

## Press Release

**Press Embargo: 03 May 2016; Noon, Eastern Standard Time (EST)**

### Seeking to Rewind Mammalian Extinction – The Effort to Save the Northern White Rhino

In December 2015 an international group of scientists convened in Austria to discuss the imminent extinction of the northern white rhinoceros and the possibility of bringing the species back from brink of extinction. The discussions of this historic meeting appear in the international Journal *Zoo Biology*. The publication of this work is designed as part of the ongoing effort to raise awareness for the extinction crisis facing rhinos and many other species while also reaching out to the scientific community to share and gather information.

“The effort to save the northern white rhinoceros will need new technologies, new approaches and problem-solving in order to avert its imminent extinction.” Said Joseph Saragusty, D.V.M., Ph.D., andrologist from the Leibniz Institute for Zoo and Wildlife Research (IZW) in Berlin, Germany. “The productive engagement of an international multidisciplinary team of experts will be essential to accomplish the ambitious goal of bringing back the northern white rhinoceros from its otherwise certain path to extinction.”

The discussion to save the northern white rhinoceros touches on genetics and cell biology, scientific ethics and the importance of long term strategic thinking and ongoing communications. A key element of these discussions was the need to maintain genetic banks of frozen tissue, spermatozoa and oocytes to use as materials in this fight against extinction.

“Cryobanked genetic resources from this unique form of rhinoceros have been saved in San Diego and in Europe.” Said Oliver Ryder, Ph.D., geneticist for San Diego Zoo Global. “The genetic resources in the form of banked viable cell cultures, tissues and spermatozoa, together with the capability to establish induced pluripotent stem cells are the basis for hope that a viable population of northern white rhinoceros can be

produced."

With some genetic tissue from northern white rhinos available the group is looking at advanced reproductive technologies as the hope for the future of the species.

"It was a long way from the idea to the roadmap created in Vienna. I am glad that we found so many competent supporters in the scientific community who believe in the application of advanced cellular and reproductive technologies for the genetic rescue of the northern white rhinoceros. Now we have to demonstrate that this novel strategy can make a difference" Said Thomas Hildebrandt, Prof. Dr., head of the Reproduction Management department at IZW.

The last three northern white rhinoceroses reside in Ol Pejeta Conservancy in Kenya where they were transported from ZOO Dvůr Králové, Czech Republic. "Although we were able to breed the northern white rhinoceroses in our zoo, their health status does not allow them to breed naturally anymore. We are now optimistic that the cutting-edge research outlined in Vienna will give these very last specimens a chance to see an offspring of their own kind." Said Jan Stejskal, Director of International Projects of ZOO Dvůr Králové.

In addition to sharing information about reproductive technologies the group of experts discussed the ethics of spending resources to save one species. The paper voices the hope that the information gathered through this effort would be applied towards other species facing the threat of extinction in the future.

### **Publication:**

Saragusty J<sup>1</sup>, Diecke S<sup>2</sup>, Drukker M<sup>3</sup>, Durrant B<sup>4</sup>, Friedrich Ben-Nun I<sup>5</sup>, Galli C<sup>6,7,8</sup>, Göritz F<sup>1</sup>, Hayashi K<sup>9</sup>, Hermes R<sup>1</sup>, Holtze S<sup>1</sup>, Johnson S<sup>10</sup>, Lazzari G<sup>6,8</sup>, Loi P<sup>11</sup>, Loring JF<sup>5</sup>, Okita K<sup>12</sup>, Renfree MB<sup>13</sup>, Seet S<sup>1</sup>, Voracek T<sup>14</sup>, Stejskal J<sup>15\*\*</sup>, Ryder OA<sup>4\*</sup>, Hildebrandt TB<sup>1\*</sup> (2016): **Rewinding the process of mammalian extinction**. ZOO BIOL; DOI: 10.1002/zoo.21284

\* These two authors are of equal seniority

\*\* All co-authors other than the first and the two senior authors are listed by alphabetic order

**Affiliations:**

1. *Leibniz Institute for Zoo and Wildlife Research, Alfred-Kowalke-Straße 17, 10315 Berlin, Germany*
2. *Max Delbrück Center for Molecular Medicine, Robert Rössle Straße 10, 13125 Berlin, Germany.*
3. *Institute of Stem Cell Research, German Research Center for Environmental Health, Helmholtz Center Munich, Ingolstädter Landstraße 1, 85764 Neuherberg, Germany.*
4. *San Diego Zoo Institute for Conservation Research, 15600 San Pasqual Valley Road, Escondido, CA 92027, USA.*
5. *Center for Regenerative Medicine, Department of Chemical Physiology, The Scripps Research Institute, 10550 North Torrey Pines Road, La Jolla, CA 92037, USA.*
6. *Avantea srl, Laboratorio di Tecnologie della Riproduzione, Via Porcellasco 7/F, 26100 Cremona, Italy.*
7. *Università di Bologna, Dipartimento Scienze Mediche Veterinarie, via Tolara di Sopra 50, 40064 Ozzano dell'Emilia, Italy.*
8. *Fondazione Avantea, Via Angelo Cabrini 12, 26100 Cremona, Italy*
9. *Faculty of Medical Sciences, Kyushu University, Maidashi 3-1-1, Higashi-ku, Fukuoka 812-8582, Japan.*
10. *San Diego Zoo Global, PO Box 120551, San Diego, CA 92112-0551, USA*
11. *Faculty of Veterinary Medicine, Univeristy of Teramo, Campus Coste San Agostino, 64100, Teramo, Italy.*
12. *Center for iPS Cell Research and Application, Kyoto University, 53 Kawahara-cho, Shogoin, Sakyo-ku, Kyoto 606-8507, Japan*
13. *School of BioSciences, The University of Melbourne, Melbourne, Victoria 3010, Australia*
14. *Tiergarten Schoenbrunn, Maxingstraße 13 b, 1130 Vienna, Austria*
15. *ZOO Dvůr Králové, Štefánikova 1029, 544 01 Dvůr Králové nad Labem, Czech Republic*

The **Leibniz Institute for Zoo & Wildlife Research (IZW)** is an internationally renowned research institute of the Leibniz Association. With the mission of "understanding and improving adaptability" it examines evolutionary adaptations of wildlife and its resilience to global change, and develops new concepts and measures for conservation. To achieve this, the IZW uses its broad interdisciplinary expertise in evolutionary ecology and genetics, wildlife diseases, reproductive biology and management in a close dialogue with stakeholders and the public.

**[www.leibniz-izw.de](http://www.leibniz-izw.de)**

Bringing species back from the brink of extinction is the goal of **San Diego Zoo Global**. As a leader in conservation, the work of San Diego Zoo Global includes on-site wildlife conservation efforts (representing both plants and animals) at the San Diego Zoo, San Diego Zoo Safari Park, and San Diego Zoo Institute for Conservation Research, as well as international field programs on six continents. The work of these entities is made accessible to children through the San Diego Zoo Kids network, reaching out through the Internet and in children's hospitals nationwide. The work of San Diego Zoo Global is made possible by the San Diego Zoo Global Wildlife Conservancy and is supported in part by the Foundation of San Diego Zoo Global.

**[www.sandiegozooglobal.org/overview](http://www.sandiegozooglobal.org/overview)**

**ZOO Dvůr Králové** has been one of the most important breeders of African ungulates in the world since the late 1970s. The zoo is dedicated to conserving African wildlife through both ex situ and in situ efforts as well as promoting African culture and wildlife conservation. Four northern white rhinos have been born in the zoo and in 2009 it collaborated with its partners to transfer then four northern white rhinos from Dvůr Králové to Ol Pejeta Conservancy, Kenya, in hope to further prompt their breeding.

**[www.zoodvurkralove.cz/en/](http://www.zoodvurkralove.cz/en/)**

**Avantea** is a company involved in large animal breeding through the application of the most advanced reproductive technologies. Avantea mission is to find innovative solutions in the field of reproductive biotechnology for animal breeding and conservation. The current main research focus is on refinement of assisted reproductive technologies, generation of animal models of human diseases using modern gene editing technologies and use of embryonic stem cells to model early embryo development and long-term effects of assisted reproductive technologies. Avantea is contributing its know how and expertise in biotechnology and assisted reproduction techniques (oocyte maturation, ICSI, embryo production, embryo cloning, genome editing) of large mammals to the rescue of rhinoceros.

**[www.avantea.it/en.html](http://www.avantea.it/en.html)**

###

**Contact:**

**Cesare Galli**

[cesaregalli@avantea.it](mailto:cesaregalli@avantea.it)

Avantea

Via Porcellasco 7 F

26100 Cremona

Italy

Phone +39 0372 437242

Mob. +39 335 6240261

**Steven Seet**

[seet@izw-berlin.de](mailto:seet@izw-berlin.de)

Unit Press & Communications

Leibniz Institute for Zoo and Wildlife Research (IZW)

of the Forschungsverbund Berlin e.V.

Alfred-Kowalke-Straße 17

10315 Berlin  
GERMANY  
P.O.Box 70 04 30, 10324 Berlin  
Tel. + 49 - 30 - 51 68 - 125  
Cell + 49 - 177 857 26 73  
Fax + 49 - 30 - 51 26 - 104

**Christina Simmons**

csimmons@sandiegozoo.org  
Public Relations  
San Diego Zoo Global  
p. 619 685 3291 c. 619 318 3348  
P.O. Box 120551  
San Diego, CA 92112-0551  
USA

**Jan Stejskal**

jan.stejskal@zoodvurkralove.cz  
Vedoucí komunikace a mezinárodních projektů /  
Director of Communication and International Projects  
ZOO Dvůr Králové  
544 01 Dvůr Králové nad Labem  
Czech Republic  
Tel: +420 608 009 072 | +420 499 311 226