrition of avian species, vitamin function in metabolism and livestock and poultry production in

developing countries. He gave numerous freshman seminars and mentored graduate students, many from other countries. He traveled extensively in Malaysia, Australia, Indonesia and India and spent four periods in China as a consultant for the US Feed Grains Council and the American Soybean Association. He retired in 1989 but remained active in the department.

After retirement Pran took trips on a glider and in a hot air balloon accompanied by Dr. Annie King from the department. He joined a campus program to learn to walk on hot coals and accomplished the walk twice. During faculty meetings, to keep awake, he would often sketch pictures of other faculty that were quite accomplished.

In 2001, Pran went to India to be with family. He died of heart failure in New Delhi in May of 2004.

Dr. Vohra was a member of the Poultry Science Association, World's Poultry Association, the Biochemical Society, American Society for Nutritional Sciences and Sigma Xi. In 1972 he received the American Feed Manufacturers Research Award. A conference room on third floor Meyer Hall is named for him. He, along with Professor Emeritus Howard Kratzer and the late Professor Emeritus Frank Ogasawara, established a scholarship in the Animal Science Department for graduate and undergraduate students in avian sciences. Contributions to the Kratzer, Ogasawara and Vohra Scholarship in Pran's name are welcome and may be made out to "Regents of UC" and sent to the Department of Animal Science, University of California, One Shields Avenue, Davis, CA 95616.

Wade C. Rollins 1912-2002

Wade Rollins was born in Jersey City, New Jersey, on February 12, 1912, and died November 15, 2002. He and his mother, who was of Native American



heritage, and his father, a postal service worker, moved to Los Angeles in 1926, where Wade attended Belmont High School. He did well academically and in track and field sports and, throughout much of his life, continued to run to maintain good physical condition.

Wade first attended Los Angeles City College, then transferred to UC Berkeley, where he received an A.B. degree in 1933 and an M.A. degree in 1935, both in mathematics. He was a social worker in Alameda County for two years, then left in July 1937 to volunteer in the International Brigade of the Loyalist Forces in the Spanish Civil War. On entering Spain from France via the underground he was briefly imprisoned in the Napoleonic fortress at Figueras by anarchist Spanish forces. He served as an artilleryman in the 14th Battery of the Brigade. His wry sense of humor was exemplified by his comment, "Thank God I'm here as a volunteer; I'd hate to be here because I had to be." Wade loved the Spanish people, learning their language and serving as official translator for his battery. On leaving Spain, he hiked over the Pyrenees in street shoes.

When Wade returned from Europe in January 1939, he was quite a celebrity with the Bay Area left wing

Continued, Rollins, p. 8

Cloned Calves Work Wins Top Award



Cindy Batchelder is delighted to receive the first-place award for her presentations at the International Embryo Transfer Society's meeting from the chair of the student paper competition, Dr. Curt Youngs, from Iowa State.

Cindy Batchelder, Physiology Ph.D. student working in the Department of Animal Science, received the first-place award for graduate student research at the 2004 Meeting of the International Embryo Transfer Society (IETS) held in Portland, Oregon. An abstract of Cindy's research was selected from approximately 50 submitted by graduate students from around the world. Her research was selected for presentation as both poster and oral presentations at the Portland meeting where her research out-competed all other presentations. Cindy presented results from her Ph.D. thesis designed to study the success with which different cell types can be used for cloning in cattle. One of Cindy's first cloned calves, Rosie, was featured in an earlier issue of *Highlights*.

Another former Physiology Ph.D. student working in Animal Science, Dr. Marcelo Bertolini, was recipient of the best-paper award at the 2002 IETS meeting held in Brazil. Having two students from our department receive this prestigious award reflects the high quality of graduate students and their research in Animal Science.

Rollins

Continued from p. 7

movement. He met his wife at a lecture he gave on the Lincoln Brigade of the Spanish Civil War, and they were married in 1941. He resumed graduate study at UC Berkeley in 1939 in mathematical statistics under Professor Jerzy Neyman, meanwhile also working as a dance instructor, reader in mathematics, social worker and claims agent for the US Employment Service. During the 1942 to 1945 war years, he worked as an electrician in the US Navy shipyards in Vallejo.

In 1945 Professor Neyman recommended him to Professor P.W. Gregory of the Animal Husbandry Department at UC Davis as a person well qualified to analyze animal breeding data. This period marked the beginning of the science of quantitative genetics, which depended heavily on statistical methodology. Wade came to Davis that

October, completed his Ph.D. in Genetics in 1948 and was hired as Instructor in Animal Husbandry in January 1949.

One early collaborative study involved analyses of the differences among cattle breeds and breed crosses at the Imperial Valley Field Station in their responses to high temperature stresses. Another was estimation of the heterotic effects of crossbreeding in beef cattle and development of breeding plans to use heterosis to improve productivity. His analyses of accumulated beef cattle data also led to important advances in knowledge of inbreeding effects, genetic variation in several production traits and inherited defects. He spent two sabbatic leaves at the Animal Breeding Research Organization in Edinburgh, first researching identical twinning in cattle and later focusing on genetically determined

muscular hypertrophy ("double muscling") in beef cattle, which he had studied at Davis but expanded to include the condition in European breeds. He became a leading expert on the topic.

Wade served on numerous senate, college and departmental committees. He retired in 1978 but continued to live in Davis a short distance from his office in Hart Hall. His well-known habit of rising early was accentuated during his retirement years, when he was typically in his office from 3:00 to 4:00 a.m. to midmorning.

In 1995, with failing eyesight, he moved to San Diego to be near his son where he lived until his passing.

Gifts may be sent to the Animal Science Memorial Fund, made out to UC Regents but sent to the department. This fund supports student activities.



L-R: Chad Aldridge, Joy Palutzian, Jen Arnall, Kim Stackhouse, Christina Brookshire, and Dana Van Liew, judging team coach, gather after successful competition at the Southwestern Stock Show in Fort Worth.

Animal Science Undergraduates: The Yearly Cycle

Members of the Cal Aggie Judging Team, along with students enrolled in other department courses and members of departmental clubs, administer and assist a number of workshops and outreach programs each year. These events run throughout the year, and their success relies upon the efforts and talents of our judging team and other undergraduates.

In the fall, students administer the department's Community College Judging Field Day (21 years in 2003). State Champion 4-H and FFA teams from the western states join the community college participants in the competition; teams from Chico State, Fresno State and Cal Poly San Luis Obispo also participate as a training exercise. Our students also prepare and provide classes of livestock for the Fall Classic in Medford, Oregon, and for the Chico State Community College Field Day. The fall events conclude with students making rings of livestock available for viewing all day the Friday preceding the Cow Palace Invitational Livestock Workshop. Since 1948, college students and their instructors have stopped by UC Davis to gear up for the Cow Palace competition.

The Agricultural Sciences Field Day is the focus event during winter quarter. Held at the department's Straloch Cattle Beef Facility, 200 to 300 FFA and 4-H members participate in the livestock judging competition. Our students are instrumental in making this event a success.

The Aggie Spring Classic Jackpot Show, held during spring quarter, is organized and hosted by departmental undergraduates. This year was a great success with 444 entries, up from the 300 last year. The jackpot show drew high schoolers from across California to the Woodland Fair grounds to compete for cash prizes with over 300 head of beef, sheep, swine and meat goats. The event provides enormous visibility for our department, college and campus. The Aggie Spring Classic is yet another example of departmental outreach to youth and the agricultural industries. The event is fully student-run with advice from coach Dana VanLiew. After this year's Aggie Classic, Dana commented, "Our undergraduates made us look good this weekend."

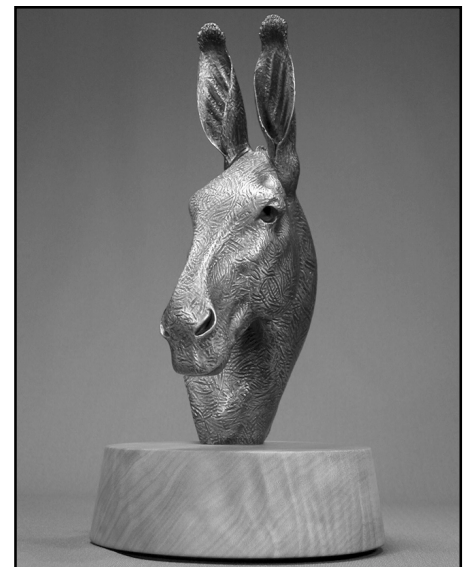
Spring and summer are also busy times for students, who are often asked to officiate at livestock exhibitions and county fair round robin showmanship competitions. Along with the organized on- and off-campus events mentioned above, students host a number of selection and showmanship workshops for individual youth groups. As the students return to campus each fall, the annual cycle begins again.

In addition to the workshops they help present all year, the Cal Aggie Livestock Judging team competes in many venues. This past winter the 2004 Team participated in three national events earning top ten team and individual awards at the Arizona National, National Western and Southwestern Exposition.

Bronze Action Jackson Sculptures Available

As a fundraiser for the Department of Animal Science, local sculptor Trent L. Meyer and his daughter, Eliana, collaborated on creating a quarter-scale bust of champion donkey Action Jackson, an award-winning jack that stands at stud at the Animal Science Horse Barn. A limited edition of 50 signed and numbered bronze sculptures, titled "The Jack," is offered for sale with all net proceeds to support Animal Science programs at risk from recent budget cuts.

The magnificent sculpture is available at an initial offering price of \$1500 through the department or the sculptor. Trent is financing this philanthropic undertaking with no outlay of funds from the university. For information, please contact Dan Sehnert (djsehnert@ucdavis.edu or 530-752-1256) of the Animal Science Department or Trent Meyer (trentmeyer@jps.net or 530-661-7476). We greatly appreciate Trent's generous donation of time and talent to benefit the department. Trent's wife, Dr. Deanne Meyer, is a Cooperative Extension specialist with Animal Science.



Notable Notes

Zeb Hogan, Ecology graduate student working with Bernie May in Animal Science and Peter Moyle in Wildlife, Fisheries and Conservation Biology, has received two grants from the National Geographic Society's Conservation Trust for a project to research and conserve Mekong giant fish in Cambodia. The critically endangered Mekong giant catfish *Pangasianodon gigas*, the endangered giant carp *Catlocarpio siamensis* and the river catfish *Pangasianodon hypophthalmus* are three of the largest freshwater fish in the world, measuring up to three meters in length and weighing 660 pounds (300 kilograms). Hogan purchases these species from fishermen and releases them alive into the Tonle Sap River. Prior to release, they are weighed, measured and tagged, and DNA is collected from *P. gigas* and *P. hypophthalmus*.

In the short term, purchasing and subsequently releasing captured wild fish decreases the probability of their extinction. The buy-and-release project also generates an appreciation for endangered species conservation in Cambodia. In the longer term, the tagging and genetics research will help to determine the migratory patterns, habitat use and exploitation

rates of *P. gigas* and *P. hypophthalmus*. This knowledge is critical to the development of a long-term conservation strategy for these and other important Mekong fish species. His research is summarized in *National Geographic* and *American Scientist*. Zeb's children's book about the plight of this fish and environmental degradation in southeast Asia was also released in November 2003.

Rebecca Fox, an Animal Behavior graduate student working with Dr. Jim Millam in the Animal Science Psittacine Research Project, was awarded a Phi Beta Kappa Graduate Fellowship for her research on novelty and fear in parrots. In one study, she presented a series of items to young orange-winged Amazons, apparently increasing the courage of the baby parrots, except for presentations of a few odd items such as a stuffed elephant that was just too frightening. She also compared tameness of baby parrots hand-raised by humans with those raised by their parents but handled by humans for 20 minutes a day after becoming cognitive at several weeks old. She found both groups similar, defying claims that these birds must be hand-fed to be tame.

HIGHLIGHTS

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