

The BIRTH project intends to provide first direct, skeletal evidence about number of babies born by prehistoric mothers.

Aim of the BIRTH project is to investigate biological and cultural mechanisms behind fertility rate of population lived at the Balkans between 10000-5000 BC.

BIRTH will intend to answer the intriguing questions: did Neolithic mothers really have more babies than Mesolithic ones?

BIRTH is not only about past. Lesions about prehistoric fertility could be important for modern humans because the same mechanisms stand behind human fertility from the beginning of our evolution until today.



Sculpture named *Vulva* was placed near the hearth of the house at Lepenski Vir, and was described as a "womb before giving birth". (National museum, Belgrade.)
Photo: A. Radoman

BIRTH

Births, mothers and babies

345 Early-Middle Holocene (10000-5000 BC) sites in Serbia providing bioarchaeological and archaeological material studied as part of the BIRTH project

Prehistoric fertility in the Balkans between 10000-5000 cal BC



Philosophy behind:

BIRTH draws upon the philosophy of *Henri-Louis Bergson* (1859-1941), who described the mechanisms by which science creates false evolutions using merely the remains of the past. But those remains are solely fragments of past realities, rather than reality itself. Bergson suggested that the integration of theory of knowledge and theory of life is the key in understanding evolution, by means of exploring certain tendencies in evolution from their nascency, following their development and collecting actual data on certain evolutionary processes.

New ERC BIRTH project, hosted by the Laboratory for Bioarchaeology, University of Belgrade investigates the biological and cultural mechanisms which affected fertility and led to a major demographic shift in human evolution, known as the Neolithic Demographic Transition (NDT). The project develops an integrative framework for understanding skeletal, (micro)nutritional and cultural effects on fertility rates during the Early-Middle Holocene in the Central Balkans. Human, animal, plant and archaeological remains studied in the BIRTH coming from the Mesolithic and Neolithic sites in Serbia.

Principal investigator Sofija Stefanović

BIOLOGY OF FERTILITY

This part of the project investigates skeletal indicators of pregnancy and paleoobstetric traits of females and neonates, as well as the health and nutritive status of the population on the whole.

Skeletal evidence of fertility: investigate 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.

Body, health and micronutrition: analysis of pelvis and neonatal skeletons will determine whether the Neolithic saw a change in body proportions that could have had a positive effect on birth success. Micronutrients are of particular importance for babies, pregnant and lactating women and our aim is to determine the concentrations of elements (Iron, Iron, Zinc and Calcium) which are vital for growth, development and fertility.

PREHISTORIC MACRO AND MICRONUTRITION

The aim of this segment of the project is to determine the macro and micronutritive potential of diet, and to correlate obtained results with data on human health, body proportions and fertility.

Evidence from animal bones: existing and newly obtained archaeozoological data from Early-Middle Holocene sites will be integrated in order to reconstruct macro and micro nutritive values of animal products used in human diet. Project will establish chronology of animal domestication, i.e. introduction of milk and dairy which probably have had consequences on human biology.

Archaeobotanical micro-remains: although the shift towards diet rich in carbohydrates is often cited as one of the key causes of NDT, data on the introduction and availability of carbohydrates in the Early Neolithic is scarce. Project will analyze micro-archaeobotanical remains from dental calculus and artifacts used in food preparation and consumption in order to understand the outset of plant cultivation and consumption.

SIMULATION AND MODELING

Summed radiocarbon probability distributions: simultaneously with estimates of individual fertility, we will reconstruct population dynamics, by using the method of summed radiocarbon probability distributions. The existing database of 333 Early Neolithic sites will be employed in order to define a spatial/chronological unbiased sample of 300 new radiocarbon dates.

Testing hypotheses on the interaction of demographic and cultural processes: the project encompasses a wide range of methodological approaches at various levels and we will use computer simulation and modeling as instruments for testing complex hypotheses regarding the interaction between demographic and cultural processes.

ARCHAEOLOGY OF BIRTHING

The attitudes of the community towards pregnancy, birth and neonatal care could have played a key role in the success of the birthing process and an increase of fertility. The aim of this segment of the project is a construction of a methodological framework for the research on the archaeology of birthing.

Neonate burials: Assuming that burial practices connected with neonates reflect the concern of the community for babies, and assuming that communal concern is the foundation for the success of birthing process, Early-Middle Holocene neonate burials from the Central Balkans will be analysed.

Figurines: in order to explore the extent to which the topic of birthing was present in Early-Middle Holocene communities, we will analyze the Early Neolithic figurines—their formal attributes, context of deposition and use will shed more light on their association with fertility or lack thereof.

