



ÖAW

Austrian
Academy of
Sciences



Austrian
Archaeological
Institute

Archaeological Sciences

at the Austrian Archaeological Institute



Wet Lab (© S. Prodingner)





The Archaeological Sciences Unit

Over the years, a competence centre for archaeological sciences has been created at the Austrian Archaeological Institute (OeAI) at the Austrian Academy of Sciences (OeAW) in response to the dynamic developments in archaeology. The new location at the Postsparkasse in the Vienna city centre offered the opportunity to set up comprehensive laboratory facilities as part of the newly established research unit for archaeological sciences.

Its particular strength and also added value at an international level is the staff with their proven expertise in specialist areas. These include lithics and marble research, ceramic/clay/mortar and colour archaeometry, archaeogeochemistry as well as archaeozoology, archaeoethanatology and histotaphonomy, archaeobotany and expertise in the field of food archaeology.

The activities of the Archaeological Sciences unit have an impact on many research projects at the OeAI. The unit contributes to the institute's research agenda and is actively involved in project development, collaboration and coordination.

The structural basis for scientific research is provided by the specialised laboratories equipped for state-of-the-art analytical methods, with further techniques available through national and international cooperation partners. Collections form another important element, and are used primarily for comparative studies. Specifically, reference should be made to the stone collection (lithics) as well as marbles, pigments, animal remains, seeds and ceramics/clay/mortar in the form of raw samples and thin sections.

The Archaeological Sciences at the OeAI are organised into the following laboratories:

Head: Eszter Bánffy

- Bioarchaeology Lab (coordination: Andreas G. Heiss | Alfred Galik)
- Ceramic Lab (coordination: Pamela Fragnoli)
- Geochemistry Lab (coordination: Alexandra Rodler)
- Lithic Lab (coordination: Michael Brandl)

The OeAI's diverse and extensive archaeometric collection is available online at oeaimetrix.oeaw.ac.at.

OEAI.METRIX

Laboratories

The Archaeological Sciences are focusing on the following research fields:

Lab Infrastructure

Dimitra Kourtidou

The laboratory infrastructure at the institute comprises specialised facilities equipped for state-of-the-art analytical methods, including a fully equipped wet laboratory for chemical-physical sample preparation and a precision analysis laboratory housing a multi-collector mass spectrometer. Available techniques include petrographic, high-resolution digital, and scanning electron microscopy, X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), and high-resolution gas chromatography–mass spectrometry (GC–MS). Further mobile devices for working in the field are available. There is also storage space for our extensive research collections.



Bioarchaeology Lab: Archaeobotany
(© OeAW-OeAI/N. Gail)

Bioarchaeology Lab: Archaeobotany

Andreas G. Heiss

Macrofossil analysis and xylology/anthracology are the two main methods used in our research to study cultivated and wild plant remains found at various sites. These include prehistoric Alpine pile dwellings, Bronze Age and Iron Age Central Europe, the Neolithic Balkans and Byzantine Ephesos. We reconstruct past agricultural practices, plant-based diets, forestry and human–environment interactions in general. A major research focus is the diachronic study of archaeological food remains.



Ephesos, Verulanus Halls, *Characeae oogonia*
(© OeAW-OeAI/A. G. Heiss)



Bioarchaeology Lab: Biological Anthropology (© S. Prodingner)

Bioarchaeology Lab: Archaeozoology

Alfred Galik

The zooarchaeological research focuses on diverse animal remains, including mammals, birds, fish and molluscs. Besides zoological and anatomical research we are interested in reconstructing past animal economy and ecology, fishing traditions and human diets in various chronological and geographical contexts – mainly in Europe, Anatolia (notably Ephesos), and Saudi Arabia. The chronological range of scientific interest starts with Neolithisation and goes up to early Modern Times.

Bioarchaeology Lab: Biological Anthropology

Caroline Partiot

Our research aims to reconstruct the biological identities, health status, life histories, and burial practices of past populations from a variety of geographical and chronological contexts, ranging from Neolithic remains to ancient cities such as Ephesos and Carthage, and antique-medieval Austria. We apply methods from osteobiography, paleopathology, archaeoethnatology, and histology to the analysis of human remains. A significant part of our research focuses on childhood and early life adversity.

Ceramic Lab

Pamela Fragnoli

We study earthen materials to reconstruct craft organisation, exchange networks, and consumption practices within broader socio-economic trajectories. Our research spans craftscales in Ephesos, resilient resource management in Bronze and Iron Age desert oases on the Arabian Peninsula, international connectivity in the Late Bronze and Iron Age Mediterranean, craft specialisation in early state Mesopotamia, and early ceramic traditions in Europe and Western Asia.

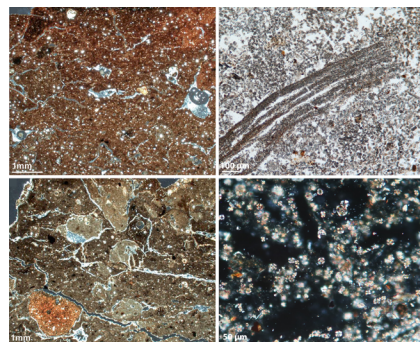


Lithic Lab (© OeAW/D. Hinterramskogler)

Geochemistry Lab

Alexandra Rodler

We investigate provenance, production, and trade networks using mass spectrometry, with a current focus on the polychromy of ancient art and architecture through the analysis of colouring materials. Comparing metals, glasses, glazes, and pigments through the lens of production technologies and exchange systems, we shed new light on the economic, social, and cultural connections of past societies.



Ceramic and sediment thin sections (© OeAW-OeAI/P. Fragnoli, L. Webster)

Lithic Lab

Michael Brandl

We focus on the characterisation and provenance of various lithic raw materials used for the production of tools and ornaments in archaeological contexts. We apply a multi-analytical approach combining methods such as LA-ICP-MS and FTIR. These analyses allow us to reconstruct past human behaviour relating to mobility patterns, resource management and diachronic socio-economic developments. Current projects include investigations into lithic economies in Serbia, Romania, South Africa and Albania.

Lithic Lab: Marble Analyses

Vasiliki Anevlavi

We utilise archaeometric methods and multi-proxy approaches on artefacts from museum collections and archaeological sites to determine the provenance of white marbles across prehistoric and historical periods and to reconstruct ancient trade and logistics networks (e.g. Ephesos, Thrace and Noricum).

Micromorphology

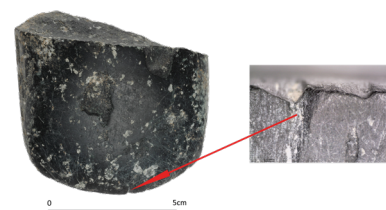
Lyndelle Webster

We study archaeological sediments at the micro-scale, unlocking clues about human activities and the natural processes that contributed to site formation. Thin sections prepared from undisturbed sediment blocks are analysed using microscopic and spectroscopic techniques (FTIR, XRF), and integrated with soil chemistry, phytolith and aDNA studies. We are applying this approach to diverse sites, including Neolithic settlements in the Balkans, and Bronze through Iron Age sites in Europe and Western Asia.

Wear and Robotic

Laura Dietrich

We investigate artefact use and material properties through use-wear analyses, controlled experiments, 3D-modelling, geometric morphometrics, and material characterisation to study prehistoric technologies, material choices, and patterns of innovation. Current projects focus on the 'Neolithic Package' in Southwest Asia and Europe and on developing digital reference collections of experimentally-produced wear.



Use-wear analysis of a stone-axe from the Neolithic Çukuriçi Höyük (© OeAW-OeAI/L. Dietrich)



WHAT WE OFFER

- Exchange with our experts in archaeometry, material and provenance analysis, use-wear analysis and controlled experiments, bioarchaeology, and geoarchaeology
- Joint research within the existing research topics of the institute, and the joint development of new projects
- A lively, integrated environment for analysis and discussion of archaeological materials and their contexts
- Access to our analytical infrastructure and extensive reference collections, to the institute's libraries and our digital research environment, as well as exchange with experienced researchers from across all prehistoric and historic archaeology



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The OeAI is an institute of the Austrian Academy of Sciences and, with around 150 employees, is Austria's largest research institution in the field of archaeology and ancient studies. Its core task is to research the history of mankind from the Quaternary period to modern times, taking into account material archaeological sources and written records.

CONTACT

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