

# Avian Genetic Rescue Workshop Participants

October 2-5, 2024

Toronto, Canada



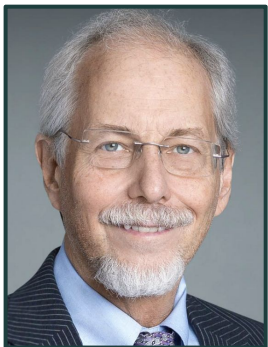
## **Suziane Alves Barcellos, The Rockefeller University**

Dr. Alves Barcellos is a postdoctoral associate in the Jarvis Lab, working on a bird conservation and de-extinction project. In 2022, she received her PhD from Universidade Federal do Pampa in Brazil. Her research interests range from cytogenetics to genomics. She has experience in animal cytogenetics, more specifically in avian species, cell culture and karyotype evolution.



## **Matt Biegler, The Rockefeller University**

Dr. Matthew Biegler is a postdoctoral researcher at The Rockefeller University in New York City, working in the Laboratory of Neurogenetics of Language headed by Dr. Erich Jarvis. He received his PhD from the Department of Neurobiology at Duke University, developing molecular tools to enhance the study of vocal learning neurogenetics in the zebra finch song system. Dr. Biegler's current research focuses on enhancing reproductive stem cell culture methods and assisted reproductive technologies to facilitate biobanking, surrogacy, and genetic rescue efforts across avian species. With a particular focus on songbirds, representing nearly two-thirds of all avian species, his innovative approaches combine single cell sequencing of developing reproductive tissues with novel techniques in the isolation, culture, and reintroduction of primordial germ cells.



## **Jef Boeke, NYU Grossman School of Medicine**

Jef D. Boeke, PhD, DSc, founded and directs the Institute for Systems Genetics at NYU Langone Health. From 1985–2013, Dr. Boeke was on the faculty at Johns Hopkins University School of Medicine. Dr. Boeke received a BS in biochemistry summa cum laude in 1976 from Bowdoin College, and then earned a PhD in molecular biology from Rockefeller University in 1982, where he worked with Peter Model and Norton Zinder on the genetics of the filamentous phage. He did his postdoctoral work at The Whitehead Institute of MIT as a Helen Hay Whitney Postdoctoral Fellow with Gerald Fink.



## **Patricia Byrne, San Diego Zoo Wildlife Alliance**

Patricia Byrne is a researcher in Reproductive Sciences at the San Diego Zoo Wildlife Alliance, where she plays a pivotal role in developing and applying molecular techniques to improve the management of avian species in zoological populations. A key focus of her research is the cryopreservation, recovery, and restoration of germline stem cells from endangered bird species. Currently, her research is centered on the development of molecular techniques for the genetic and hormonal profiling of African Penguins, with an aim of elucidating the mechanisms behind sperm competition during extra-pair copulations in managed populations. She is also exploring stress biomarkers by analyzing telomeric DNA attrition.



## **Heejung Choi, Seoul National University**

Dr. Choi is a member of Professor Jae Yong Han's lab at the Center for Avian Germ Cell Modulation and Cloning. Her interest is in animal genetic engineering, especially in producing transgenic birds using avian germ cells.



## **Leilani Fowlke, Northern Illinois University**

Leilani is a chick-rearing and avian neonate specialist with a focus on seabird restoration and translocation. She has participated in and helped albatross, petrel, shearwater and storm-petrel translocations in Hawaii and Mexico since 2016. She also briefly worked in the Chick-rearing Unit of the South African Foundation for the Conservation of Coastal Birds (SANCCOB) and just finished a year working for San Diego Zoo Wildlife Alliance Mariana Crow Recovery Project as a Chick Rearing Specialist. I have just started my PhD at Northern Illinois University working in Dr. Jones Evidence-based Restoration lab where I will collect the reproductive life-history of the Phoenix Petrel and Polynesian Storm-petrel to prepare both species for future translocations.

## **Jae Yong Han, Seoul National University**

Dr. Han is a professor in the field of avian biotechnology affiliated with Seoul National University in Korea. Prof. Han received his Ph.D. in Animal Molecular Genetics from the University of Minnesota in 1991. In the same year, he was appointed as a professor at Department of Agricultural Biotechnology, Seoul National University, Korea. Prof. Han has made over 300 scholarly contributions, including 240 SCI(E) peer-reviewed research papers. His academic specialties are avian transgenesis and genome editing by using primordial germ cells (PGC). Specifically, his laboratory has established various avian transgenic technologies and embryonic germ (EG) cells. More recently, he has reported the efficient chicken transgenic system, and genome-edited chickens, including egg white and egg yolk bioreactor research. Based on his achievements in the field of avian biotechnology for over 30 years, he was awarded 2012 World's Poultry Science Association Award (Research) and 2013 The National Academy of Science (Korea) Award. Now, he has established a research center, awarded by the National Research Foundation of Korea, focused on the topic of Center for Avian Germ Cell Modulation and Cloning (2015-present).



## **Erich Jarvis, The Rockefeller University**

Erich Jarvis, PhD is the head of the Laboratory of Neurogenetics of Language and professor at The Rockefeller University. He is also a scientific investigator with Howard Hughes Medical Institute (HHMI). Dr. Jarvis uses song-learning birds and other species as models to study the molecular and genetic mechanisms that underlie vocal learning, including how humans learn spoken language. He is interested in how their brains, and ours, have evolved to produce this complex behavior. Dr. Jarvis also leads the Vertebrate Genomes project, is a co-PI of the Human Pangenome Reference Consortium and part of the Earth Biogenome Project. Dr. Jarvis is the recipient of key awards and honors for his achievements, including one of the highest awards given by the National Institutes of Health (NIH) -- the NIH Director's Pioneer Award, and one of the highest given by the National Science Foundation (NSF) -- the NSF Alan T. Waterman Award.





## **Thomas Jensen, Hobart and William Smith Colleges**

Dr. Jensen is a visiting assistant professor of Biology at Hobart and William Smith Colleges where he studies methods for transfer of germline stem cells to quail hosts. His current studies are focused on investigating methods to quantify the successful transfer, migration, and colonization of donor-derived germline stem cells using cells derived from both embryonic and adult donors.



## **Lech Kaczmarczyk, Linköping University**

Dr. Kaczmarczyk is a Principal Research Engineer in the Division of Cell and Neurobiology at Linköping University in Sweden. He is a molecular (neuro)biologist with bioinformatic skills. He has successfully and independently brought challenging projects to completion, such as the development of over ten transgenic mouse lines, including models for neurodegenerative diseases, and transgenic tools for studying gene expression.



## **Hiroshi Kagami, Shinshu University**

Dr. Kagami was born and raised in Japan. He graduated from Obihiro University of Agriculture and Veterinary Medicine obtaining B. Sc. in Animal Breeding. His M.Sc. and Ph. D. in Animal Genetics and Breeding were obtained from Graduate School of Agricultural Sciences of Nagoya University. His major has been avian reproductive biotechnology. He became a Lecturer in Faculty of Veterinary Medicine at Azabu University. He held successive positions as a full Professor and Vice Dean at the Faculty of Agriculture in Shinshu University, Japan. He is inducted as Full Member of Sigma Xi. He has been awarded more than 30 Prizes/Recognitions for the achievement of stem cell manipulation for avian breeding and restoration.



## **Anna Keyte, Colossal Biosciences**

Anna received her PhD in 2010 from Duke University in Developmental Biology. Her postdoc focused on neural crest cells in cardiac development in the chick model system. She spent six years at The Rockefeller University as a Research Scientist studying artificial reproductive technologies in birds. She is currently the Avian Species Director at Colossal Biosciences where she leads a team of scientists working on the Dodo de-extinction project and other avian genetic rescue projects.



## **Katja Koeppel, University of Pretoria**

Dr. Koeppel graduated from Glasgow University in 2000 and went to South Africa in 2002 and completed her MSc in wildlife in 2004. She fell in love with the country, its people, and wildlife. After working in private practice, she joined the Johannesburg Zoo as veterinarian and later became the head veterinarian until 2015. At Johannesburg Zoo, she was part of the team that hand reared Wattled cranes for release. She moved to the University of Pretoria to be able to teach and contribute more to research. She is the veterinary advisor for the Mabula Southern Ground-Hornbill Project. Together with Vulpro, she has developed artificial insemination of Lappet-faced vultures and hope to expand the project to white headed vultures next year.



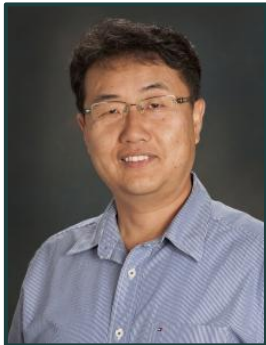
## **Rusty Lansford, University of Southern California & Children's Hospital Los Angeles**

Dr. Lansford research group focuses on understanding how environmental stressors impact development. They integrate molecular biology and intravital imaging techniques to study cardiac and germ-cell development decision-making. They generate and use transgenic, fluorescent protein-expressing Japanese quail as a model system to manipulate and visualize normal and abnormal embryogenesis. Over the past two decades, they have been developing tools and approaches for in vivo multiplex 4D imaging. Their research also involves the generation of new multispectral fluorescent sensors to monitor changes in cell behaviors resulting from molecular disruptions. The quail model system allows them to study early embryogenesis independently of maternal influences. His research aims to have a real-world impact, investigating how ecological stressors impact lifelong health and developing advanced molecular tools for bird conservation.



## **Lena Larsson, G M Sutton Avian Research Center**

Dr. Lena Larsson grew up in Sweden and got a bachelor degree in ecology, behavior, and evolution from UC San Diego. Her varied field experiences include two years trapping and tracking greater prairie-chickens in Osage County, Oklahoma. In 2008, she attained a PhD in population genetics at Stockholm University, disentangling genetic structure of Baltic herring and teaching conservation biology. She returned to Oklahoma and the Sutton Avian Research Center in 2009 as a postdoc, and currently serves as the nonprofit's executive director. She has been greatly involved with the establishment of conservation breeding facilities to aid the recoveries of the highly endangered Attwater's prairie-chicken and the masked bobwhite quail.



## **Kichoon Lee, Ohio State University**

Professor Lee's research in the Department of Animal Sciences at Ohio State University focuses on the discovery of novel factors and understanding their roles in adipose tissue and muscle development. The future direction of his research is to continue studying several candidate genes involved in the adipose and muscle development using in vitro and in vivo systems.



## **Carlos Lois, Caltech**

Dr. Lois earned his PhD in the laboratory of Arturo Alvarez-Buylla at the Rockefeller University where he investigated the origins and dynamics of newly-generated neurons during adult neurogenesis in mammals. He did postdoctoral work in the laboratory of David Baltimore at Caltech and MIT, where he developed a transgenic method to genetically engineer species of neurobiological interest. He enjoys playing with his two children, hanging out in the Pacific ocean, and reading fiction.



## **Camile Lugarini, The Chico Mendes Institute for Biodiversity Conservation**

Dr. Lugarini holds a PhD in Veterinary Sciences and is an Environmental Analyst of The Chico Mendes Institute for Biodiversity Conservation. She is also the Executive Coordinator of the National Action Plan for the Conservation of the Spix's Macaw, and coordinator of the Spix's Macaw reintroduction project. She heads four protected areas in South Brazil and has experience in wildlife medicine, bird conservation, and parrot reintroduction. Additionally, she is a member of the IUCN/Wild Parrot Specialist Group.



## **Gabriela Mastromonaco, Toronto Zoo**

Dr. Mastromonaco is building interdisciplinary science teams to enhance our understanding of animals in human care and exceed animal well-being standards. For 25+ years, she has been developing and applying assisted reproductive technologies in domestic and non-domestic animal species to support long-term species sustainability goals.



## **Josh Mazza, African Lion Safari**

Josh is an Interpretive Naturalist Guide and Animal Handler



## **Mike McGrew, The Roslin Institute**

The McGrew laboratory at the Roslin Institute studies a special stem cell, the germ cell, which produces the sperm and eggs. These cells can be used to generate genome edited chickens, chicken which contain precise genetic changes in their genome. They use this system to investigate susceptibility to avian influenza infection, sex skewing of chicken, and novel ways to preserve both chicken breeds and avian wildlife.



## **Paolo Mita, NYU Institute for Systems Genetics**

Dr. Paolo Mita graduated in Molecular Biology from the University of Lecce and obtained a dual PhD from New York University (NYU) Medical School and the University of Milan. Under the mentorship of Dr. Susan K. Logan, Dr. Mita made several contributions to identifying and characterizing a novel regulation of the androgen receptor by prefoldin-like proteins. He joined Dr. Jef Boeke's lab at Johns Hopkins Medical Institute and later at NYU Institute of Systems Genetics (ISG). As a post-doctoral fellow, Dr. Mita's studies focused on the interaction between LINE-1 retrotransposon and mammalian cells. During the SARS-COV2 pandemic in 2020, Dr. Mita co-founded a diagnostic company, Pandemic Response Lab, which provided fast, reliable, and affordable COVID testing and contributed to viral genomic sequencing to track the evolution of the virus. In 2023, he re-joined ISG at NYU Medical Center as a Research Assistant Professor under the guidance of Dr. Teresa Davoli. In this position, Dr. Mita continues his studies on the impact of L1 retrotransposons on mammalian cells. He is also involved with Dr. Boeke, Dr. Davoli, and Dr. Wright (Linköping University) in the "Winding back the clock – the genome edited re-wilded chicken" project. This project, newly funded by Revive & Restore, aims to create a wild/feral chicken from a domestic origin and to develop and advance new genomic tools for the engineering of avian genomes.





## **Gareth Morgan, African Lion Safari**

Gareth has been working in the African Lion Safari Bird department for 31 years with a focus on meat eating birds, parrots and gamebirds.



## **Jim Mueller, U.S. Fish and Wildlife Service**

Jim has worked in conservation of endangered species for 36 years and became the Attwater's Greater Prairie-Chicken Recovery Team Leader in 2023. His career has focused on population ecology and habitat management. He would like to preserve the genetic diversity of the Greater Prairie-Chicken while continuing to work on managing and restoring habitat for these birds in the wild.



## **Yoshiaki Nakamura, Hiroshima University**

Dr. Yoshiaki Nakamura was born in Kobe, Japan, in 1983. He received his BS, MS and Ph.D. in agricultural science from Shinshu University, Japan, in 2006, 2008 and 2011, respectively. From 2011 to 2017, he was a postdoctoral researcher at Division of Germ cell Biology, National Institute for Basic Biology, Japan. He joined Hiroshima University, Japan, as an assistant professor in 2017. Since 2022, he is an associate professor with laboratory of Animal Breeding and Genetics, Hiroshima University. He has received several academic awards as the first author including the Outstanding Paper Award (Japan Poultry Science, 2010), Japan Prize in Agricultural Science (The foundation of Agricultural Science of Japan, 2018) and the Young Investigator Award (Japan Poultry Science Association, 2010; Society for Reproduction and Development).



## **Ben Novak, Revive & Restore**

Ben collaboratively pioneers new tools for genetic rescue and de-extinction. As lead scientist, he heads Revive & Restore's genetic rescue efforts and is the lead coordinator for conservation cloning projects, including cloning projects with black-footed ferrets and Przewalski's horse. While Ben's primary passion is the restoration of the extinct passenger pigeon, the conceptualization and advocacy of biotech-based genetic rescue solutions for all organisms have been a lifelong pursuit.



## **Raveena Parsa, African Lion Safari**

Raveena is a student at McMaster University, studying genetics and hoping to go into biotechnology & genetic engineering.



## **Ryan Phelan, Revive & Restore**

As Executive Director, Ryan works with some of the world's leading molecular biologists, conservation biologists, and conservation organizations to envision and develop pioneering genetic rescue projects using cutting-edge genomic technologies in order to solve seemingly intractable wildlife conservation challenges. She has organized landmark workshops on genetic rescue, bringing together global experts to identify the challenges facing endangered species and tools to help save them from extinction.



## **Ronja Rahner, Clinic for Birds, Reptiles, Amphibians, and Fish**

Dr. Rahner Graduated in veterinary medicine in spring 2020. Since then, she has been employed as a veterinarian at the Clinic for Birds, Reptiles, Amphibians and Fish at Justus Liebig University in Giessen, Germany.



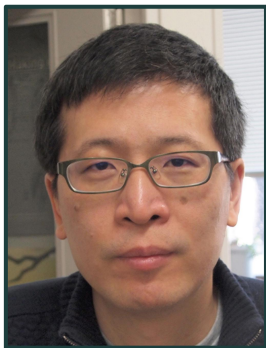
## **Drew Sauve, African Lion Safari**

Dr. Sauve is the Manager of Conservation and Research at African Lion Safari. He supports Gareth Morgan, who is the manager of birds at the Safari, in cryobanking primordial germ cells and developing their laboratory capacity to extract and donate PGCs. His research program at Safari is mainly focused on evolutionary ecology, quantitative/population genetics, and conservation biology.



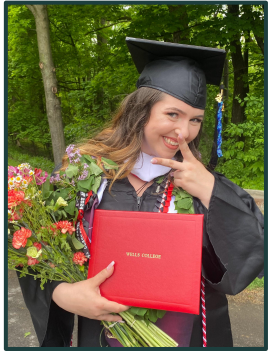
## **Simona Secomandi, The Rockefeller University**

Dr. Secomandi is a postdoctoral fellow at the Jarvis lab. Her experience ranges from fieldwork to wet lab to bioinformatics. During her undergraduate years at the University of Milan, she focused on bird ecology before shifting to genomics and bioinformatics during her PhD, with a thesis investigating barn swallow genomics using genome assembly, comparative genomics, and pangenomics. She went on to her first postdoctoral position at the University of Cyprus, where she investigated the population genomics and demography of wild African birds. Currently, Simona is working on the Revive & Restore Passenger Pigeon de-extinction project, with the goal of reconstructing the extinct species' genomic blueprint using a combination of pangenomics and comparative genomics.



## **Guojun Sheng, Kumamoto University**

Dr. Sheng obtained his Ph.D. in developmental genetics from the Rockefeller University in 1997, under the supervision of Professor Claude Desplan, and his postdoctoral training in molecular embryology in the laboratory of Professor Claudio Stern at Columbia University and University College London. He also received intensive embryology training at Marine Biology Laboratory, Woods Hole, MA. Before joining Kumamoto University in late 2015, Dr. Sheng had directed the Laboratory for Early Embryogenesis at RIKEN Center for Developmental Biology (CDB) in Kobe, Japan (2004-2015). Dr. Sheng is currently a professor at the IRCMS (International Research Center for Medical Sciences) and the Graduate School of Medical Sciences in Kumamoto University. His laboratory uses the avian animal model and studies cellular and molecular mechanisms regulating cell fate changes during early embryonic development. He also applies developmental biology and stem cell biology technologies in avian conservation projects.



## **Justine Simms, Hobart and William Smith Colleges**

Justine recently graduated from Wells College, earning her BA in Biology. While at Wells, she was a lab technician for Thomas Jensen and helped with various research projects focusing on wildlife conservation. She also has been a key member of the animal care team to provide the best quality of life and care for the Quail Colony. Justine followed Thomas Jensen after graduation to Hobart William Smith and is now his Lab Manager where she oversees undergrad research and continues to make progress with germline stem cell transfer of donor to host to conserve endangered species DNA.



## **Jon Spero, Toronto Zoo**

Passionate Conservationist and Avian Specialist and currently the Lead Keeper of Birds and Terrestrial Invertebrates at the Toronto Zoo. Mr. Spero is an expert in species management, conservation and community engagement. He is committed to bridging the gap between wildlife conservation and public awareness.



## **Hana Thompson, African Lion Safari**

Hana is a Research Assistant - Genomics at African Lion Safari. Her research is on conservation genetics, with a focus on using genomics to manage conservation breeding programs.



## **Aryn Wilder, San Diego Zoo Wildlife Alliance**

Dr. Wilder's research is broadly focused on developing strategies for managing genetically healthy populations and conserving endangered species. Specific goals include understanding the relationship between genetic variation and fitness, exploring the genomic basis of inbreeding depression and outbreeding depression, and predicting extinction risk.



## **Dominic Wright, Linköping University**

Professor Wright is a quantitative geneticist who specialises in the genetic basis of domestication and feralisation. He is particularly interested in understanding the mechanistic basis of a wide range of life history, behavioural, and morphological traits at the genomic level. To understand this, his group uses a mixture of laboratory intercrosses between wild and domestic chickens, as well as field studies on feral chickens in Hawaii and Bermuda.



## **Qi-long Ying, University of Southern California**

Professor Qi-Long Ying's research at the University of Southern California primarily focuses on the derivation, expansion, and application of embryonic and adult stem cells across a wide spectrum of species, including mouse, rat, rabbit, bovine, human, and various avian species.