

01: Ancient proteins as indicators of climatic and evolutionary change

Lead supervisor:

Dr. Nicole Boivin
Department of Archaeology
Max Planck Institute for the Science of Human History
Kahlaische Strasse 10
07745 Jena, Germany
Email: boivin@shh.mpg.de
http://www.shh.mpg.de/141324/director_Nicole_Boivin

Co-supervisors:

PD Dr. Peter Frenzel
Friedrich Schiller University of Jena
Institute of Earth Sciences
Burgweg 11
07749 Jena
Email: peter.frenzel@uni-jena.de
<http://www.igw-ahg.uni-jena.de/en/Workgroup+Prof+Heubeck/Team/Frenzel+Peter+PD+Dr.html>

Dr. Katerina Douka
Department of Archaeology
Max Planck Institute for the Science of Human History
Kahlaische Strasse 10
07745 Jena, Germany
Email: douka@shh.mpg.de
<http://www.shh.mpg.de/person/53723/25522>

Dr. Patrick Roberts
Max Planck Institute for the Science of Human History
Department of Archaeology
Kahlaische Str. 10
07745 Jena, Germany
Email: roberts@shh.mpg.de
<http://www.shh.mpg.de/179129/>

Prof. Dr. Michael Petraglia
Max Planck Institute for the Science of Human History
Department of Archaeology
Kahlaische Str. 10
07745 Jena, Germany
Email: petraglia@shh.mpg.de
<http://www.shh.mpg.de/178394/>

Involved subjects: Archaeology, Earth Sciences, Palaeoenvironments, Palaeontology, Geoscience

Number of positions requested: 2

Abstract:

Zooarchaeology by Mass Spectrometry (ZooMS) is a powerful new method that is revolutionizing the ability of archaeologists to provide insights into faunal changes through time. The method, involving mass peptide fingerprinting using MALDI-TOF mass spectrometry, enables identification of faunal remains from preserved proteins. These proteins can in some cases survive over long time periods, including in parts of the world where ancient DNA rarely preserves.

ZooMS allows study of less well-preserved archaeological assemblages, where little material is identifiable by traditional morphological methods, and also improves identification rates and specificity for better-preserved assemblages. ZooMS accordingly holds significant potential to improve our understanding of changes in faunal assemblages through time in diverse regions of the world. This project will involve the zooarchaeological and ZooMS study of diverse faunal assemblages across a wide region of Africa, Australia, South America or Asia. It will be used to examine changes in faunal diversity through time, enabling the testing of theories about climatic and evolutionary change, as well as human impacts such as extinction, extirpation and the introduction of domesticates. In some regions, where access to relevant sites is possible, the examination of megafaunal extinctions, and testing of theories about the role of climate or humans in driving them during the Late Quaternary period, could be undertaken.