Applications are invited for a studentship starting in October 2025 to be supervised by Dr Melanie Roffet-Salque (University of Bristol).

# Investigating the impacts of past climate change on human populations using a novel H isotope proxy on archaeological pottery and skeletal remains

The Organic Geochemistry Unit at the University of Bristol (School of Chemistry; #1 in the UK for Research based on THE analysis of REF2021) has been at the forefront of the investigation into past subsistence practices using the analysis of lipids derived from foodstuffs and preserved in archaeological pottery (e.g. Evershed et al. 2022, Nature). Studying the interplay between subsistence practices and climate is crucial to understanding the resilience of human populations to changing climate in the past. However, the impacts of climate on human populations can be highly regionalised making their detection challenging due to a scarcity of well-dated local or on-site terrestrial palaeoclimate records.

This PhD studentship will address the lack of well-dated local climate records by developing a novel H isotope proxy using lipids preserved in archaeological pottery and skeletal remains. Following on from a pilot study (Roffet-Salque et al. 2018, PNAS), as part of this PhD studentship you will be using animal fats extracted from archaeological pottery and animal bones from across the Mediterranean to build climate records for the region at key periods. This will enable you to study the impacts of climate (in)stabilities on early farming human populations and their subsistence practices.

You will be:

- Securing samples from a wide range of archaeological sites,
- Extracting lipids within various matrices (archaeological pottery and animal bones),
- Determining the molecular and compound-specific isotope composition of the lipid extracts using state-of-the-art analytical methods: Gas Chromatography-Flame Ionisation Detector (GC-FID), GC-Mass Spectrometry (GC-MS) and GC-Combustion-Isotope Ratio MS,
- Collaborating with climate modelers to compare the high-resolution well-dated proxy records obtained during your PhD with climate model simulations,
- Collaborating with archaeologists to study the impacts of climate on early farming communities.

#### **Candidate Requirements**

Applicants must have obtained, or be about to obtain, a First or Upper Second Class UK first degree, or the equivalent qualifications gained outside the UK, in Chemistry or in a related discipline (archaeological chemistry, environmental sciences, biogeochemistry).

#### How to Apply

Please make an online application for this project at the following page <a href="https://www.bristol.ac.uk/study/postgraduate/apply/">https://www.bristol.ac.uk/study/postgraduate/apply/</a>

### **Funding**

A full studentship will cover UK tuition fees, a training support fee and a stipend (£19,237p.a. in 2024/25, updated each year) for 3.5 years.

## **Getting in Contact**

We encourage you to make an informal enquiry to Dr Melanie Roffet-Salque (melanie.salque@bristol.ac.uk) if you have any queries or would like to discuss project.