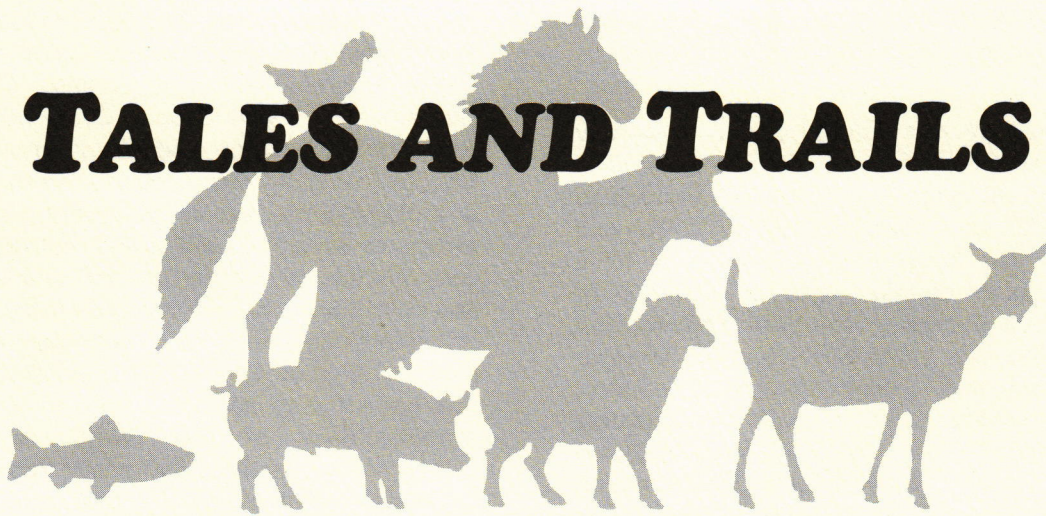


TALES AND TRAILS



DEPARTMENT OF ANIMAL SCIENCE UNIVERSITY OF CALIFORNIA, DAVIS, CA 95616-8521 (916) 752-1250

DNA ANALYSIS LABORATORY ESTABLISHED PCR technique expedites milk protein genotyping for selection and breeding

Dr. Juan Medrano of the Department of Animal Science has announced that the DNA Analysis Laboratory is now open for business. Under a licensing agreement with Cetus Corporation, a California-based biotechnology firm, DNA Analysis Laboratory will use the polymerase chain reaction (PCR) technique to genotype dairy cattle milk proteins.

Kappa-casein and beta-lactoglobulin are milk proteins which are important in cheese manufacturing. Two important genetic variants of these proteins have been described. Milk containing the BB type kappa-casein and beta-lactoglobulin yields 4% to 8% more cheese from the same quantity of milk. Until recently kappa-casein typing was a time consuming and expensive technique. Determination depended on the analysis of a milk sample. This limited direct analysis to the cow; bull information was determined indirectly from the milk of the dam and the bull's female offspring.

Using the PCR technique Dr. Medrano and Dr. Estuardo Aguilar-Cordova of the UC Davis School of Medicine, developed a method to type both bulls and cows by means of a blood sample (reported in Tales and Trails, Spring, 1990), or a semen sample in the case of a bull. The animal is genotyped at the DNA level. The

protein genotype is now readily available prior to any selection or breeding decisions.

Presently no premium is paid for cows with the BB genotype. However, several artificial insemination (A.I.) services, with an eye to the future, are actively typing their bulls. DNA Analysis Laboratory is typing the sires of 21st Century Genetics. According to Dr. Medrano, interest has not been limited to A.I. studs; independent producers are also interested in the service.

Dr. Medrano feels that "the impact of the PCR technique in animal production extends beyond merely milk protein genotyping. The technology has potential use in a number of areas. The technique has excellent potential for disease control." In fact, an important function of DNA Analysis Laboratory will be the development of new diagnostic methods.

DNA Analysis Laboratory is located in Meyer Hall on the campus. Dr. Medrano stressed that the laboratory is in full operation. Although collection and handling of blood or semen samples is fairly routine, a producer should contact the lab prior to collecting and submitting the samples. The phone number is 916/752-4509.♣

KEN ELLIS RETIRES AFTER 28 YEARS IN COOPERATIVE EXTENSION

Kenneth W. Ellis retired from the University of California Cooperative Extension on April 1, 1991 with 28 years of service. Ken first joined CE in 1963 as a livestock advisor in Tehama County. His subsequent assignments have covered such diverse roles as Director of Cooperative Extension for both Tehama and Fresno Counties, state-wide Program Director for Animal and Avian Sciences, Forestry, Wildlife, Marine Advisory and Vet Medicine administration; and North Central Regional Director for the Division of Agriculture and Natural Resources. At retirement, he had been an Extension Animal Scientist at UC Davis since 1988.



Retired Extension Animal Scientist Ken Ellis.

Born and raised on a livestock and grain farm in east central Illinois, Ken attended the University of Illinois where he majored in both Animal Science and Agricultural Economics. After graduation he worked for Kraft Foods in Indiana for seven years before migrating to California in 1963 with his new wife, Margaret.

Ken's warmest memories of that first assignment are of the close working relationships and friendships he developed with the ranchers in the area. "Unquestionably they taught me far more than they ever learned from me," he believes. Many of those early friendships have endured throughout Ken's entire extension career.

Over the years, Ken fostered many projects and activities designed to improve the livestock industries in California. He was one of the first to recommend and teach the use of Expected Progeny Differences (EPDs), a management tool that enables producers to evaluate the genetic

potential of their herds. He worked closely with such industry groups as the California Beef Cattle Improvement Association, California Cattlemen's Association, California Wool Growers Association and the California Beef Council. Of all his many accomplishments, Ken is probably proudest of his recent successful efforts to develop humane and realistic animal care practice guidelines for beef, swine, sheep and dairy cows, through the cooperative efforts of extension advisors, veterinarians and producers. (See Swine Care Guidelines article this page.) Ken sees this type of project as representative of the ways in which Cooperative Extension can assist food animal industries weather the changes faced by our increasingly urban society.

Ken and Margaret, who also retired from the University this spring, expect to move back to their farm in Indiana this fall. Those of us who had the pleasure of working with the Ellises wish them farewell and a happy retirement.

SWINE CARE PRACTICES

The first volume in the Animal Care Series of publications, Swine Care Practices, has been published and distributed to UC Cooperative Extension advisors and to a number of swine producers. The department hopes to make the pamphlet available soon to the general public for a nominal charge to cover printing and mailing costs.

The guidelines cover such topics as stress, care and management, behavior, standard production practices, breeding, nutrition, environmental issues such as housing and waste disposal, and disease prevention and treatment. Each subject is treated from the standpoints of both animal well-being and production efficiency.

The Animal Care Series has been developed in response to growing concern from consumers and producers about animal welfare and food safety and are intended primarily for use by the swine producer and extension advisor. However, it is expected that they will also be of interest to the consumer public and legislators.

Information on how to order copies of Swine Care Practices can be obtained from Livestock Advisor Jim Farley, Merced County Cooperative Extension, 209/385-7403.

Baldwin and Knapp Study Methane Emissions

Methane gas, as most of us have heard by now, is considered to contribute significantly to the "greenhouse" effect. Domestic livestock currently account for 15-25% of total atmospheric methane according to figures from a 1989 Environmental Protection Agency (EPA) publication. In particular, ruminant animals -- cattle, sheep, goats -- are the largest contributors to that figure. Total methane gas emissions from all sources are expected to account for as much as 20% of future global warming.

As the EPA believes that "significant strides may be made in stabilizing the atmospheric concentration of methane...", Dr. Joanne Knapp, a recent graduate of this department, is working with Dr. Lee Baldwin on a project to identify possible means of reducing methane emissions from livestock. Using a computer simulation model of animal performance which was developed by Baldwin and his colleagues at UC Davis, they have already identified several intervention possibilities, including diet modifications for intensively-managed animals, use of various products to increase production per animal, and means to improve reproductive efficiency to reduce brood herd requirements.

In addition to identifying various strategies for methane reduction, the project will make cost-benefit analyses of those strategies, and will try to identify limitations of the EPA estimates to help narrow the focus needed for future research. The overall goal of the project is to provide solid, accurate information to governmental agencies as the basis of policy making.

In their current study, Knapp and Baldwin are focusing on methane emissions produced in an animal's digestive tract; methane produced by animal waste is being studied extensively by researchers at other institutions.



Periparturient Disease Project Studies Factors Affecting Dairy Cow Fertility and Milk Yield.

Several million dollars may be lost each year by the California dairy industry due to periparturient - "close to birth" - problems of milk cows. Such diseases as milk fever, calving difficulty, uterine infection and mastitis, to name a few, are recurring problems that seriously reduce dairy profitability.

All of these diseases have been studied individually, but Extension Animal Scientist Dr. Steven Berry has recently undertaken a project to study the interrelationships among these and other periparturient problems with management practices and nutrition. The study will try to determine the aggregate effects of periparturient problems on fertility and milk yield, and discover which management practices are most effective in minimizing those problems. The results of the study are expected to aid dairy farmers in deciding whether to cull or treat individual animals.

The PPDZ project, which is funded by the California Milk Advisory Board, involves 10 large dairies located in the Central Valley. The dairies average 960 milking cows and range from 550-1,650 cows. Producers collect data on breeding, calving, disease and milk yield as part of their normal management procedures (to participate in the project the dairy had to be using the computer program DairyComp 305).

Dr. Berry visits each dairy monthly, collects the raw data on a floppy disk and consolidates the information here at UC Davis. He then generates reproductive and disease incidence reports and error lists for the producers to enable them to increase the accuracy of their records. Any abnormalities in the data are discussed with the producer during the monthly visits. The dairies' nutritionists, veterinarians and Cooperative Extension dairy advisors also receive copies of the reports and are active participants in the study.

At this stage of the project, Berry and his investigators are still collecting the raw data and creating data base files. Statistical analysis of the data will begin this fall. After preliminary analysis is complete, Berry plans to develop a computer model which will help dairy producers identify potential problem cows and management practices which help minimize problems.



Roy Hull Retires After 41 Years

By any measure, a tenure that included nine U.S. Presidents, eight California governors, and three UCD Chancellors and a Provost must be considered lengthy. After forty-one years, the Department's farming operations and animal facilities coordinator, Roy Hull, will retire on October 1, 1991. If you include his five years as an undergraduate, Roy has spent nearly a half century at UCD.

Roy arrived at UCD, then a campus of 500 students, in the fall of 1945. After a brief stint in the Army he completed his B.S. degree in Animal Husbandry in December, 1951. As he was about to accept the Imperial Valley herdsman job, Dr. Hughes, department chair at the time, told Roy that the farm foreman on campus had just quit and Roy should unpack his bags; he would be taking that position instead!

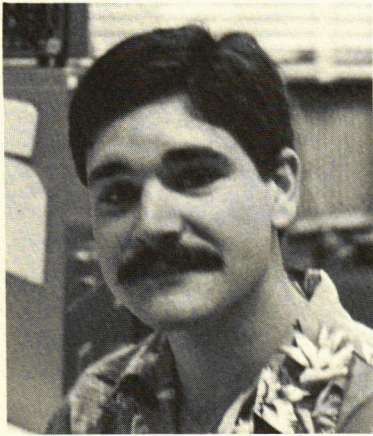
According to Hull, the changes that have occurred in the department farming operations have reflected those occurring in the industry. He has seen a major reduction in the size of the farming crew. A five-man crew is no longer required for the haying operation, the crew no longer stays in a bunkhouse, and the herd of

Percherons were retired long ago. Cattle have moved from the irrigated pasture to dry lots as the production of alfalfa has proven a better economic alternative.

Asked what major change he has seen in the students over the years, Hull responds, "...females. When I arrived here in 1945 there were three female students on campus. Today nearly 80% of the undergraduate student body in the Department is female." He remembers the controversy associated with the building of the present dairy facility in 1958. "There was a major discussion over the fact that many thought the barn was too far away for the students to access."

From his initial appointment as farm foreman, Hull assumed responsibility for the animal facilities, feed mill and Sierra Field Station beef herd. He has been responsible for ensuring livestock availability for both research and teaching at the facilities. This involved at times, "...sorting out some traffic jams in trying to meet both teaching and research demands."

Roy will remain in the Davis area where he will continue to "...grow a few head of steers."



Dr. Roberto D. Sainz is the newest member of the Animal Science Department faculty. Dr. Sainz took his M.S. (1984) in Animal Science and Ph.D. (1986) in Nutrition here at UC Davis. Since 1988 he has been a lecturer at the University of Melbourne, Australia. His research program will focus on the areas of beef cattle and ruminant nutrition; he will be teaching Animal Science 116 - Beef and Sheep Production, and Nutrition 122 - Ruminant Nutrition & Digestion.

Thesis to Propose Offering Animal Science Students More Diversity of Species

"Students want more variety of animals in the classes," says Sharon Jahn, Animal Science graduate student. After discussing student evaluations of Animal Science courses with department faculty, she feels today's students are urging professors to include more than farm animals in both undergraduate and graduate courses. Companion animals, such as dogs, cats, horses, rabbits, rats, mice and even non-traditional animals such as birds and reptiles are among current student interests.

As her Master's degree project, Sharon Jahn has elected to develop an Animal Science teaching curriculum expanding the use of companion and non-traditional animals in the classes. Ms. Jahn has embarked upon this consequential task with a two-pronged data-gathering effort: (1) interviewing UCD Animal Science professors and (2) surveying 58 land grant college department chairs nation-wide to determine current use of animals in teaching. With most of the interviews completed and a 79% return rate on the surveys, Sharon is in

the process of evaluating information gathered. Preliminary data suggests that other academic institutions are already incorporating companion animals and non-traditional animals into their curriculum. Ms. Jahn hopes to recommend a curriculum which will include more animals in existing undergraduate and graduate courses and/or create new courses involving these animals, depending on the results of her research.

Sharon Jahn graduated from UCD with a B.S. degree in Animal Science. As she pursues her Master's degree, the department is fortunate that her studies directly benefit the department teaching goals. Hopefully, her recommendations will result in greater student satisfaction and stimulate enrollment.

Ms. Jahn has been a career employee at UC Davis since 1972. She has been an Animal Health Technologist since 1974 in the Office of the Campus Veterinarian, which is a division of the Department of Environmental Health and Safety. In that position she coordinates campus animal facilities inspections and accreditation inspection programs, develops and teaches classes on humane care and use of animals, and serves as a staff member on the animal care and use committee. She helped develop a computerized facility inspection tracking system for continual monitoring of campus problem areas, and created or co-produced numerous videotapes for campus and nation-wide training programs on animal use and care. The National Institute of Health (NIH) provided original financial support for the videotape program development. Ms. Jahn has subsequently received four awards from the Health Sciences Communications Association for her video productions.

She is currently a member of the Northern California Branch of the American Association for Laboratory Animal Science and has served as past President and Education Chair. She is a member of the Animal Technician Certification Board and the Board of Trustees for the American Association for Laboratory Animal Science. Ms. Jahn is also a part-time Technical Consultant for lab animal biotechnical companies and other institutions.

Ms. Jahn feels her suggested Animal Science curriculum should prepare students for available jobs. After frequent contact with people in the industries, she would like to say to other Animal Science students, "There are jobs out there for trained personnel."



INTERNATIONAL PROFILE

Dr. Sheikh Mohammad Shabbir

The Department of Animal Science is fortunate to have as its distinguished visitor, Dr. Sheikh Mohammad Shabbir from Pakistan, Head of the Department of Animal Science at the University College of Agriculture in Kashmir. Under sponsorship of the Federal USAID Pakistan Participant Training Program, Dr. Shabbir is conducting nutritional research projects and academic program studies with UCD Animal Science Professor Dan Brown.

Dr. Shabbir has visited the UCD research field stations to learn research techniques and equipment operations which will facilitate his current study in calcium needs of lactating ewes. Dr. Shabbir's research centers on three areas: 1) the relationship of calcium to milk production of sheep bred for multiple births, multiple lambing and wool production, 2) whether dietary calcium concentration affects bone structure after two months of lactation, and 3) the effects of dietary calcium on the future fertility of sheep. He states he hopes "to define the real situation of calcium in high producing sheep with twins."

Dr. Shabbir completed his D.V.M. and Master's degree in Pakistan. He was selected for cultural scholarship by the Federal Republic of Germany. After learning the German language, he completed his Ph.D. in Germany in 1978 with a thesis on mineral composition of saliva in dairy cows. After returning to Pakistan, he joined the Pakistan Agricultural Research Council Islamabad (PARC) as Senior Scientific Officer where he researched feeding sheep and goat in local conditions, publishing articles on feeding unconventional feed resources to large and small ruminants. After

serving more than four years in PARC he became an Associate Professor and taught nutrition of range sheep and goats and related subjects. He was selected for the post of Professor in 1986 and worked as a Dean of the faculty for one year.

After his visit in Animal Science at UCD, Dr. Shabbir plans to return to Pakistan to create a Masters' Program in Animal Science at the Kashmir University. He is currently studying the UC Davis graduate programs for the purpose of deriving a workable system for his college.

CWGA "Golden Fleece" Awarded to Ken Ellis

Ken Ellis, recently retired Extension Animal Scientist (see article, page 2), has been honored with the 1991 California Wool Growers' Association "Golden Fleece" award.

This annual award honors individuals who have made a lasting contribution to the California sheep industry. The CWGA calls the Golden Fleece the "unsung hero" award, intended to be given to those who have given "unremitting support and service" to the industry, but have received little recognition for their efforts. Past recipients have come from the sheep industry, government, cooperative extension and the university.

Honorees from the UC Davis Animal Science Department have included Dr. Glenn Spurlock (1969), Rueben Albaugh (1970), Dr. William Weir (1973) and last year's recipient, Dr. Eric Bradford.

HORSE DAY ATTENDANCE EXPECTED TO TOP 500

With over 300 pre-registrations, the department expects another record draw this year for the annual Horse Day to be held Oct. 12. Attendance at the event has increased steadily since Horse Day began in 1985.

This year's topics include: Fever, Cough and the Runny Nose Syndrome, First Aid Tips, Latest Trends in Broodmare Management, and Feeding Supplements. There will also be panel discussions after the morning and afternoon presentations.

Extension Specialist Don Bath Receives ADSA Award of Honor

Animal Science Extension Dairy Specialist Donald Bath received the 1991 American Dairy Science Association (ADSA) Award of Honor at the 86th annual meeting of ADSA at Utah State University in Logan. Dr. Bath was recognized for his long-term dedication to the Association which began when he joined ADSA as a graduate student in 1962.

The Award of Honor, ADSA's highest award, is given annually to an ADSA member who has contributed in an unusually outstanding manner to the welfare of the Association or made a distinguished contribution to the Association.

A Cooperative Extension Dairy Specialist in dairy cattle nutrition, Bath has held a series of significant positions in ADSA including membership on the Journal of Dairy Science Editorial Board and the Board of Directors, and as President and Treasurer of the Association. His many contributions to ADSA included developing the ADSA Personnel Policies and Procedures Manual, hosting tours to dairy farms and allied industry organizations, and developing and strengthening the association itself.

Aquaculture Specialist Fred Conte Provides Stored Expertise At Training Workshop

With public demand tugging hard on the sleeve of his gray sweater, Animal Science Cooperative Extension Specialist Fred Conte has developed a computerized data base of aquaculture information to meet a broad clientele need. At a workshop given for Sea Grant Marine Advisors in June, Dr. Conte delivered a well-designed plan to relieve the public service crunch for information and, as a result, free sufficient time for him to meet his commitments to commercial producers. As evidenced by the meeting, Dr. Conte is willing to train other extension advisors in a "teach the teachers" approach.

A carefully maintained log of incoming telephone and mail inquiries provided Conte with statistics on the kinds of information most often requested. He directed his first efforts

toward preparing informational letters addressing areas of greatest inquiry. Dr. Conte and departmental secretary, Ms. Nicole Gibson, compiled a vast body of expertise into concise information on a wide range of aquaculture subjects. The index of available data includes such topics as channel catfish, weed control of ponds, oxygen depletion, water quality standards, as well as a handy data sheet for chemical evaluation of the requestor's aquaculture site. With a few strokes of a computer keyboard, a response package is prepared for the requestor. Conte has found that after recipients receive the information, most discover that it answers all of their questions and provides additional information on the subject of their interest.

Dr. Conte and Ms. Gibson will continue to develop and expand their data base as new needs arise. According to Conte, "A change in the weather, such as a cold snap or cloudy days, can create aquaculture problems for farmers resulting in a siege of calls. New situations develop day to day."

Brown and Sakul Are Featured Speakers at Dairy Sheep Symposium

The North American Dairy Sheep Association's annual symposium was held at UCD this August. The three-day event included presentation by the Department's Dr. Dan Brown and post-doctoral fellow Hakan Sakul. Brown reviewed results from the Department's sheep lactation trials and discussed the importance of the overall management scheme in determining the feeding program. He also pointed out the need for research on the role of nutrition in peak performance and persistence of lactation, and the need to determine long term nutrient requirements.

Sakul discussed the efficiency of different methods for genetic improvement in milk production in the U.S. breeds. Lack of access to the germ plasm of foreign breeds, Sakul feels, is greatly hampering improvements in productivity.

The Symposium featured 13 speakers on topics ranging from sheep parasitology to marketing of sheep products. Information about the Dairy Sheep Association may be obtained from Ron Sundburg, 209/763-5711.

Anderson and Yates Earn Awards for Excellence

Professor Gary Anderson - Distinguished Teacher

Dr. Gary Anderson was honored for teaching excellence with the Academic Senate's 1991 Distinguished Teaching Award. Only three such awards were made campus-wide this year from a pool of nearly 1700 eligible faculty. Anderson's undergraduate Physiology of Reproduction students consistently rate him highly--averaging 4.9 points out of 5. One student felt that Dr. Anderson was rated so highly because "he really cares." Anderson has a reputation for a contagious and motivating enthusiasm for his subject matter.

Testifying to his quality as a teacher and mentor is the fact that 29 master's degree students and seven Ph.D. candidates have chosen Dr. Anderson as their major professor. Anderson joined the Animal Science faculty in 1973; for the past seventeen years he has offered the Animal Science Graduate Student Seminar.

Staff Associate Tricia Yates Awarded Walker Trophy

Staff Advising Associate Tricia Yates received the Walker Trophy from the College of Agriculture and Environmental Sciences. The annual award honors outstanding staff service in the area of advising. Letters in support of Yates' nomination cited her excellence in administrative and supervisory leadership, her role in informing faculty of curriculum revisions and in training new faculty advisors, and praised the counseling she has provided to approximately 430 undergraduates and 90 graduate students a year.

Despite her heavy workload, students say she exhibits a genuine concern for them as individuals. In the words of one Animal Science student, "She provides the crucial link between the students and the requirements." Since winning the award, Yates has moved on to a higher level position in the English Department.

Tales and Trails

Animal Science Department
University of California, Davis
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