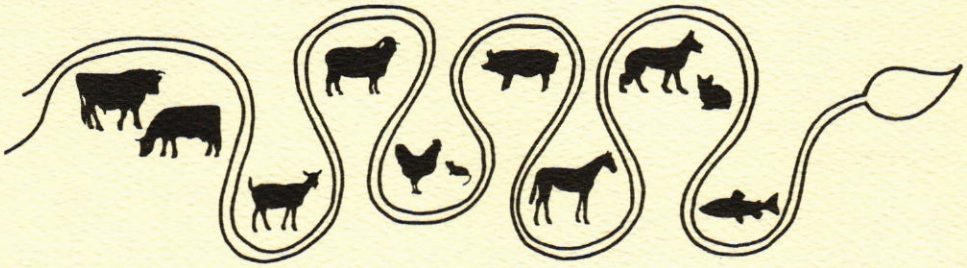
TALES AND TRAILS



SPRING 1988

Department of Animal Science University of California, Davis Davis, California 95616 (916) 752-1250

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.

(continued on page two)