

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

New Frontiers in Reconstructing Human Evolution History (E3)

May 29–June 1, 2023 • Herrenhausen Palace • Hannover, Germany

Scientific Organizers: Sarah A. Tishkoff and Joshua M. Akey

Supported by the Directors' Fund

Global Health Travel Award Deadline: February 7, 2023 / Scholarship Deadline: April 11, 2023 / Abstract Deadline: April 11, 2023 / Discounted Registration Deadline: March 29, 2023

MONDAY, MAY 29

Arrival and Registration

TUESDAY, MAY 30

Welcome and Keynote Address

***Sarah A. Tishkoff**, University of Pennsylvania, USA

Svante Pääbo, Max Planck Institute for Evolutionary Anthropology, Germany
Impact of Neanderthals and Denisovans on Human Evolutionary History

Computational Approaches for Reconstructing Human Demographic History

***Rasmus Nielsen**, University of California, Berkeley, USA
Inference of Human History using Ancestral Recombination Graphs

Ben Peter, Max Planck Institute for Evolutionary Anthropology, Germany
Towards Computational Approaches for Studying Non-discrete Human Population Structure

Andrew H. Vaughn, UC Berkeley, USA
Short Talk: Bayesian Inference of Admixture Graphs on Native American and Arctic Populations

Yilei Huang, Max Planck Institute for Evolutionary Anthropology, Germany
Short Talk: Demographic Inference with IBD Segments in Ancient DNA

Xinjun Zhang, University of Michigan, USA
Short Talk: Novel Adaptive Introgression Candidates in Worldwide Human Populations Revealed by Machine Learning Method MaLAdapt

Workshop

Craig B. Lowe, Duke University School of Medicine, USA
Forging New Regulatory Elements In The Human Genome

***Elise Kerdoncuff**, University California Berkeley, USA
Reconstructing 50,000 Years of Evolutionary History in India: Insights from 3,000 Whole Genome Sequences

Cristina de Guzman Strong, Henry Ford Health/Michigan State University, USA
Discovery of Recent Evolution in the Human Skin Epidermis for the Involucrin/Ck1e/Vitamin D Receptor Axis using Integrative Multi-omics Strategies

David Gokhman, Weizmann Institute of Science, Israel
Uncovering the Regulatory Function of Variants that Shaped Human Evolution

Ayken Askapuli, University of Wisconsin-Madison, USA
Genomes of the Golden Horde Elites and their Implications for the Human Population Dynamics in Central Eurasia

Evolution of Complex Traits

***Priya Moorjani**, University of California, Berkeley, USA
Evolution of Human Germline Mutation Rate

Iain Mathieson, University of Pennsylvania, USA
Evolution of Complex Traits in Human Populations based on Studies of Ancient DNA

Alan R. Shuldiner, Regeneron Pharmaceuticals, Inc, USA
New Insights into Health and Disease and the Identification of Therapeutic Targets from Large-scale Genetics in Under-Studied Populations

Gili Greenbaum, Hebrew University of Jerusalem, Israel
Short Talk: Reconstructing the Direction of Phenotypic Difference in Complex Traits

Dan Ju, University of Pennsylvania, USA
Short Talk: Investigating the Evolution of Height in Central African Rainforest Hunter-gatherers

WEDNESDAY, MAY 31

Early History of Modern Humans

***Qiaomei Fu**, Chinese Academy of Sciences, China
The Genetic Population History in Northern and Southern China

Liran Carmel, Hebrew University of Jerusalem, Israel
The Epigenetics of Ancient Populations

John A. Capra, UCSF, USA
Resurrecting Ancient Molecular Phenotypes using Machine Learning

Daniel N. Harris, University of Pennsylvania, USA
Short Talk: Neanderthal Homologous Regions in African Populations Arose Predominantly through Ancient African to Neanderthal Admixture

Claudio Quilodran, University of Geneva, Switzerland
Short Talk: Past Human Expansions Shaped the Spatial Pattern of Neanderthal Ancestry

Martin M. Corcoran, Karolinska Institutet, Sweden
Short Talk: Archaic Humans have Contributed to Large-scale Variation in Modern Human T Cell Receptor Genes

Poster Session

Ethical Issues of Working with Indigenous Population Samples

Katrina G. Claw, University of Colorado Denver, USA
Remote Presentation: Ethics and Best Practices in Research with Indigenous Communities

***Emma Kowal**, Deakin University, Australia
Indigenous Australians, 20th Century Physiology, Evolutionary Genomics, and the Possibility of Human Hibernation

Angelica Beate Winter Boldt, Universidade Federal do Paraná, Brazil
Short Talk: How the Past Shapes Current Stories: Genetic Epidemiological Profiles of South American Mennonites

THURSDAY, JUNE 1

Genomic Basis of Human Adaptation

***Emilia Huerta-Sanchez**, Brown University, USA
Impact of Archaic Introgression on Human Adaptive Traits

Aida Andres, University College London, UK
Genomics of Local Human Adaptation

Sarah A. Tishkoff, University of Pennsylvania, USA
Evolution of Complex Traits in African Populations

Jasmin Rees, University College London, UK
Short Talk: Local Adaptation to Micronutrients in Modern Humans

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Elena Bosch, Universitat Pompeu Fabra, Spain

Short Talk: Adaptive Archaic Introgression Related to Cellular Zinc Homeostasis in Humans

Yilan Wang, Harvard University, USA

Short Talk: grnTea, A Machine Learning Tool to Detect Transposable Element Insertions in Ancient Human Whole-genome Sequencing Data

Career Roundtable

Christina Warinner, Max Planck Institute for the Science of Human History and Harvard University, Germany

Cristina de Guzman Strong, Henry Ford Health/Michigan State University, USA

Impact of Infectious Disease on Human Evolution

***Christina Warinner**, Max Planck Institute for the Science of Human History and Harvard University, Germany

Evolution of the Human Microbiome and Impact for Health and Disease

Lluís Quintana-Murci, Institut Pasteur, CNRS UMR2000 and Collège de France, France

From Neanderthals to COVID-19: Evolutionary Sources of Immune Response Variation in Humans

Kirsten Bos, Max Planck Institute for Evolutionary Anthropology, Germany

Prehistoric Epidemics and Plagues Inferred from Ancient DNA

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

FRIDAY, JUNE 2

Departure