



Understanding fertility during the Mesolithic Neolithic in the Danube Gorges: Bioarchaeological approach



Second International Workshop

Maison Méditerranéenne des Sciences de l'Homme, Aix-Marseille University,

Aix en Provence, France

1st to 3rd July 2014



We are pleased to announce the Second international workshop on Bioarchaeology of fertility organized by Aix-Marseille University, Bordeaux University, CNRS, MCC, Belgrade University, MSTD and the *BEAN project* (Bridging the European and Anatolian Neolithic). This new workshop aims at presenting the works and results obtained during the last year of the Serbian-French scientific cooperation (PreFert project, **Prehistoric Fertility**). This project focuses on the understanding of prehistoric fertility in the Danube Gorges (Mesolithic-Neolithic transition, Balkans) through the integration of archeological, anthropological and paleodemographic methods. Researchers working on the following topics are also welcome:

- children bioarchaeology (feeding practices, growth development, behavioural characteristics, infant feeding practices ...)
- evidences of birthing process, pregnancy and neonatal care in the archaeological record
- prehistoric paleodemography, demography at the Mesolithic-Neolithic transition

Organizing committee

Camille de Becdelievre (University of Belgrade)

Jelena Jovanović (University of Belgrade)

Mélie Le Roy (University of Bordeaux, CNRS, MCC, UMR 5199 PACEA)

Gwenaëlle Goude (Aix-Marseille University, CNRS, MCC, UMR 7269 LAMPEA)

Scientific committee

Sofija Stefanović (University of Belgrade)

Stéphane Rottier (University of Bordeaux, CNRS, MCC, UMR 5199 PACEA)

Gwenaëlle Goude (Aix-Marseille University, CNRS, MCC, UMR 7269 LAMPEA)

Estelle Herrscher (Aix-Marseille University, CNRS, MCC, UMR 7269 LAMPEA)



Programme

Tuesday 1st July:

9h30: Reception and visit of the laboratory

10h30: Coffee break

11h00: Opening (G. Goude and J.-P. Bracco)

Introduction to the Workshop (C. de Becdelièvre)

11h30: **Sofija Stefanović** (Laboratory for Bioarchaeology), *An introduction to Bioarchaeology of Fertility: human birth at the Danube Gorges between 10000-5000 BC.*

12h30: Lunch break

14h00: **Anne-Marie Tillier** (UMR 5199, PACEA), *Can we speak of perinate and infant mortality in Prehistory.*

14h30: **Anna Degioanni** (UMR 7269, LAMPEA) : *Reflections on demography and Neolithic age.*

15h00: **Mélie Le Roy** (UMR 5199, PACEA), Camille de Becdelièvre (Laboratory for Bioarchaeology), M. Porčić (University of Belgrade), *Age reassessment and representativity of children from danube gorges sites: Mesolithic/Neolithic transition.*

15h30: Coffee break

16h00: **Jelena Jovanović**, Camille de Becdelièvre, (Laboratory for Bioarchaeology), Estelle Herrscher, Gwenaëlle Goude (UMR 7269, LAMPEA), *Nutrition and infant feeding practices during Mesolithic-Neolithic in the Danube Georges: assessment of a French-Serbian project (PreFert).*

17h00: Discussion

18h00: Cocktail dinner

Wednesday 2nd July :

9h30: Reception and coffee

9h45: Visit of Ponteau-gare (Martigues), Neolithic site

13h00: Lunch break

14h30: Working session

16h00: Coffee break

16h30: Working session

18h00: Cocktail dinner

Thursday 3rd July :

9h30: Working session

10h30: Coffee break

11h00: Working session

13h00: Lunch break

14h00: Working session

16h00: Cultural visit



Abstracts

An introduction to Bioarchaeology of Fertility: human birth at the Danube Gorges between 10000-5000 BC

Sofija Stefanović¹

¹ Laboratory for Bioarchaeology, Departement of Archaeology, University of Belgrade

In order to investigate the key biological and cultural mechanisms affecting fertility rates resulting the Neolithic Demographic Transition, we integrate skeletal markers with micro-nutritional and macro-scaled cultural effects on fertility rates during the Early-Middle Holocene (10000-5000 BC) in the Danube Gorges. Bioarchaeology of fertility, new framework for the understanding complexity of human birth will investigate human, animal and plant remains by multidisciplinary approach in order to: 1) analyze variability in the pattern of birth rates (number of pregnancies, interval(s) between them and the duration of the reproductive period) through histological analysis of irregularities in tooth cementum of women; 2) Determine paleoobstetric and neonatal body characteristics, health status and nutrition through analysis of skeletal remains; 3) Determine micronutritional changes during the Early-Middle Holocene through trace element (Zn, Ca and Fe) analysis; 4) Investigate the micro and macronutritional value of prehistoric foodstuffs, through an analysis of animal and plant remains and to compare the nutritional intake in relation to health and fertility; 5) Explore the possible role of culture in driving fertility increases, especially the role of prehistoric dwellings as a new birthing arena in human evolution.

Can we speak of perinate and infant mortality in Prehistory

Anne-Marie Tillier¹

¹ PACEA, UMR 5199, University of Bordeaux

It is a common knowledge that in ancient populations (pre-industrialised populations), normal perinatal/infant mortality ratio ranges between 43% and 52%. This contribution attempts to address the question regarding infancy and infant mortality in prehistoric populations, through the presentation of few examples originated from sites separated by hundred (or thousands) of kilometres and thousands years in time. There are indeed difficulties related to the representation of perinatals and infants in the anthropological documentation, to the question of age and sex estimation, etc. The low percentage of infants in prehistoric sites is not representative of the expected mortality profile. By contrast, the meaning of an unusual demographic picture represented by either the unique presence of infants or the high percentage of perinatals in a site, raises methodological and cultural questions. In this aspect, the use of recent modern human reference samples (known age and sex) in age and bone maturation estimation may not be appropriate for the specimens under investigation, as they originate from sedentarized and/or industrialised populations.



Reflections on demography and Neolithic age

Anna Degioanni¹

¹LAMPEA, UMR 7269, CNRS, Aix-Marseille University

Reconstruction the demographic structure of past populations is not straightforward because of the lack of reliable data. The data at our disposal are the skeletal remains, which are an unrepresentative sample of the living population. In Europe as the Neolithic skeletal remains increase, generally it is said that the size of the population increases. Is it correct? What is the cause of this increase? Would it not be more useful to interest in changes between nomadic and sedentary life and changes in diet with the cereal more important introduction?

Age reassessment and representativeness of children from danube gorges sites: Mesolithic/Neolithic transition.

Mélie Le Roy¹, Camille de Becdelièvre², Marko Porčić³

¹PACEA, UMR 5199, University of Bordeaux

²Laboratory for Bioarchaeology, Departement of Archaeology, University of Belgrade

³University of Belgrade

As part of the Prefert project, the age at death of all immature individuals from Danube gorges sites has been reassessed using different methods, in order to provide a homogenous data base. Five archaeological sites were considered: Lepenski Vir, Vlasac, Padina, Ajmana and Hajducka Vodenica. This study allowed to re estimate the number of individuals within each archaeological site. This new data was used to discuss the representativeness of each age rank present within the sample and identify if changes occur depending on the period.

Nutrition and infant feeding practices during Mesolithic-Neolithic in the Danube Georges: assessment of a French-Serbian project (PreFert).

Jelena Jovanović¹, Camille de Becdelievre¹, Estelle Herrscher², Gwenaëlle Goude²

¹Laboratory for Bioarchaeology, Departement of Archaeology, University of Belgrade

²LAMPEA, UMR 7269, CNRS, Aix-Marseille University

Major nutritional changes that occurred at the advent of the Neolithic are considered as one of the possible explanations for the human demographic transition. The French-Serbian cooperation project (Prefert) aims at exploring two issues correlated with the appearance of the first agricultural practices: the shift toward the consumption of higher calorie food that may have impacted the maternal energy balance, and the reduction of the period of breastfeeding that may enable mothers to be pregnant more often. In the prospect of collecting direct information about the diet of mothers during their pregnancy, we performed stable isotope analyses of carbon, nitrogen and sulfur ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$ and $\delta^{34}\text{S}$) extracted from the collagen of 20 fetuses and neonates from the Danube Gorges Mesolithic-Neolithic sites (Balkans 9500-5500 BC). The feeding practices of 20 older children (6 months-8 years) were examined by applying a multi-sampling strategy to discuss the timing and the patterning of the weaning process. Results are interpreted jointly with available data about adult nutrition, with a special focus on the female diet.