

BioRescue creates four new northern white rhino embryos

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Oocyte collection with Fatu -- the Northern White Rhino Credit: BioRescue/Rio the photographer

The international consortium of scientists and conservationists working towards preventing the extinction of the northern white rhino through

advanced assisted reproduction technologies is pleased to announce that in March and April 2021, four additional northern white rhino embryos were produced.

This is the most successful series of procedures—from oocyte collection in Kenya to in vitro fertilization and cryopreservation in Italy—the team of Leibniz Institute for Zoo and Wildlife Research (Leibniz-IZW), Safari Park Dvůr Králové, Kenya Wildlife Service, Ol Pejeta Conservancy and Avantea has ever conducted. Additionally, the team confirmed the successful sterilization of the southern white rhino bull Owan, which was conducted in December 2020. The bull will now be introduced to the Ol Pejeta southern white rhino females that have been identified as potential surrogate mothers for future northern white rhino offspring.

Females Najin and Fatu at Ol Pejeta Conservancy, Kenya, are the only remaining northern white [rhinos](#) in the world. To prevent the extinction of the northern white rhino, an international consortium of scientists and conservationists called BioRescue led by Leibniz-IZW has been harvesting immature egg cells (oocytes) from the two females and artificially inseminating these using frozen sperm from deceased males in order to viable northern white rhino embryos since 2019. In the near future, the embryos will be transferred to southern white rhino surrogate mothers to develop northern white rhino offspring.

On March 28th, 2021, 19 oocytes were retrieved from Fatu's ovaries using a probe guided by ultrasound, after the animal was placed under general anesthesia. Fatu is the younger of the two northern white rhinos, Najin's daughter and Sudan's granddaughter. Both the anesthesia and the ovum pickup procedure went smoothly and without complications. After incubating and maturing the egg cells at Avantea's laboratory in Italy, 14 of them were fertilized with thawed sperm from deceased northern white rhino bull Suni using a procedure called intra-cytoplasmic sperm

injection (ICSI). Four fertilized oocytes developed into viable embryos that are now stored in liquid nitrogen along with the five embryos already created in previous procedures. There are now a total of nine embryos, all derived from oocytes collected from Fatu.

"We are excited with the laboratory outcome of the last ovum pick-up in March. With nine pure northern white rhino embryos now developed, the partners in the project should embark on the next phase of the project -embryo transfer to the surrogate southern white females at Ol Pejeta Conservancy. We are eager to get the progeny from the project that will guarantee survival of the species," says Kenya's Tourism and Wildlife Cabinet Secretary, Hon. Najib Balala.

Embryo development was achieved with the help of Geri, an innovative benchtop incubator with integrated continuous embryo monitoring capabilities designed to provide an individualized and undisturbed incubation environment, and donated by Merck.

"Merck is a long-term partner to Project BioRescue. We are supporting efforts to save the Northern White Rhinos (NWR) by offering innovative fertility technologies to increase chances to save NWR from extinction," says Sebastian Bohl, Vice President, Global Head of New Businesses, Fertility, Merck.

During the most recent procedure, Najin, who is now 31 years old, was put under light sedation whilst standing and examined via ultrasound. After the results of the ultrasound, the team decided not to attempt the procedure as she had not appeared to have developed enough promising oocytes. The consortium will soon thoroughly discuss if and how to continue the oocyte collections with Najin, as ethical risk assessments are a pivotal part of the program.

Another very important step in the success of the BioRescue program

was the selection and sterilization of the southern white rhino bull Owuan in December 2020. The animal was sterilized by the BioRescue team with a minimally invasive non-surgical procedure using state-of-the-art equipment. The sterilization went smoothly and without any complications. In March 2021, the BioRescue team confirmed via electroejaculation that the sterilization was indeed successful. Owuan has recovered well from the examinations and is up to his future role: as a sterilized bull, he will reliably indicate through his behavior the reproductive cycle of potential surrogate mothers without any risk of impregnating them. This information is a crucial prerequisite for transferring the [embryos](#) to surrogate mothers at the correct timing of their reproductive cycle. Under the guidance of Kenya Wildlife Service, the team carefully planned the location of selected southern white rhino females for Owuan's company and his introduction to them will take place in the coming weeks.

More information: www.biorescue.org/

Provided by Leibniz Institute for Zoo and Wildlife Research (IZW)

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