

TALES AND TRAILS



SPRING 1988

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Use of Embryo Transfer to Preserve Endangered Species

(based on collaborative research of Dr. Gary Anderson, Investigators in the Dept. of Reproduction and a number of excellent graduate students)

Captive breeding is becoming an important and often essential strategy used to preserve endangered species. However, endangered species are often "shy breeders" in captivity and produce few young per pregnancy. The use of embryo transfer (ET) technology could greatly improve female reproductive performance in these cases, as has been the case with domesticated livestock, such as with cattle.

An approach would be to transfer embryos from endangered species to the uterus of a nonendangered, perhaps domesticated, species. Because embryos usually fail to develop in a foreign uterus, research is being directed to determining what prevents a fetus from developing in the uterus of another species.

The sheep and the goat were selected as the experimental animals since these species do not readily cross to produce viable hybrids. New procedures for manipulating embryos outside the maternal environment are used to modify embryos before transfer to a maternal species. Portions of sheep and goat embryos are combined such that during gestation the fetus develops from tissues of one species while critical portions of the placenta develop from tissues of the other. The composite embryo is then transferred to the reproductive tract of the species compatible with the placenta. In effect, the foreign fetus is surrounded and protected by the placenta.

Experiments at UCD and in Europe have demonstrated that with the appropriate embryonic manipulations, fetuses of one species can develop to term in the uterus of the other. Additional research is needed to further define the combination of embryonic cells that consistently produces the desired placenta and the desired fetus. Then these procedures can be applied to rare and endangered species with the confidence that transfer of an endangered embryo to a foreign species is likely to result in a viable young at term.

Breed Improvement with Paper Dairy Herds: Students Respond

Simulated dairy herds are created in the Animal Genetics 107 course taught by Professors Gall and Medrano. The computer simulated herds form the basis for the laboratory part of the class which is designed to help students get involved in actual dairy management and genetic planning. With these herds, the students strive for genetic improvement using various methods that were discussed in class.

In the Winter quarter, the eight students set up a special studies program with Professor Gall to continue their breeding programs with these herds.

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ALUMNI PROFILE

Max Herzog, Dairy Cattle Breeder

Breed Improvement (from page 1)

The students were aware of the negative genetic correlation between milk yield and fat percentage and realized that this was a problem for many dairy producers today. As a group, they decided to select their herds for genetic improvement in milk fat while maintaining high milk production.

To start the project, the students set goals for the group. These goals included: 1) to compare random selection and phenotypic selection of cows; 2) genetic improvement through intense selection of males for high milk fat while maintaining a high milk yield, based on a rigorous progeny testing system; 3) to incorporate into their production systems both permanent and temporary effects of the environment (randomly selected by the computer).

The students ran their herds (two herds per student; one with cow selection and one with a random mating system) for a period of ten weeks, with one week corresponding to one production year. Comparisons of the progress made, as well as genetic improvement over time, were made between the random herd and the cow selection herd. Within the selected herd, the students placed heavy emphasis on heifer and young bull selection. The group initiated strict and heavy culling practices to gain maximum genetic and production improvements within the herds.

Some students experimented with their herds and utilized the concepts of total random mating in both herds, while others used systems such as line breeding and inbreeding, to observe genetic and production variation. The group studied the effects of breeding values, mating systems, and environmental effects. They concluded that even with the best breeding programs, environmental effects, both temporary and permanent, of the dairy, play a large role in the determination of production level. These conclusions were based on the noted positive correlation between environmental effects and level of production.

Upon completion of the course, the students stated, "we took this class for fun and ended up learning more about breeding systems and total dairy management than we realized."

Max "Kip" Herzog, a third generation purebred dairy cattle breeder and second generation UC graduate, is one of the outstanding leaders in the US purebred dairy cattle industry. Sleepy Hollow Dairy, on Lakeville Road near Petaluma, has been in the Herzog family since the 1920's. The 1000 acre farm is currently owned and managed by Max, a 1928 graduate of U.C. Berkeley, and by Kip, a 1960 graduate in Animal Science from U.C. Davis. They have developed one of the premier Holstein-Friesian breeding establishments in the world, and have sold cattle throughout the US and to many other countries. In 1979, Kip and his father received the Dairy Shrine "Breeder of the Year Award" at the World Dairy Expo in Madison, Wisconsin, and in 1985 Kip received the "Senior Breeder of the Year Award" from the California Holstein Association. The 300 milking cows currently in the herd have a DHIR average production of 24,715 lb. of milk and 930 lb. of fat (3.8%) from three times-a-day milking which gives them a Breed Average classification score of 104.5.

Kip served as President of the California Holstein Association in the early 1970's and is currently (1987-89) President of the Holstein Association of America. He has given presentations in Italy, Germany, Japan and Canada, and in January represented the Holstein Association of America at the World Dairy Conference in Nairobi, Kenya.

He is a founding partner of Nor-Cal sires, a dairy sire proving organization affiliated with American Breeders Service, and involves 70 commercial dairies in Sonoma, Napa and Marin counties. He is also a member of the group of local business people who founded the Bank of Petaluma in 1987, which made Wall Street Journal news by selling its original stock offering in the record time of three days.

Kip was active at Davis, being Chairman of Little I and the FFA Judging Contest. He returned to Sleepy Hollow directly upon graduation in 1960, but has kept in touch with the Davis campus. He is married to the former Marilyn Jacobs, who graduated from UCD and was the campus Homecoming Queen in 1969. Kip and Marilyn have three children; Jennifer, Tricia and Trent. Kip comes to campus to speak to classes from time to time, and in 1986 was recognized by the local chapter of the AGR fraternity with the presentation of their Alumni Achievement Award for service to agriculture.

(Continued page 3)

Herzog (from page two)

As a student, Kip was interested in seeing more emphasis on practical training in the department's curriculum, and continues his interest in that goal. He follows new research results and technologies in nutrition, genetic evaluation, health management and reproduction, and applies these where he feels they will help his operation. For example, Sleepy Hollow has been the site of successful on-farm embryo transfer for some of the top cows in the herd for several years. Kip sees maintaining and improving fertility of today's and tomorrow's high producing cows as the greatest current challenge to dairy scientists, breeders and producers.

Animal Science Development Committee

A Department Development Committee, appointed by Chairperson Bill Garrett in the fall of 1987, has been charged with finding ways of improving the department's programs, and obtaining additional sources of funding for teaching, research, and extension activities. Other specific tasks were also assigned, such as making conference rooms in the new Food and Agricultural Sciences Building more useful and attractive.

The Committee membership is Tom Adams, Lee Baldwin, Don Bath, Tom Famula, Graham Gall, Joan Macy, Jim Meyer, Ed Price and Eric Bradford (chair).

The Committee decided at its first meeting that the first step should be the development of a new statement of mission and academic plan for the department. A department-wide planning activity has not been carried out for some time. The move to a new building and the integration of Cooperative Extension and the Experiment Station makes this an opportune time for a planning effort.

Committee activity to date has focused on preparations for developing a comprehensive academic plan for the department. An early decision was to invite people from outside the department and the University to participate in the planning effort. Ten people have been invited to serve on an Animal Science Department Advisory Panel, and all have agreed to serve. The Advisory Panel is expected to meet regularly once or twice a year with the members of the Animal Science Department.

Development Committee (continued)

A retreat is scheduled for September 6, 7 and 8 at Lake Tahoe. All faculty, extension specialists, a few farm advisors and the members of the Advisory Panel will seek to define the department's missions in teaching, research and public service for the next decade and beyond, and to identify approaches to achieving these missions efficiently and effectively. Following the retreat, a detailed academic plan will be developed.

The New Animal Science Building

The Animal Science Department and Animal Science Extension have moved from Hart Hall and are now located in the new Food and Agricultural Sciences Building (FASB) located at the corner of LaRue and Bioletti. The new building is actually two buildings, an office building and a laboratory building, connected by a series of glass-walled catwalks that overlook a brick courtyard landscaped with ivy and cherry trees. Both buildings are four stories tall with a single basement. Four departments and the Aquaculture and Fisheries Program are housed in FASB.

The Animal Science Department and Animal Science Extension are located on the first and second floors of FASB with the Main Office found on the second floor in room 2223. The Nutrition Department is located on the third floor with Avian Sciences on both the third and fourth floors. The Department of Environmental Toxicology and the Aquaculture and Fisheries Program are located on the fourth floor. The basement is a modern laboratory animal research facility which provides animal research space for the Nutrition, Avian Sciences and Environmental Toxicology Departments.

Access to Animal Science has also been improved by this move. While Hart Hall was located in the center of campus, FASB is located south of the core campus with plenty of available parking. Visitors should find it much easier to stop by for a visit and view the new surroundings. The new location is also a benefit to the Department since we are now directly across the street from the Cole Facility which houses our Small Animal Colony, the embryo transfer laboratory, the muscle biology laboratory, the slaughter facility and the horse barn. In addition, the swine barn borders the northeast corner of FASB and the dairy barn is just a block to the northwest.

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New Building (from page three)

While Hart Hall has great charm, character and history, Animal Science was increasingly cramped by the severe shortage of good laboratory space. By moving to the new building, Animal Science laboratory space has doubled and the quality of the space is much improved. Additionally, there was building money available for the purchase of new equipment which has also served to improve the quality of the laboratory space.

Approximately one-half of the first floor laboratory and office buildings are dedicated to teaching and teaching support. The laboratory building has excellent teaching laboratories with far better equipment than was previously available. As a direct consequence, dramatic improvements are being made in our laboratory courses. The office building houses teaching assistants, support equipment and has an excellent computer laboratory. The Goss Room is also located on the first floor office building of FASB, close to the computer laboratory and teaching support services. The size of the Goss Room is much expanded as compared to its predecessor in Hart Hall. Stop by and see us and our new accommodations. We are always eager to discuss the needs and ways in which we may be better able to serve California agriculture and the whole of the agricultural industry.

New Faculty

Drs. James G. Fadel and Janet F. Roser are new additions to the Animal Science faculty.

Dr. Fadel is a Ph.D. graduate in Animal Science from Cornell University and earned his M.S. at UCD. He previously was a visiting scientist at Montana State University. His teaching responsibilities include Animal Science 128, Linear Programming in Animal Agriculture, a graduate course in modeling and guest lectures in nutrition and animal science. His research involves the use of mathematical models in Animal Science and evaluation of the chemical and physical properties of feeds.

Dr. Roser received her Ph.D. in Animal Physiology at UCD and was formerly a research biochemist for Monoclonal Antibodies, Inc. of Mountain View, California. She teaches Animal Science 15, 115, and 49, related to appreciation and production of horses. Her research is varied, but predominantly focuses on endocrine control of equine fertility.

Nonsurgical Contraception in Feedlot Beef Cattle

(excerpts from research of Tom Adams, Sarah Davis,
Betty Adams, and Rich Benson)

Historically, there has been a major price and production differential between feedlot heifers and feedlot steers due, in large part, to a high incidence of inadvertent pregnancy among incoming feedlot heifers. A number of management procedures have been advanced to reduce or eliminate the economic liabilities of the feedlot heifer, but most are relatively expensive and stressful.

Recent research has led to the development of a contraceptive vaccination procedure that induces an animal to produce antibodies against its own gonadotropin-releasing hormone (GnRH), a hormone that plays a critical role in control of reproduction. The vaccination procedure disrupts normal secretion of hormones responsible for reproductive activity and gonadal development. Thus it may serve as a nonsurgical alternative to physical castration of both sexes, thereby alleviating animal stress and potential infection while reducing the economic liability of feedlot heifers.

Dr. Adams and his colleagues have evaluated the contraceptive effect of active immunization against GnRH when applied to beef heifers when they enter the feedlot. The procedure attenuated synthesis and secretion of the gonadotropic hormones and resulted in the suppression of reproductive activity and gonadal function in a group of 30 test animals. There was a reduction in feedlot gain and feed efficiency of the immunized animals.

In a more recent trial, Dr. Adams' research sought to examine the effect of immunization against GnRH combined with administration of Synovex H implants on feedlot performance. Synovex H implants replace some of the steroid hormones that are suppressed during immunization and, thus, might be expected to lessen the growth-retarding effects of immunization.

The data indicated that active immunization of feedlot heifers against GnRH when combined with Synovex H implants resulted in increased average daily gain and feed efficiency and improved carcass quality relative to control animals.

Dr. James Meyer Returns to Animal Science

Chancellor Emeritus James Meyer has rejoined Animal Science after concluding his service as UCD Chancellor from 7/01/69 to 6/30/87. His new office is housed in room 2111 of the Food and Agricultural Sciences Building, a sunny location with a view overlooking the horse arena. His expertise in University administration and Animal Science has proven valuable in his current role as a participant in departmental activities.

Chancellor Emeritus Meyer is presently involved in a research project, "rethinking the undergraduate curriculum of colleges whose historical roots are in agriculture." Approximately 2,000 Animal Science graduates of 1956 through the present are being surveyed to obtain background information.

Among his other varied activities, Dr. Meyer is serving as Vice President of the Western Association of Schools and Colleges Accrediting Commission, will be doing some consulting work, and hopes to "get up to speed" in Nutrition. When asked about his impressions of the Animal Science department now that he has returned, Dr. Meyer stated, "it is different, but yet the same; different in that research is somewhat more sophisticated, but the same in its concern for students. It has a great group of faculty and staff."

Jim Robb Retires

The distinguished go-to-for-information man, Jim Robb, has retired after over 35 years of service to the department and the University. Jim's vast and varied duties included acquiring and readying animals, equipment, and visual aids for classes, and programming various departmental personal computers. His familiar cigaretted profile leaves an impression as unforgettable as the carved archways of Hart Hall.

25 Years of Staff Service

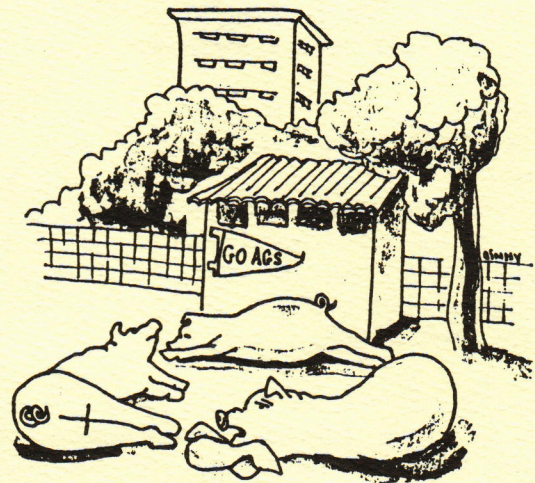
Bill Neel and Gene Mikuckis recently received recognition for 25 years of department and University service. The indestructible Mr. Neel works as Animal Resources Supervisor at the feedlot and feedmill. Gene Mikuckis, as SRA IV, splits his current laboratory work between performing genetics research for Dr. Touchberry and quantifying heat damage in various feed commodities for Dr. Fadel.

Campus Land Use

As the Davis core campus prepares for increased enrollment and staffing, it is very likely that much of the land now assigned to Animal Science will be re-assigned to others over the next decade. There is talk of the removal of pigs and cows to less prime real estate on the campus outskirts.

The department is watching these developments closely since animals play an important role in teaching, as well as in research supported by multiple grant dollars. The impact of any re-allocation of land is difficult to predict. A financial factor is the relative cost of purchasing feed and raising it at home. In addition, there is the concern of being able to maintain quality control of feed purchased for research. Where does one buy a specific type of silage?

As the campus modernizes, and anticipations are high for improved facilities, there is also sentiment for a sense of historical loss. What would a stroll to Reprographics be without the vision of pigs reclining in their pens, or a swim at the Rec Pool without the odor of the Dairy?



"Now that we're comfortable, they want to move us out of the central campus and put up a high-rise."

The Reorganization of the Division of Agriculture and Natural Resources

Frank Mongini, continued

UC Vice-President Kenneth R. Farrell has initiated a plan to reorganize the Division of Agriculture and Natural Resources (ANR) effective July 1, 1988. The goals of the reorganization include enhancing the Agricultural Experiment Station, Cooperative Extension and other UC campus units and decentralizing programs and administrations from the Office of the Vice-President to campus and regional offices. In addition, the new organization will improve communications among ANR units and facilitate affirmative action programs. The Animal Science Cooperative Extension Specialists will become an integral part of the Animal Science Department reporting through the Department Chair to the Dean of the College of Agriculture rather than to a separate Cooperative Extension administration.

The Department of Animal Science is pleased with these changes which will substantially strengthen the overall teaching, research and extension programs in the Animal Sciences. It is a pleasure to have long time associates Reuben Albaugh, Don Bath, Steve Berry, Fred Conte, John Dunbar, Ken Ellis and Frank Murrill as official members of the Department of Animal Science.

ALUMNI PROFILE Frank Mongini, California Veterinarian

Frank Mongini is one of the most energetic and well known food animal veterinarians in California. Frank was raised on a family dairy in Arizona, but migrated to California to enter undergraduate work in animal science. Upon receiving his B.S. in Animal Science in 1964, Frank joined the Coast Guard Reserves to serve 6 months active duty. Frank married and began veterinary school in 1966.

He helped finance his undergraduate degree by working for the well known geneticist, P.W. Gregory. During veterinary school he worked with Dr. Bob Bushnell, Extension Veterinarian doing some of the pioneering work on developing mastitis preventive teat dips for dairy cows. During his senior year, Frank was a preceptor for 2 weeks at the Cotati Animal Hospital after which he was offered a job pending graduation. Frank joined the mixed animal practice in Cotati upon

graduation in 1970 and became a partner in 1973. The three-veterinarian practice built a large animal hospital that same year.

Over a period of years, the practice grew from 3 to 8 veterinarians and 3 years ago their organization divided into separate small animal and large animal practices. Frank has two partners in the Cotati Large Animal Clinic and they employ two associate veterinarians; all 5 veterinarians are UC Davis graduates. Frank has a very strong interest in surgery and has built a sub-specialty of surgery on dairy cows. All surgery cases, except a few emergencies, are handled at the clinic which has excellent facilities for delicate surgeries and post-operative care. The clinic receives many referrals from other practitioners in the area.

Frank has a special interest in registered dairy cows and serves most of the local registered herds. About 80% of Frank's practice is involved with reproduction and preventive medicine.

As if having a busy food animal practice is not enough, Frank is involved in other business ventures. He has started a custom bull housing facility where bulls can be housed until completion of their progeny test. Working with a commercial company, they also collect and freeze semen from bulls on the premises and perform breeding soundness examinations, as well as surgery on mature dairy or beef bulls, something which requires special and very substantial facilities to ensure the safety of the bulls and people. Frank is in a partnership with a relative to purchase and breed dairy heifers and sell them as springers.

Frank is a member of many professional societies and is actively involved with his profession and the dairy industry. He is vice-president of the Society for Theriogenology and he is the only food animal practitioner on the Animal Welfare Committee of the California Veterinary Medical Association.

Frank Mongini has truly found his animal science degree to be useful in his career and life. He also believes that students of animal science should, in addition to their formal education, develop and hone their observation skills. Clearly, Frank is committed to California's dairy industry.

Staff Special Performance Awards

Special Performance Awards for this year went to the following Animal Science departmental staff:

From the APS series

Katherine Bangs, SRA III for Dr. Medrano, working in the Small Animal Colony,

Step 5 employees (non-APS)

Patricia Yates, Advising Associate of the Advising Center, working under Dr. Moberg, Master Advisor,

Ed Macias, Senior Agricultural Technician working for Daymond Yates at various Animal Science facilities and barns, and

Victor View, Principal Agricultural Technician, also under Daymond Yates at the livestock facilities.

1987-88 Student Award Recipients

California Cattlemen's Association Achievement Award is awarded every year by the Association to five outstanding California University seniors in the field of Animal Science. This years students are:

Tristan Allen, Senior in Animal Science

Eric Erba, recent graduate in Animal Science who will continue in the M.S. Animal Science program

Forest Halford, Senior in Animal Science

Daniel Johnson, a recent graduate in Agricultural Science and Management (Animal Science Option)

Judy Mello, Senior in Agricultural Education and an Animal Science Peer Advisor.

Elizabeth Graves Hossekus Scholarship is awarded to UCD students majoring in Animal Science. The scholarship was established in memory of Elizabeth Hossekus, a UCD Animal Science graduate of 1925. Awards went to:

Sheila Gaertner, Senior in Agricultural Science and Management (Animal Science Option) and Agricultural Science and Management Peer Advisor
Eric Erba (see above award).

Student Awards (continued)

California Cattewomen's Scholarship (an auxiliary of the California Cattlemen's Association), went to Sheila Gaertner (see above award).

Tom Mead Dairy Award (World-wide Sires) has no final decision on this year's recipient at this time.

LaDonna Becker and Kimberly Rager (both of Animal Science) received Departmental Citations in recognition of academic excellence.

Greta Breedlove Ross Scholarship went to Rosalie Truong, a Junior in Animal Science.

Carl L. Garrison Scholarship went to Melinda McEl-liott, Junior in Animal Science.

Dairy Shrine Award recognition went to Bruce Van deSteeg, Senior in Animal Science.

Oskar Lang Memorial had no recipients this year:

UC Bar Award went to Sheila Gaertner, Valentine Sworts, and Christopher Yturri.

Leadership Recognition of Outstanding Seniors: Tristan Allen, Daniel Johnson, Judy Mello, Kimberly Rager, Valentine Sworts, and Christopher Yturri.

Animal Science Stud Farm Management Internship: Sandra Gilbert, William Hanneman, Ronda Kockinis and Karen Schaidler.

Ginny Landry Memorial

Ginny Landry was a UCD graduate in Animal Science who was active in departmental activities which included being Little I chairman and president of the Block and Bridle. She died August 7, 1987. Donations are being accepted towards the purchase of a memorial bench to be located near the new Food and Agricultural Services building. Donations should be made to:

UC Regents/Ginny Landry Memorial
c/o Ann Mohr
Animal Science Department
U. C. Davis
Davis, CA 95616

**American Society of Animal Science
Recognition Awards**

Seniors: Lawrence Davis
Raymond Doty
Eric Erba
David Festa, Jr.
Sheila Gaertner
Kimberly Rager
Matthew Sween

Juniors: David Bennett
Kathy Kero
Melinda McElliott
Rosalie Truong

Sophomores: Juliette Gafni
James Sherar

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NEWS JUST IN: WE ARE HAPPY TO ANNOUNCE THE VERY RECENT APPROVAL TO NAME THE NEW FOOD AND AGRICULTURAL SCIENCES BUILDING AFTER CHANCELLOR EMERITUS JAMES H. MEYER.

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