



HRZZ IP-2022-10-8926 - Bridging the Disciplinary Gap: Integrating Animal Genetics and Archaeology in Croatia (PI: Vlatka Čubrić Čurik)

**Workshop on Collaborative-integration of Genetics with
Archaeology: From Aurochs to Cattle**
2nd to 4th April 2025, ZAGREB - CROATIA

VENUE:

University of Zagreb Faculty of Agriculture, Department of Animal Science
Svetošimunska 25, 10000 Zagreb, Croatia

Organized by **Rajna Šošić Klindžić and Ino Čurik**

WP5 Integration of animal genetics with archaeological evidence

Supervised by **Preston Miracle**

AIM: In the GABridge project, we have assembled a multidisciplinary team of scientists specializing in molecular genetics, population genomics, applied animal breeding, computer science, archaeology, and zooarchaeology. This aligns with the integrated research approaches highlighted by Stock and Burton (2011), emphasizing the importance of combining diverse disciplines to tackle complex problems. To foster interdisciplinary collaboration, we will organize a workshop introducing fundamental cattle genetic concepts to both archaeologists and animal geneticists. The workshop will feature theoretical lectures, along with presentations of key studies in a semi-Journal Club format, encouraging active participation. Reading the assigned papers beforehand will enhance engagement and discussion. This structured approach will allow attendees to trace the historical development of archaeogenetic research in cattle. This will ensure that all project members understand the current state of cattle archaeogenetics, encouraging active contribution to GABridge-related studies. We believe that successful collaboration requires both archaeologists and geneticists to be involved in formulating research hypotheses. At the very least, the workshop will equip archaeologists with the knowledge to engage more confidently with cattle genetics literature. Additionally, dedicated sessions will focus on strengthening collaboration between archaeologists and animal geneticists, emphasizing the need for clear frameworks to achieve fully integrated research.

Day 1, 2nd April: **Bringing Genetics to Archaeology: Cattle Perspectives**

08.30-09.00 – Registration and welcome

09.00-10.30 – Theoretical Session I (Chairperson: Šošić Klindžić)

1. Mitochondrial and Y-Chromosome Inheritance (Čurik)

10.30-11.00 – Coffee Break

11.00-13.00 – Understanding Mitogenome Inheritance: Journal Club (Chairperson: Šošić Klindžić)

1.1. Beginnings and the First mtDNA Dogma (Držaić)

(Troy *et al.*, 2001, *Nature*; Edwards *et al.*, 2007, *PRSB*)

1.2. New Challenges and Multiple Domestications (Brajković)

(Achilli *et al.*, 2008, *CB*; Achilli *et al.*, 2009, *PLoS One*; Zhang *et al.*, 2013, *NC*)

1.3. Breaking the First Dogma and Demography (Keršić)

(Čubrić-Čurik *et al.*, 2022, *EA*)

13.00-14.00 – Lunch

14.00-16.00 – Understanding Y-Chromosome Inheritance: Journal Club (Chairperson: Šošić Klindžić)

1.1. Current Diversity and First Evidence (Shihabi)

(Peres-Perdal *et al.*, 2010, *Heredity*; Escoufflaire *et al.*, 2021, *AS*)

1.2. Evidence or Misconception (Čurik)

(Gotherstrom *et al.*, 2005, *PRSB*; Bollongino *et al.*, 2008, *PLoS One*, Svensson and Gotherstrom, 2008, *BL*)

16.00-16.30 – Coffee Break

16.30-18.00 – Understanding Haplotype Analyses (Chairperson: Šošić Klindžić)

1. How to Make a Phylogenetic Tree: Computer Exercise (Brajković)

Discussion

2. How to Make a Network: Computer Exercise (Brajković)

18.00-18.15 – Wrap up & End of Day 1 (Čubrić Čurik)

Day 2, 3rd April: **Bringing Genetics to Archaeology: Cattle Perspectives**

09.00-10.30 – Population Genetics of Cattle – Basic Terminology (Chairperson: Keršić)

1. Autosomal Inheritance and Basics of Population Genetics (Čurik)

2. Basics of Modern Cattle Diversity – Journal Club (Mijadžiković)

(McTavish et al., 2013, PNAS; Chen et al., 2018, NC)

10.30-11.00 – Coffee Break

11.00-11.30 – Paleoeecology: context for aDNA interpretations (Chairperson: Tomac)

“In the past everything was different – Reconstruction of a late Pleistocene and Holocene lakescape in central Europe” (Draganits)

11.30-13.00 – aDNA: Zooarchaeological wish list, Round table discussion - Vuković, Saliari, Bjelihova, Tomac, Grgurić Srzentić (Chairperson: Miracle)

13.00-14.00 – Lunch

14.00-16.00 – Introgression with ABBA/BABA Approach (Chairperson: Keršić)

1. Theoretical Aspects of Genetic Introgression (Čurik)

2. Genetic Introgression from Aurochs to Cattle - Journal Club (Držaić)

(Park et al., 2015, GB; Gunther et al., 2024, eLife)

16.00-16.30 – Coffee Break

16.30-17.30 – Working in Archaeogenetics Laboratory

1. Practical Work and Demonstration in Laboratory (Brajković, Čubrić Čurik, Držaić)

17.30-18.00 – Wrap up & End of Day 2 (Miracle)

Day 3, 4th April: Bringing Genetics to Archaeology: Cattle Perspectives

09.00-11.00 – Archaeogenetics of Cattle – The New Revolution: Journal Club (Chairperson: Držaić)

1. Large-Scale archaeogenetics – The First Pillar (Keršić)

(Verdugo et al., 2019, Science; Ginja et al., 2023 iScience)

2. Large-Scale Archaeogenetics – The New Revolution (Čurik)

(Rossi et al., 2024, Nature)

11.00-11.30 – Coffee Break

11.30-12.00 – Wrap up & End of Workshop (Čurik & Šošić Klindžić)

Please, note that all related workshop papers can be found on the following dropbox link:

<https://www.dropbox.com/scl/fo/p79t33m8vhu2gy3vlllyvg/AJZOj8plZgZbnVLwquJBdW0?rlkey=pb3aibhzhfd6lpn60e3thvltm&dl=0>