EVALUATION 2015

DEPARTMENT OF LANDSCAPE ARCHAEOLOGY AND ARCHAEOBIOLOGY

Prague – 20th October 2015
Research of biological variability of man, its health, subsistence strategies, economics and environment

13 team members, only 6 full time

Archaeology  Aerial archaeology  Geophysics

Physical Anthropology  Archaeogenetics

Palaeobotany  Archaeozoology  Geoarchaeology

NEW!

Interdisciplinary, inter-team and international cooperation
Evolution of the department

Dept. of Methodology

Archive

Dept. of Spatial Archaeology

E. Neustupný

Dept. of Anthropology

J. Chochol

Dept. of Environmental Archaeology

Dept. of Landscape Archaeology and Archaeobiology

2007

Dept. of Information Sources

M. Kuna

Lab. of Archaeogenetics

V. Černý

Radiocarbon lab. CRL

I. Světlík
Archaeological Map of the CR

AMCR is an electronic infrastructure combining a tool for managing the agenda of field archaeology in the CR with the main data sources used for archaeological research.

AMCR meets two main goals:

- **System of administration of field archaeology** in the CR (registration of field events, quality control, archiving of excavation reports, etc.)
- **Sites and monuments records** – to be used as a basic research infrastructure

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Project NAKI DF 12P01OVV003: Archaeological Map of the Czech Republic. A System for Data Acquisition, Management and Presentation, M. Kuna
Aerial archaeology archives
10,000 photographs

Bibliography of Bohemian archaeology
100,000 titles

Archaeological Map of the CR

Archaeological database of Bohemia
65,000 records

Internet database of archaeological field work
15,000 entries per year

Digital archives IA CAS
250,000 documents

GIS and PIAN (“spatial identification of sites”)
20,000 spatial units
Modelling distribution of archaeological settlement evidence based on heterogeneous spatial and temporal data

method of predictive modelling based on evidence density estimation (EDE function)

Czech archaeological database

maps of a relative density of an archaeologically detected traces of past settlement (with respect to its probabilistic character)

Demján, P. – Dreslerová, D. submitted: Modelling distribution of archaeological settlement evidence based on heterogeneous spatial and temporal data
Archaeology, archaeometry and informatics: prehistoric and medieval glass in the Czech Republic

„Celtic“ glass: bracelets and ring-beads

Hellenistic mosaic vessels, Czech Republic
2nd-1st cent. BC

Project GAČR 14-253965, N. Venclová
Chemical analyses

methods:

SEM-EDS (Scanning Electron Microscopy with Energy Dispersive Spectrometry)

NAA (Neutron Activation Analysis)

LA-ICP-MS (Laser Ablation Inductively Coupled Plasma Mass Spectrometry)

trace element contents:

strontium, baryum and zirconium

• 36 samples of different colours from 13 mosaic vessels
• 60 samples of Celtic glass

Photo: Š. Jonášová
Celtic and mosaic glass in the context of Mediterranean glass:
Late Hellenistic to Early Roman

Celtic and mosaic glass vs. Levantine glass:
Beirut, Late Hellenistic to Early Roman

After Henderson 2013, complemented by Venclová
Production areas of natron glass and major trade routes of glass ingots to Celtic Europe, 3rd-1st cent. BC

After Roymans et al. 2014, supplemented
Drinking habits in the Early Iron Age

Cremation grave with the Etruscan beaked flagon (Schnabelkanne) from Ostrov near Pilsen

**Hypothesis:** the flagon may have been used for serving wine or mead

**Assumptions:**
- pollen from outer surface come from a sediment that filled the grave
- pollen from inner surface come from the sediment filling the flagon plus potentially from the previous content/drink

Kozáková, R. - Trefný, M. - Postránecká, K. submitted: Using pollen analysis to detect microscopical traces of original content of Etruscan beaked flagon from Ostrov near Pilsen, Czech Republic.
Pollen analysis – sampling

- 14 analysed samples, 9 in, 5 out
- 2 samples – no pollen
- 5 samples – extremely low number of pollen
- 4 samples – recent contamination
- 1 sample – recent contamination plus honey?
- 2 samples – honey plus recent contamination?
Result: residue of honey?

- Possible honey indicators: *Tilia*, *Hypericum*, *Trifolium repens type*, *Mentha type*
- Contamination: *Chenopodiaceae*, *Polygonum aviculare*, *Cerealia sp.*
- Recent contaminations: *Secale cereale*, *Centarea cyanus*

flagon may contained mead
flagon may be filled repeatedly
flagon was put into the grave empty
Genetic imprints of Neolithic

Genetic imprints of food-production systems in different human populations, especially nomadic pastoralists and sedentary farmers.

Co-evolutionary aspects of human genetic diversity: milk production and lactase persistence

Lactase persistence (LP)
• Ability to digest lactose all life
• Only some human populations
• Genetically determined trait

Project GAČR 13-37998S-P505:
Genetic imprints of food-production systems in human populations, V. Černý

Laboratory of Archaeogenetics
Distribution of lactase persistence

Interpolated map of Old World LP phenotype frequencies (after Itan et al. 2010)
Origin of T-13910 mutation

Simulation model shows the origin of T-13910 at ca. 7.5 ka. It may be connected with an appearance of LBK culture (after Itan et.al. 2009. PLoS ComputBiol 5(8)).
Is milk consumption more ancient in Europe than in Africa?

Was it introduced there by migration of the farmers from the Near East?

Eastern Sudan, the Beja peoples with their cows  
Photo: V. Černý

Burkina Faso, Fulani woman milking her cow  
Photo: V. Černý
Fulani herdsmen have the same mutation as in Europe and in surprisingly high frequencies.

Did this variant arise independently in Africa or was it introduced there by the migration of Eurasian pastoralists from the north?

Figure by E. Priehodová

Testing of the lactase persistence in Burkina Faso
Genetic imprints of food-production systems in human populations

Genetic diversity of different enzymes in pastoralists and farmers

**NAT2 enzyme**

The main factor of the variability NAT2 enzyme in Africa was not subsistence, but the natural environment


Collection of DNA, the team gathered during last 15 years, is quite unique and allows us to collaborate with number of foreign colleagues and publish the results in high impacted journals.
any structural change in archaeology in the future will cost money, therefore

it is vitally important to persuade the public that archaeology matters

Archaeological Atlas of Bohemia

105 sites selected as examples

to illustrate the range of archaeological remains
to open archaeology to non-archaeologists
to present landscape as a diachronic phenomenon
to explain how archaeology works
tools

- texts, maps, new site plans, lidar snaps,
- GPS coordinates, photographic panoramas
www.aatlas.cz

- Czech and English version
- short texts, more photos, fulltext publications and reports