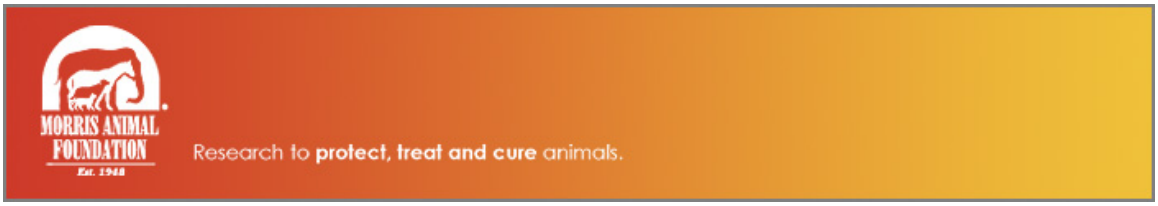

ADVANCED TECHNOLOGY IMPROVES GENETIC DIVERSITY

Despite the giant panda's popularity, surprisingly little is known about this highly endangered animal. That makes it tough for veterinarians and conservationists to do everything possible to support this species' survival. One thing experts do know is that maintaining a healthy, genetically diverse captive population plays a critical role.

With only 122 giant pandas in captivity, most of them in China at Wolong Giant Panda Breeding and Research Center and at Chengdu Giant Panda Breeding and Research Base, representing every individual in captive breeding programs is essential. Until recently, only five percent of these captive males had ever sired offspring naturally, making diversity logistically difficult to achieve. Assisted reproduction is therefore critical to the survival of the species. In fact, today almost all captive pandas are artificially inseminated.

With funding from Morris Animal Foundation, Dr. JoGayle Howard of the Smithsonian Institution's National Zoological Park and her colleague, Dr. Rebecca Spindler at the Toronto Zoo, have greatly improved assisted reproduction techniques for giant pandas.

For the best breeding success, female pandas are artificially inseminated during their peak estrus on multiple days, using fresh sperm from multiple males. The females and males must be anesthetized for every insemination or sperm collection.

Drs. Howard and Spindler wanted to improve sperm-freezing techniques, called cryopreservation, so fresh sperm wouldn't be needed and pandas wouldn't need to be repeatedly anesthetized. They worked closely with Chinese colleagues at the Wolong research center and Chengdu research base to test freezing techniques that would improve the sperm's post-thaw viability. At the end of the study, the team tested a two-step straw freezing technique and used thawed sperm on six females, with promising results. Four of these pandas became pregnant, compared with five of six inseminated with fresh sperm.

The investigators also banked large quantities of sperm from previously

underrepresented males. The Chinese are now using those samples for more diversified breeding. Because of the results, the Species Survival Plan for pandas now requires all captive programs to collect and preserve sperm.

"Getting to know our Chinese colleagues helped us to better understand what was needed," Dr. Spindler says. "What we've learned could be applied to other species and to the captive pandas in the United States."

These breeding efforts are just another step toward better panda preservation. The investigators are now at work on a new foundation funded study to better understand changes in the male panda during breeding season.

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