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Volume 8, Article 16 June 2015

FACES OF A SCIENCE BREAKTHROUGH

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PHOTOS PROVIDED BY CINCINNATI ZOO & BOTANICAL GARDEN

Meet 'Vito" and "Elsa". These two kitten cuties, born April 2015, aren't just cute faces. They are the first non-human offspring of any species born using vitrified sperm for artificial insemination (AI).

What? Vitrified sperm? Artificial Insemination? The first?

While three human babies were reported being born using vitrified sperm, this is the first non-human offspring in the world using this method! Born at the Cincinnati Zoo & Botanical Garden (CZBG) Center for Conservation & Research of Endangered Wildlife (CREW), a world leader in small cat reproductive research, "Vito" and "Elsa" are the faces of an exciting advancement in wildlife research and conservation.

(left –right) ***Vet student JaCiara Johnson with newborn kittens "Vito" and "Elsa" — first non-human offspring born using vitrified sperm; kitten "Elsa" with mom "Ivy"; kitten "Vito" with mom "Ebony".***

(Photos | Cincinnati Zoo & Botanical Garden)

In late April 2015 in an application pioneered by CREW scientists in domestic cats, the two healthy domestic kittens, a male named "Vito" (short for vitrification) born to mom "Ebony", and a female named "Elsa" (after the character in the movie Frozen) born to mom "Ivy", were conceived following laparoscopic oviductal Artificial Insemination (LO-AI) using domestic cat sperm preserved by vitrification (semen preserved as glass instead of ice).

"This breakthrough could allow us to expand semen banking of endangered cats throughout the world to aid in their conservation," said Dr. Bill Swanson, CREW's Director of Animal Research and one of the world's authorities on breeding endangered small cats. *(Dr. Swanson explains in this video.)*

This "novel cryopreservation method" involves ultra-rapid freezing in liquid nitrogen to form a 'glass' rather than ice crystals and is extremely quick and simple to perform. When reapplied in wild cats, the procedure might be useful in the field for wildlife veterinarians and biologists to collect and preserve endangered small cat semen for later use.

Preliminary results with semen from fishing cats and ocelots indicate that vitrification is effective for preserving post-thaw sperm viability and function across cat species. Although no AI procedures have been conducted yet with vitrified sperm in these wild cat species, AI success in domestic cats suggests that it may be possible to use this approach to produce fishing cat or ocelot offspring at a future date.

This successful breakthrough means saving endangered small cat species, those weighing less than 50 lbs, from extinction. Of the 37 wild cat species in the world, 28 are small in size and are threatened with extinction in the wild.

The study's lead author, veterinary student JaCiara Johnson, will present results at the American Association of Zoo Veterinarians' Annual Meeting in Portland, Oregon.