

APPLYING ASSISTED REPRODUCTIVE TECHNOLOGIES TO WILDLIFE CONSERVATION MANAGEMENT

Jonathan T. Aaltonen

Reproductive Sciences Lab, Omaha's Henry Doorly Zoo and Aquarium, USA

Non-intervention with endangered wildlife species reproduction is no longer an option in this era of accelerated species extinction, as we enter a possible 6th mass extinction event. Assisted Reproductive Technologies (ART) will prove invaluable to save some species. Many species reproductive traits and physiology are ill defined due to a lack of basic research and access to meaningful study numbers. While basic research is fundamental, the Omaha's Henry Doorly Zoo and Aquarium's (OHDZA) desire for applied sciences with clear results coupled with efforts being made in the zoo world to use non-invasive techniques with respect to animal welfare issues has led to some mixed, yet interesting, results. This presentation will candidly cover some of the successes and failures of the Reproductive Sciences Lab at OHDZA in the past decade. Detailed topics will include attempts at creating, isolating, and large scale production of recombinant tiger hormones with the use of Chinese Hamster Ovarian (CHO) cell and other cell cultures transfected with recombinant tiger LH and FSH sequences. A novel delivery method modified for ART hormones via an inert, biodegradable polylactide co-glycolide polymer-based gel that allows for a controlled release rate for super ovulation in tigers. The preliminary success of a cryopreservation study that resulted in freezing whole live *Aurelia aurita* jelly polyps. Other topics briefly touched on will address the development of a density gradient insert that has become a World Health Organization (WHO) recommendation for all human fertility clinics worldwide. Development of voluntary semen collection methods for gorilla and Philippine crocodile through positive reinforced behavioral training, successful snake artificial insemination and hormone induced spermiation or egg laying in Malagasy powder blue reed frog and Mississippi gopher frog resulting in healthy offspring.