

Laboratory for CHEMICAL ANALYTICS



Laboratory for MICROBIAL ECOLOGY

Centre for Applied BIOANTHROPOLOGY (BIOANT)

The Laboratory will be a regional center for analytical chemistry in anthropology, including the multielemental analysis of archaeological bone samples, the implementation of complete toxicological analyses from biological samples (blood, urine, bone, hair, nails etc.). The Laboratory expertise will be based on high performance techniques such as ICP-MS/MS, GC-MS/MS and LC-MS/MS, which complement each other and provide complete insight into the human body's chemical burden (heavy metals, metalloids, trace elements, pesticides, herbicides, antibiotics, narcotics and other drugs). It is a fact that analytical chemistry in anthropology is one of the most propulsive areas of anthropological and forensic sciences and almost every disease or condition of a human organism is related to the influence of particular chemicals. This is particularly associated with complex diseases, including obesity, and one of the main pathways of the intake of chemicals into the human body is nutrition.

Most of contemporary diseases are related to disorders in microbiome and, accordingly, microbial ecology, using molecular tools, has become one of the leading branches in human disease research. The role of the Laboratory will be to determine the role of microorganisms in the quality of life in different populations, to explore the mechanisms of interaction of intestinal microbiome and human organism and the role of microbiome in the emergence of complex diseases. The Laboratory will also explore the role of microorganisms in the impact on the environment, exploring nutritional habits of populations of the past and microbiological factors that affect the quality of the archaeological sites.

Research will contribute to the knowledge of the interaction of the ecological system consisting of human and environment and the improvement of the health status of individuals. The analyses to be carried out within this Laboratory include classical microbiological analyses and the application of new methods such as (meta-)genome analysis, (meta-)transcriptome analysis, massive parallel sequencing and sequencing of individual cells, metabolomics and cell physiology testing in real systems.

Project is partially funded by
the European Union, from the European fund
for Regional Development

User: Institute for Anthropological Research, Zagreb, CROATIA

Duration: 1 June 2018 – 1 December 2019

Total worth of the project: 26.472.966,86 HRK

EU co-financing: 22.502.021,83 HRK

WWW.INANTRO.HR/EN/BIOANT



Contact:

Centre for Applied Bioanthropology
Institute for Anthropological Research

Ljudevita Gaja 32
10 000 Zagreb, Croatia
+385 (0)1 55 35 100

ured@inantro.hr
www.inantro.hr



INSTITUTE FOR
ANTHROPOLOGICAL
RESEARCH



Europska unija
Zajedno do fondova EU

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Institute for Anthropological Research.

More information on EU funds: www.strukturnifondovi.hr

In May 2018, Institute for Anthropological Research signed the grant award for the project "Centre for Applied Bioanthropology" which was approved under the Call "Investments in Organizational Reform and Infrastructure of the Research, Development and Innovation Sector" and funded by the European Fund for Regional Development. The project involves the construction of four new laboratories (Laboratory for Molecular Anthropology, Laboratory for Evolutionary Anthropology and Bioarchaeology, Laboratory for Chemical Analytics and Laboratory for Microbial Ecology) in the existing premises of the Institute. This project will enable the implementation of high quality scientific research, further enhance the collaboration with international institutions and submissions of significant international projects, all with the aim of securing the competitiveness in the European Research Area.



The project will enhance top-level scientific research capacity of the Institute, increase the number of researchers working in improved research facilities, increase the number of scientific publications in the journals indexed in Web of Science platform, increase the number of students and theses and provide a better bases for scientific cooperation with similar organizations, both in Europe and the world. It will enable the Institute for Anthropological Research to become the leading national center for conducting anthropological research.



Laboratory for MOLECULAR ANTHROPOLOGY

The Laboratory will be specialized in various types of molecular-anthropological analyses, including population-genetic analyses, analyses of migration processes at regional and global levels, as well as applied molecular-anthropological analyses within the forensic science and genetic analyses in the field of sport and nutrition.

One of the key activities of the Laboratory will be associated with a molecular-genetic personalized approach to obesity such as the examination of genetic markers, treatment and prevention of obesity in the Croatian population. Testing of the genetic predisposition for obesity and healthy aging, by using molecular-genetic approach and standard medical-anthropological procedures, will be further used for developing a set of guidelines for proper nutrition and physical activity.

Laboratory for EVOLUTIONARY ANTHROPOLOGY AND BIOARCHAEOLOGY

The Laboratory will be specialized in the implementation of various types of bioarchaeological analyses, including taxonomic and phylogenetic, and various evolutionary aspects, as well as the preparation of human bone material for various types of analyses (e.g. sampling for ancient DNA analysis etc.). The preparation involves the cleaning, drying and inventorying of bone samples from the archaeological context, while standard analysis includes the determination of taphonomic characteristics, sex and age at the time of death, minimum number of individuals in case of mass burials, paleopathological and dental analyses, determination of metric and non-metric characteristics and height reconstruction. Also, the Laboratory will take samples to be sent abroad for further analyses (C14, aDNA). The Laboratory for Evolutionary Anthropology and Bioarchaeology will collaborate with the Laboratory for Chemical Analytics, in particular on the analyses of stable isotopes (carbon, nitrogen) for the purpose of reconstruction of diet of various archaeological populations.

