

BiolsoANE: an open-access repository of bioarchaeological isotopic analysis in the greater ancient Near East

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The isotopic analysis of bioarchaeological remains has gained pace over the last few decades in the archaeology of the greater ancient Near East (GNE). Initially recognised for their utility in investigations of mobility, subsistence and diet, isotopic methods are now employed to address increasingly diverse research questions. Not only have research topics diversified, but so have methodologies. Advances in instrumental analysis, the use of multiple isotopic analyses, the application of new isotopes in archaeological research and the combination of isotopic analyses with ZooMS, aDNA and proteomics are revolutionising what can be learnt about past human societies from bioarchaeological remains. Today, embracing a holistic understanding of human ecology and pushing forward the frontier of interdisciplinary research, the isotopic analysis of bioarchaeological remains has not only become an indispensable method for the research agendas of excavations and regional projects, but it has also transformed into a research field in and of itself. In recent times there has also been an increasing trend to explore ‘big pictures’, resulting in large-scale pan-regional and diachronic examinations of dietary habits, subsistence strategies, palaeoeconomies and animal and human mobility.

However, biases exist in terms of the intensity of research and the questions being addressed, and there is a need to connect researchers across the different subregions of the GNE. In this rapidly developing field, data-reporting standards of legacy data need to be addressed and current research protocols and data reporting need to be standardised at large. Therefore, there is a need to compile the data that have already been produced and published to enable observation of research trends and continued assessment and improvement of methodologies. With these objectives in mind and following several meetings of the Archaeological Isotopes Working Group (AIWG) at American Society of Overseas Research (ASOR) conferences, it was established that the creation of a centralised database of isotopic data and research from the region would be a good way to approach these objectives. A research grant from the British Institute at Ankara (BIAA), awarded in 2020, and subsequent and continuing support from the BIAA has enabled us to work towards making this need a reality.

Thus, here, we would like to announce the final outcome of this project: a website with an open-access bibliography and integrated database of published bioarchaeological

isotope data for the GNE – BioIsoANE: A Repository of Bioarchaeological Isotopic Analysis in the Greater Ancient Near East. The website, database and bibliography will provide a focal point for researchers from multiple disciplines, within and beyond archaeology, to examine, collate, compare and contrast data, and allow them to perform their own meta-data studies. The website will serve as a collaborative platform to move the field forward and increase the robustness of isotopic analyses and data reporting, as well as the reliability and traceability of data. This dynamic collaborative research platform will be hosted on the BIAA server and will provide an affiliated contribution to the Institute’s digital repository. The BioIsoANE website project is an international and collaborative endeavour, co-directed by the authors of this article, including a user-interface designer (Emrah Çiftçi, BAREK, Ankara) and two web application developers (Cem Çetintaş and İlker Ergün, Ankara), and supported by the members of the AIWG and BioIsoANE’s current advisory committee: Michael Richards, Lynn Welton (Durham University), Scott Branting (University of Central Florida) and Dominique Langis-Barsetti (University of Toronto).



The region covered by the BioIsoANE project and databases.

The BioIsoANE database will include all isotopic data from bioarchaeological remains (human, animal, plant, organic residues) recovered from sites dating to all archaeological periods of the greater ancient Near East – from the Balkans to the south Caucasus, and from northern Sudan to the Persian Gulf and Iran. A relational database for storing published isotope data in the most efficient way and in compliance with best practices in data reporting has been designed and developed. For this we observed a number of principles: meta-data compatibility with existing open-access database projects in related fields; maximising the contextual information provided for samples from which quantitative data are driven; user-friendly organisation of data and flexible search functions to increase utility for various research objectives; and, finally, scientific rigour in reporting data quality measures and maintaining flexibility to accommodate for further development of data fields as analytical methods continue to advance. It will be possible to view a summary of the data for each site via an interactive map, where sorting and visualising by categories such as period, region, country, isotope and sample type will be possible. The isotope data repository database is linked to the bibliographic database to ensure context and traceability of the data. This bibliographic database will be searchable through common search fields (for example, author, date, title, journal), as well as customised search fields developed by us for users from multiple related disciplines (for example, region, country, site, site type, chronological and cultural period, sampled population type, sampled tissue type, reported isotopes, research theme); it will also have content fields for storing the keywords and abstracts of publications included in the database. So far, data for these fields from nearly 300 published articles have been collated following a systematic browsing of journals in related fields, conference proceedings, edited volumes, etc. The coding for the digital development of the databases and web pages, whilst currently ongoing, is nearing completion, after which and following data entry, the website, its interactive map and databases will become publicly accessible.

In the process of data compilation, we have recognised certain patterns in the published literature regarding how data-reporting standards and research methodologies and agendas have evolved, and a currently vibrant field is the ‘meta-analysis’ of biological and bioarchaeological data including ancient genomic and isotopic datasets. Analyses utilising these quantitative datasets derived from cultural contexts of the ancient past have demonstrated that it has become ever more pertinent for archaeologists and bioarchaeologists who have hands-on experience with the actual research materials and methods of the field and in the laboratory, like ourselves, to be involved in the well-contextualised presentation of these datasets. We are currently working on the manuscript of a more detailed scholarly article, in which we will present an overview of the research trends in bioarchaeological isotopic

analyses in the GNE and elaborate on the utility of the isotopic method and its broad-scale use in the interpretation of human-environment relations, land-use and subsistence, structural inequalities and dietary preferences, and human mobility. Furthermore, it will be stressed in particular how the BioIsoANE website and database can prove to be invaluable research and teaching tools in the performance of such studies. We have also presented our work and the BioIsoANE project and its online components at two conferences: the Association for Environmental Archaeology (AEA) Spring Conference, which was held as a virtual meeting on 24 April 2021; and the ASOR 2021 meeting held virtually on 9–12 December 2021.

This project is intended to have a long-term use in and benefit to the fields of archaeology, bioarchaeology, ecology and climate studies and the isotopic research communities, providing an open-access digital repository of current and legacy data and a format for developing and enhancing isotope research in the region for many years to come. Therefore, following its public online launch and publication, the website will continue to be edited, developed, updated and managed by us. This will include primarily updating the isotope database and bibliography as more data become available and more research is conducted and published. Part of the website will also contain information to promote best practices in all stages of research, from sample selection to data reporting. This component of the website is of crucial importance for its role as an educational online platform. Longer-term aims include the addition of a forum/message board to provide a focal point for communication and discussion between researchers, which will hopefully help to develop collaborative research relationships and opportunities as well as enabling methodological and theoretical issues to be kept up-to-date, ensuring that the field continues to develop to a high international standard. At some point in the future, when it (hopefully) becomes possible, we would like to hold a thematic in-person workshop/small symposium at the BIAA in Ankara to develop and expand upon the already strong foundation of international collaboration with regards to isotopic and bioarchaeological research in the region.

We hope, and anticipate, that BioIsoANE will become a vibrant collaborative platform for researchers who specialise in or want to learn more about isotopic analyses, as well as project directors who are seeking to incorporate isotopic analyses into their own research agendas. We look forward to announcing its public launch and welcoming you online in the near future!



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in the Greater Ancient Near East