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# Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

**- Μάρτιος 2026 -**

**All other things have a portion of everything, but  
Mind is infinite and self-ruled, and is mixed with  
nothing but is all alone by itself. (Anaxagoras)**

## Newsletter of the Hellenic Society of Archaeometry

**- March 2026 -**

**Nr. 300**

## ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS

### ΣΥΝΕΔΡΙΑ – CONFERENCES/WORKSHOPS

- 9<sup>th</sup> ARCH\_RNT SYMPOSIUM Archaeological Research & New Technologies, 8-10 October 2026, Kalamata, Greece ..... **page 4**
- Call for abstracts to all early career (Heritage) Scientists for the Gordon Research Seminar 11-12 July 2026 ..... **page 6**
- XXI World Congress of the International Union of Prehistoric and Protohistoric Sciences, Trends, issues and perspectives of AI in archaeology, 31 August - 4 September, 2026, Poznan, Poland. Calls for papers ..... **page 8**
- XI Radiocarbon and Archaeology International Symposium, 30 June - 3 July 2026, Niterói, Rio de Janeiro, Brazil ..... **page 10**
- TerraLID Summer School "Lead Isotopes in Archaeology", The Deutsches Bergbau-Museum Bochum, German Mining Museum Bochum, Germany ..... **page 11**

### ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ – JOB VACANCIES/FELLOWSHIPS

- Tsakopoulos Hellenic Collection, Hellenic Research Fellowship Program 2026-2027, Call for Applications ..... **page 12**

### ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

- Workshop on compound-specific radiocarbon analyses 2027 ..... **page 13**

### ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

- ARCHAOMETALLURGY OF IRON Means of production and processes from the origins to the Industrial Revolution, by Marco Cima ..... **page 14**
- Complex Research of Ancient Egyptian 'Mummy of the Priest' from the Collection of the Lomonosov Moscow State University Research Institute and Museum of Anthropology, by Krol Alexi, Bashilov Anton A., and Lazarev Mikhail N. .... **page 16**
- Reconstruction of the lifeways of Central European Late Bronze Age communities using ancient DNA, isotope and osteoarchaeological analyses, by Eleftheria Orfanou, Ayshin Ghalichi, Adam B. Rohrlach, Enrico Paust, Aida Andrades Valtueña, Michal Ernée, Mirosław Furmanek, Agata Hałaszkó, Taylor Hermes, Marie Himmel, Jana Ilgner, Johannes Krause, Mario Küßner, Theseas Christos Lamnidis, Mary Lucas, Drahomíra Adámková Malyková, Harald Meller, Gunnar U. Neumann, Luka Papac, Sandra Penske, Maike Salinger, Sarah A. Schrader, Torsten Schunke, Lena Semerau, Lubor Smejtek, Luca Traverso, Barbara Zach, Robert Spengler, Philipp W. Stockhammer, Joachim Wahl, Christophe Snoeck, Peter Ettel, Florian N. Schneider, Patrick Roberts & Wolfgang Haak ..... **page 17**

Humans 40,000 years ago developed a system of conventional signs, by

Christian Bentz and Ewa Dutkiewicz ..... page 19

Archaeometric Study and Reassembly of the Head and Body of the *Leontinoi Kouroi* (Sicily), by Fabrizio Agnello, Giovanni Alfano, Stefano Biondo, Francesco Cappello, Lorenzo Lazzarini, Francesco Mannuccia, Giuseppe Milazzo, Lorella Pellegrino, Elena Tesser & Sebastiano Tusa ..... page 20

Sacred Space and Identity: Insights from Archaeoanthropology, Historiography, and Archaeogenetics at the St. Isidore Cathedral of Chios Island, Greece, by Anagnostis P. Agelarakis, Charalampos I. Pennas, Iosif Lazaridis, Edward A. Reno III, and Argiro Agelarakis ..... page 21

#### **EΙΛΗΣΕΙΣ - NEWS RELEASE**

Earliest evidence of indigo-dyed textiles and single-needle knitting discovered in Bronze Age Anatolia, by Koc University, edited by Stephanie Baum, reviewed by Robert Egan ..... page 22

Ancient cone-shaped vessels may have served as beeswax lamps during ritual processions, study finds, by Sandee Oster ..... page 24

3D scanning and shape analysis help archaeologists connect objects across space and time to recover their lost histories, by Carlo Rindi Nuzzolo ..... page 27

Iron Age Phoenician Scarab Seal Discovered in a Remote Sardinian Settlement, By Nisha Zahid ..... page 31

Scents of the afterlife: Identifying embalming recipes by 'sniffing' the air around Egyptian mummies, by Paul Arnold ..... page 33

Genetic analysis of Deep Maniot Greeks reveals a unique lineage in the Balkans, by University of Oxford, edited by Sadie Harley ..... page 35

Mass grave in Jordan sheds new light on world's earliest recorded pandemic, by Richard Luscombe ..... page 38

## ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

# 9<sup>TH</sup> ARCH\_RNT SYMPOSIUM ARCHAEOLOGICAL RESEARCH & NEW TECHNOLOGIES, 8-10 OCTOBER 2026, KALAMATA, GREECE

The ARCH\_RNT Symposia focus on the use of New Technologies in the Archaeological Research (Archaeometry, Computing Technology, Conservation and Restoration) notably with the presentation of interdisciplinary approaches, special case studies and research on archaeological material and assemblages.

The Symposium will be held in **hybrid mode**.

### Special Sessions:

- *Decoding Historic Building Materials for Monument Management*
- *Colour and pigments: In memory of Prof. Ioanna Kakoulli*

Deadline for abstract submission: June 1, 2026

### Registration fees

	STUDENT	REGULAR
Early bird (until August 31, 2026)	100	150
Late	200	250

**Proceedings** Both oral and poster presentations will be eligible for publication in a Special Issue of the **Journal of Archaeological Science: Reports** (*Impact Factor 1.4 / CiteScore 2.9*)

### Student Award - Nikos Zacharias

Prof. N. Zacharias organised the 1st ARCH\_RNT Symposium in 2008, and served as the Chair of the Organising Committee until his passing in 2024. The Student Award “Nikos Zacharias” will be given to honour his memory and his continuous dedication to the support of New Researchers.

The award winner will be able to present his/her work in an oral presentation, and the registration fees will be waived. Postgraduate students and PhD candidates are welcome to apply (upon submission of their abstract).

**Scientific Committee** A. Banou (University of the Peloponnese), S. Boyatzis (University of West Attica), E. Gliozzo (Università degli Studi di Siena), J. Henderson (The University of Nottingham), I. Iliopoulos (University of Patras), A.G. Karydas (NCSR Demokritos), V. Kilikoglou (NCSR Demokritos), A. Moropoulou (National Technical University of Athens), A. Pydyn (Nicolaus Copernicus University), A. Sarris (University of Cyprus), M. Xanthopoulou (University of the Peloponnese)

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## **CALL FOR ABSTRACTS TO ALL EARLY CAREER (HERITAGE) SCIENTISTS FOR THE GORDON RESEARCH SEMINAR 11-12 JULY 2026**

Applications for this year's Gordon Research Seminar – Scientific Methods in Cultural Heritage Research are open! The seminar takes place on 11 and 12 July 2026 in Les Diablerets (Switzerland). The deadline for abstracts to be considered for an oral presentation is on the **5<sup>th</sup> of April**.

This seminar is the perfect platform for young scientist in the beginning of their career (graduate, PhD students, PostDocs or similar) in (cultural) heritage science to present their work, discuss new methods, cutting edge ideas, and pre-published data, as well as to build collaborative relationships with their peers.

This year's seminar has the theme '**Rethinking Established and Emerging Analytical Techniques for Conservation, Art History and Archaeology**' and we will organize exciting sessions around these and other topics:

- Novel ways of using established techniques for object-based research
- Reassessing and expanding emerging analytical techniques to aid complex issues in Heritage Science
- The use and sharing of samples/materials/mock-ups, data sharing practice and the role of AI
- Advances in scientific techniques for material analysis, conservation, technical art history and archaeology
- Connecting fundamental research with conservation practices

The GRS will also include a Keynote lecture by Aviva Burnstock, Professor of Conservation at The Courtauld Institute of Art with a title: "*Addressing questions of mutual interest in cultural heritage: Interdisciplinary collaboration is the key*"

On Sunday, we will have a mentorship component "*Practical Advice for Early Career Scientists*" with Marine Cotte, beamline scientists at ESRF Synchrotron, and Laura Hendriks - SNSF Ambizione Fellow, as panel members. We are sure that their experiences at different career stages will be inspirational for our community to better dive into the challenge of we face : from applying for beamtime to life after a post-doc.

We also encourage applicants to apply to the Gordon Research Conference that starts immediately after the seminar (12-17 July), organized by Ilaria Bonaduce and Samuel Webb.

**Please note that limited funding is available for attending the GRS. Please get in touch if you would like to be considered for this.**

Further information and application details:

GRS: <https://www.grc.org/scientific-methods-in-cultural-heritage-research-grs-conference/2026/>

On behalf of the Chairs of the GRS:

Amelia Suzuki, Nottingham Trent University – ISPC-CNR  
Sanne Berbers, Cultural Heritage Agency of the Netherlands

\*\*\*\*\*

Sanne Berbers  
Heritage Scientist  
Rijksdienst voor het Cultureel Erfgoed  
Amsterdam  
Netherlands

\*\*\*\*\*



**XXI WORLD CONGRESS OF THE  
INTERNATIONAL UNION OF PREHISTORIC  
AND PROTOHISTORIC SCIENCES, TRENDS,  
ISSUES AND PERSPECTIVES OF AI IN  
ARCHAEOLOGY, 31 AUGUST - 4  
SEPTEMBER, 2026, POZNAN, POLAND.  
CALLS FOR PAPERS**

Trends, issues and perspectives of Artificial Intelligence systems in archaeological research / Tendances, enjeux et perspectives des systèmes d'intelligence artificielle dans la recherche archéologique

Organizers: Alessandro Di Ludovico, Michał Jakubczak

In recent years, the development and spread of new types of Artificial Intelligence (AI) algorithms have stimulated the interest and creativity of archaeologists, but also revived old debates in new guises.

Current AI systems tend to overdo autonomously the processes of data integration and normalisation, thereby imposing interpretative biases and risking the integrity of the research.

The situation is further complicated by the so-called “black box” problem, whereby users possess only limited understanding and control over the internal mechanisms of the models. This challenge is all the more relevant as the development of AI has increasingly shifted from academic institutions to large corporations.

With awareness of the various issues and risks associated with the use of AI, archaeologists have always approached it with caution and wise scepticism. A critical debate on the use of new generations of AI in archaeology is already underway and involves new reflections on Big Data and its use, as well as on the concept of data or capta and the growing importance of being able to reuse data from past research. It is certainly still extremely important to prevent AI systems in archaeology from creating new and wider gaps between scholars who systematically use quantitative and digital tools and methods, and those who are less familiar with them.

The aim of this session is to stimulate critical reflections on the present and future of AI in archaeology, with particular emphasis on its theoretical and methodological implications. We invite contributions that may include case studies, methodological discussions, or theoretical analyses, as well as reflections on the history of research and the reuse of legacy datasets. The session encourages a variety of perspectives in order to promote dialogue between different approaches and to explore how AI may transform archaeological practices in the years to come.

Website of the congress: <https://uispp2026.syskonf.pl/>

To submit a paper proposal for this session [within “Thematic Sessions 1”]:  
<https://uispp2026.syskonf.pl/abstracts>

**Submission deadline: February 28<sup>th</sup> 2026**

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**XI RADIOCARBON AND ARCHAEOLOGY  
INTERNATIONAL SYMPOSIUM, 30 JUNE - 3  
JULY 2026, NITERÓI, RIO DE JANEIRO,  
BRAZIL**

Dear colleagues,

We are pleased to announce that the call for abstracts is now open for the **XI Radiocarbon and Archaeology International Symposium**, which will be held in **Niterói, Rio de Janeiro, Brazil, from 30 June to 3 July 2026**.

The symposium will bring together researchers and students working with radiocarbon and related approaches in archaeology, cultural heritage, paleoenvironmental studies, and associated fields, fostering interdisciplinary discussion and international collaboration.

We warmly invite submissions for oral and poster presentations.

For submission guidelines, deadlines, and further information, please visit:

<https://www.even3.com.br/xi-radiocarbon-and-archaeology-international-symposium-688863/?lang=en>

We look forward to welcoming you to Brazil in 2026!

Best regards,

Organizing Committee  
XI Radiocarbon and Archaeology International Symposium

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**TERRALID SUMMER SCHOOL "LEAD  
ISOTOPES IN ARCHAEOLOGY", THE  
DEUTSCHES BERGBAU-MUSEUM BOCHUM,  
GERMAN MINING MUSEUM BOCHUM,  
GERMANY**

Dear Colleagues,

We are happy to announce that the TerraLID Summer School “Lead Isotopes in Archaeology” will be held at The Deutsches Bergbau-Museum Bochum (German Mining Museum Bochum, Germany) in person from October 5th to 9th, 2026. Leading international experts will provide a comprehensive overview on how lead isotope data are acquired, managed and interpreted through lectures and discussions. In addition, you will have the opportunity to work under their guidance in groups on your own data or prepared datasets.

Participation is free of charge but the number of participants is limited to 30. In case of more registrations than spots, participants from countries underrepresented in the lead isotope community will be given priority. Registration for our summer school is now open until February 29, 2026.

We are delighted that we can support up to 10 participants with a 500 € travel award!

You can find a link to the registration form and more information about the workshop and the travel awards on the workshop webpage: <https://www.terralid.org/events-current.html>

We are very much looking forward to welcoming you!

Best regards,

Sabine Klein,  
Thomas Rose,  
Katrin Westner,  
Helge Wiethoff

**ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –**  
**JOB VACANCIES/FELLOWSHIPS**

**ΤΣΑΚΟΠΟΥΛΟΣ HELLENIC COLLECTION,**  
**HELLENIC RESEARCH FELLOWSHIP**  
**PROGRAM 2026-2027, CALL FOR**  
**APPLICATIONS**

Thanks to generous ongoing funding, the university library is pleased to offer the continuation of the Hellenic Research Fellowship Program (HRFP) for a 14th year. The HRFP, the only residential fellowship program west of the Mississippi in Hellenic studies, provides opportunities for visiting scholars and writers-in-residence to spend time in Sacramento, CA, conducting research and crafting their creative works using the resources of the Tsakopoulos Hellenic Collection. To date, nearly 50 fellows have benefitted from their residencies, which have contributed to a variety of scholarly and creative works.

The HRFP provides a limited number of fellowships in the form of reimbursement to help offset transportation and living expenses incurred in connection with the awards. The fellowship application deadline is April 10, 2026. No late applications will be considered. See below for full program information and application instructions.

Consisting of the holdings of the former Speros Basil Vryonis Center for the Study of Hellenism, the Tsakopoulos Hellenic Collection, part of the Donald & Beverly Gerth Special Collections and University Archives, is a research collection of international significance for the campus and Sacramento regional communities, as well as for scholars around the globe. Currently numbering over 83,000 volumes and 500 linear feet of personal papers and institutional archives, it comprises a large circulating book collection, journal holdings, electronic resources, non-print media, rare books, archival materials, art, and artifacts. With its focus on the Hellenic world, the collection contains materials from antiquity to the present across the social sciences and humanities relating to Greece, its neighboring countries, and the surrounding region. There is a broad representation of languages in the collection, with a rich assortment of primary source materials. For further information about the Tsakopoulos Hellenic Collection, visit <https://library.csus.edu/tsakopoulos>.

For the full Hellenic Research Fellowship Program description, application instructions, and list of previous fellows, see: <https://library.csus.edu/tsakopoulos-hellenic-collection/hrfp>. Questions about the Program can be directed to George I. Paganelis, Curator, Tsakopoulos Hellenic Collection ([paganelis@csus.edu](mailto:paganelis@csus.edu)).

Best,  
George I. Paganelis

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**ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS**  
**WORKSHOP ON COMPOUND-SPECIFIC**  
**RADIOCARBON ANALYSES 2027**

Dear Colleagues,

We would like to announce that the 14C dating Research Laboratory - ECHOMICADAS, from the Laboratoire des Sciences du Climat et de l'Environnement, Gif-sur-Yvette, France, will be hosting the next workshop on compound-specific radiocarbon analyses.

We aim to host the workshop in fall of 2027. More details will come in due course.

We also would like to share/remind that a mailing list and wiki dedicated to CSRA exists. It is a diffusion list, forum type to discuss analytical issues encountered with CSRA, share new publications and newsletters. Its creation followed the need expressed by the community at the last workshop that took place in April 2024, Delmenhorst, Germany

You can sign in as explained here [https://groupes.renater.fr/sympa/info/14c\\_csra](https://groupes.renater.fr/sympa/info/14c_csra)

Looking forward to welcome you in fall 2027

Emmanuelle Casanova for the 14C dating Research Laboratory - ECHOMICADAS team

\*\*\*\*\*

**Dr. Emmanuelle CASANOVA**

Laboratoire des Sciences du Climat et de l'Environnement,  
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**ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS**  
**ARCHAEOMETALLURGY OF IRON MEANS**  
**OF PRODUCTION AND PROCESSES FROM**  
**THE ORIGINS TO THE INDUSTRIAL**  
**REVOLUTION, BY MARCO CIMA**

First edition 1991

Second edition 1996

Third edition essentially digital with complete revision of the texts developed within the activities of the Museo Archeologico del Canavese - May 2024

English digital edition January 2025

Publisher: Edizioni Nautilus Torino

Page numbers: 270

**Book presentation**

The distinctly Italian tendency to avoid historical summaries to avoid falling into the “trap” of creating a work that risks being neither exhaustive nor precise has been courageously overcome by Marco Cima in this reconstruction of the material systems and production processes of iron from its origins to the Industrial Revolution. The overall framework of the volume is European – albeit for the first time, the scattered hints of a history of iron production in Italy are presented in an organic matter – and its diachronic scale of examination leads one to think of a history of iron production in Italy are presented in an organic manner — and its diachronic scale of examination leads one to think of a history of extractive and metallurgical techniques that is detached from social contexts. Conversely, the risk of an “evolutionary” reading of technologies has been largely avoided: the systematic use of archaeological sources alongside written sources has played a crucial role in capturing the details of the typological transformations of furnace structures and various techniques, as well as the chronological overlaps in differentiated social contexts.

Cima’s contribution merits recognition for reaching into the narrative of indirect iron production, which is explored in depth as it enters the 18th century, providing historians - and especially archaeologists — with an essential tool to place the various production processes that precede and follow each stage of processing, thereby presenting the complexity of the interrelations between territory and forge.

The overall reconstruction is systematically articulated by subject, equipping non-specialists with the necessary tools to gain a very clear picture of the historical dynamics of production processes, while also enabling scholars to interpret or reinterpret the material or written sources they are working with.

The publication of this volume comes at a time of renewed interest in historiography regarding the themes of technology history and a resurgence in archaeological studies on production topics. This is an area where the Italian tradition is significantly disadvantaged compared to the European reference framework; one need only consider

the recent French historical literature, contrasted with the scant number of pre-industrial ceramic or glass production centres investigated in our country, let alone the substantial silence that has characterized the last five years regarding themes of extractive and metallurgical activities.

In my view, the volume on the archaeology of iron constitutes an important contribution that not only provides us with an updated synthesis of what has been elaborated thus far on the subject but also allows us to properly assess and highlight the value of the material evidence with which our territory is rich. I am particularly thinking of the growing interest in the problems of industrial archaeology and the design of archaeological-mining and metallurgical parks, where often only the monumental phases of the Industrial Revolution are considered, disregarding the less recent production phases and the entire ecosystem constituted by the mining complexes — still extant today, but often threatened by material quarries or destroyed by reckless dumping — and by woodland economies.

Therefore, Cima offers a history of techniques where the social context is not marginalized, and where synthetic analysis does not detract from a rich and functional iconographic apparatus, thus effectively and comprehensively responding to a demand generated by an ever-increasing need to read the past through integrated interpretative frameworks that allow for the combination of scientific knowledge, material remains and written sources.

† Riccardo Francovich  
(full professor of Medieval Archaeology at the Siena University)  
September 1991

This volume is a translated revised edition of the work of the same title published in 1991, which enjoyed considerable success. It is presented here with the necessary additions and updates resulting from new insights gained over three decades of research, with the aim of offering the public an archaeological manual on iron production systems. This book is the translation of 'Archeologia del Ferro 2024'. The volume is available exclusively in digital format via the Academia.edu portal.

**Please visit the site:**

[https://www.academia.edu/145526714/ARCHAEOLOGICAL MEANS OF PRODUCTION AND PROCESSES FROM THE ORIGINS TO THE INDUSTRIAL REVOLUTION?email\\_work\\_card=view-paper](https://www.academia.edu/145526714/ARCHAEOLOGICAL_MEANS_OF_PRODUCTION_AND_PROCESSES_FROM_THE_ORIGINS_TO_THE_INDUSTRIAL_REVOLUTION?email_work_card=view-paper)

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**COMPLEX RESEARCH OF ANCIENT  
EGYPTIAN 'MUMMY OF THE PRIEST' FROM  
THE COLLECTION OF THE LOMONOSOV  
MOSCOW STATE UNIVERSITY RESEARCH  
INSTITUTE AND MUSEUM OF  
ANTHROPOLOGY, BY KROL ALEXI,  
BASHILOV ANTON A., AND LAZAREV  
MIKHAIL N.**

<https://doi.org/10.55959/MSU2074-8132-25-4-11>

**Abstract**

The article is dedicated to a comprehensive study of a male mummy from the Egyptological collection of the Research Institute and Museum of Anthropology of the Lomonosov Moscow State University. Materials and methods. The mummy of a male stripped of its funerary bandages and shrouds, was donated by Professor A.I. Babukhin in 1876 to D.N. Anuchin, the museum's founder. Since 2016, the mummy has been the object of detailed studies conducted by the Research Institute and Museum of Anthropology of the Lomonosov MSU. The study employed the methodologies of diverse scientific disciplines: anthropological study based on computer tomography data, textile analysis, radiocarbon dating, gas chromatography and mass-spectrometry studies, archeopalynological investigation etc. Results and discussion. A facial reconstruction and a craniological and osteological description of the mummy were produced using computed tomography (CT) data. The interdisciplinary studies have revealed the specific features of the mummification method, which was characteristic of the Late New Kingdom and the Third Intermediate Period, but also continued in later periods. The chromatographic analysis of the skin samples revealed a complex mix of embalming agents, one of which was pine resin. This is consistent with data obtained by spore-pollen analysis. The technological characteristics of the burial textiles preserved on the mummy were also studied. The age of the mummy could be determined through radiocarbon dating as  $3,080 \pm 35$  BP ( $2\sigma$  1426–1259 cal BC), indicating that the individual in question lived during the Eighteenth – first half of the Nineteenth Dynasty of the New Kingdom.

**Keywords:** Mummy Studies; Bioarchaeology, Russian Egyptology, Reconstruction the Face from Skull, Ancient Egyptian Mummies, 3D Face Reconstruction

Please visit the site: <https://laj-msu.ru/en/articles/article/22596/>

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**RECONSTRUCTION OF THE LIFEWAYS OF  
CENTRAL EUROPEAN LATE BRONZE AGE  
COMMUNITIES USING ANCIENT DNA, ISOTOPE  
AND OSTEOARCHAEOLOGICAL ANALYSES, BY  
ELEFThERIA ORFANOU, AYSHIN GHALICHI,  
ADAM B. ROHRLACH, ENRICO PAUST, AIDA  
ANDRADES VALTUEÑA, MICHAL ERNÉE,  
MIROSLAW FURMANEK, AGATA HAŁUSZKO,  
TAYLOR HERMES, MARIE HIMMEL, JANA  
ILGNER, JOHANNES KRAUSE, MARIO KÜBNER,  
THISEAS CHRISTOS LAMNIDIS, MARY LUCAS,  
DRAHOMÍRA ADÁMKOVÁ MALYKOVÁ,  
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ETTEL, FLORIAN N. SCHNEIDER, PATRICK  
ROBERTS & WOLFGANG HAAK**

[Nature Communications](https://doi.org/10.1038/s41467-026-69895-y) volume 17, 1992 (2026).  
<https://doi.org/10.1038/s41467-026-69895-y>

**Abstract**

The Late Bronze Age (ca. 1300–800 BCE) of Central Europe is often characterised as a period of increasing mobility, socioeconomic transformation, environmental fluctuations, and expanding cultural networks. However, reconstructing the demographic aspects of these changes has been hindered by cremation being the dominant mortuary practice, limiting biomolecular approaches. Here, we integrate ancient DNA, oxygen and strontium isotope analyses, and osteoarchaeology to examine rare inhumation burials from Kuckenbunrg and Esperstedt in Central Germany (n=36) and compare them to contemporaneous inhumations from the neighbouring regions of South Germany, Bohemia (Czechia) and Southwest/Central Poland (n=33). Genome-wide data show genetic continuity with preceding Early Bronze Age populations, alongside gradual increases in Early European Farmer-related ancestry, albeit with regionally different timing and extent, reflecting a nuanced pattern of mobility and admixture. Oxygen and

strontium isotope data from Central Germany indicate that most individuals match the local isotope signal, including those who were cremated or had a different diet, and with only a few isotopic outliers, suggesting that mobility was present but not extensive. Overall, our findings suggest that the diverse inhumation practices at Kuckenbug and Esperstedt were culturally motivated, reflecting local traditions and ongoing regional interconnectedness rather than the influx of new genetic groups or non-local individuals.

Please visit the site: <https://www.nature.com/articles/s41467-026-69895-y#citeas>

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# **HUMANS 40,000 YEARS AGO DEVELOPED A SYSTEM OF CONVENTIONAL SIGNS, BY CHRISTIAN BENTZ AND EWA DUTKIEWICZ**

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Edited by Melinda Zeder, Smithsonian National Museum of Natural History, Washington, DC

## **Significance**

Humans have carved visual signs into the surfaces of mobile artifacts and cave walls since several hundred thousand years. We here analyze a 40,000 y old assemblage of mobile artifacts bearing sequences of intentionally engraved geometric signs. These sign sequences have a complexity comparable to the earliest protocuneiform and were selectively applied to yield higher information density on figurines than on tools. This proves that the first hunter-gatherers arriving in Europe already developed a system of intentional and conventional signs on mobile artifacts. Our study more broadly relates to research into statistical properties of human language and writing compared to other sign systems.

## **Abstract**

As humans, we store and share information. This allows us to distribute knowledge necessary for survival and to coordinate large groups. Our hominin ancestors harnessed the surfaces of mobile artifacts and cave walls as information carriers since the Paleolithic time period. Theories abound as to the meaning and function of these Paleolithic signs. However, very little is known about their basic, measurable properties. We here analyze a corpus of more than 200 mobile objects of a 43,000 to 34,000 y old Aurignacian culture—associated with the first modern humans to settle in Central Europe. These objects are adorned with several thousand geometric signs. We apply classification algorithms and statistical models to capture their quantitative properties. First, our analyses illustrate that these sign sequences are clearly distinguishable from modern day writing. Second, however, their statistical properties are comparable to sign sequences on the earliest protocuneiform tablets. Third, Paleolithic signs were systematically applied to yield higher information density on certain types of objects, e.g. ivory figurines compared to tools. These results cannot be taken to strictly prove that Aurignacian sign sequences encoded numero-ideographic information as in the case of protocuneiform. However, they prove that the first hunter-gatherers arriving in Europe already applied sign sequences of comparable complexity in a deliberate, systematic, and conventional manner—several ten thousand years before the advent of genuine writing.

**Please visit the site: <https://www.pnas.org/doi/10.1073/pnas.2520385123#sec-4> [Go there for full article with pix]**

**ARCHAEOLOGICAL STUDY AND  
REASSEMBLY OF THE HEAD AND BODY OF  
THE *LEONTINOI KOUROS* (SICILY), BY  
FABRIZIO AGNELLO, GIOVANNI ALFANO,  
STEFANO BIONDO, FRANCESCO  
CAPPELLO, LORENZO LAZZARINI,  
FRANCESCO MANNUCCIA, GIUSEPPE  
MILAZZO, LORELLA PELLEGRINO, ELENA  
TESSER & SEBASTIANO TUSA**

*Studies in Conservation*, 1–13. 2026  
<https://doi.org/10.1080/00393630.2026.2625622>

**Abstract**

The so-called *Apolline Head*, discovered at ancient Leontinoi (modern Lentini, Province of Syracuse, Sicily) by Ignazio Paternò Castello, Prince of Biscari, in the eighteenth century and currently preserved in the Ursino Castle Municipal Museum in Catania, together with the torso of an acephalous *ephebe*, acquired by Paolo Orsi in 1904 at Lentini and now housed in the Regional Archaeological Museum ‘Paolo Orsi’ in Syracuse, have been the subject of an archaeometric investigation aimed at resolving a longstanding scholarly debate regarding their possible association. Through petrographic and isotopic analyses, it has been conclusively demonstrated that both fragments originate from the same block of Parian marble, specifically extracted from the open-pit quarries of Lakkoi on the Greek island of Paros. A detailed anatomical examination further supports the attribution of the head and torso to a single Archaic statue. A virtual reconstruction was carried out via high-resolution laser scanning, producing a three-dimensional model with sub-millimetric accuracy. This digital modeling allowed for the precise replication of the contact surfaces between the two fragments. Rapid prototyping techniques were subsequently employed to fabricate a high-strength plastic diaphragm designed to fill the slight gap caused by eighteenth-century modifications to the base of the head, which had been smoothed to facilitate its placement on a pedestal. This intervention ultimately enabled a secure and fully reversible reattachment of the two components.

Keywords: Siceliote sculpture, Leontinoi Kouros, Biscari head, reunite, Parian marble, Digital surveying and modelling, archaeometry, restoration, reassembly

Please visit the site:

<https://www.tandfonline.com/doi/abs/10.1080/00393630.2026.2625622>

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**SACRED SPACE AND IDENTITY: INSIGHTS  
FROM ARCHAEOANTHROPOLOGY,  
HISTORIOGRAPHY, AND  
ARCHAEOGENETICS AT THE ST. ISIDORE  
CATHEDRAL OF CHIOS ISLAND, GREECE,  
BY ANAGNOSTIS P. AGELARAKIS,  
CHARALAMPOS I. PENNAS, IOSIF  
LAZARIDIS, EDWARD A. RENO III, AND  
ARGIRO AGELARAKIS**

JMH 37 (Winter 2025-26)

**Abstract**

This article aims to present a comprehensive evaluation of two human burials unearthed during rescue excavations conducted in 1981/82 beneath the mosaic floor of the central nave of the Basilica of Saint Isidore, in the Letsaina area of the capital of Chios Island. The archaeological site of this Byzantine monument, characterized by architecturally complex stratigraphic sequences spanning different periods and adorned with elaborate mosaics reflecting its former grandeur, provided a multidimensional framework for the investigation. Whereas archaeological investigations were conducted prior to the site's recent and important restoration project, the archaeological interpretation presented herein reflects the stratigraphic framework and understandings established during the 1980s excavations.

The specific construction and placement of the tomb, along with the absence of grave goods, posed significant challenges for its dating. Additionally, an intriguing aspect of their discovery was its evocation—according to tradition—with the burial of the martyrs Isidore and Merope in this sacred space, where the Byzantines erected monumental Christian structures in their honor.

**Keywords:** Byzantine Chios, Interdisciplinarity, Monumental Architecture, Complex Stratigraphy, Funerary Practices, Historiography, Bioarchaeology, Archaeometry, Archaeogenet

Please visit the site: [https://www.researchgate.net/profile/Anagnostis-Agelarakis/publication/400225069\\_Sacred\\_Space\\_and\\_Identity\\_Insights\\_from\\_Archaeoanthropology\\_Historiography\\_and\\_Archaeogenetics\\_at\\_the\\_St\\_Isidore\\_Cathedral\\_of\\_Chios\\_Island\\_Greece/links/697bde2042f94d1212a4f059/Sacred-Space-and-Identity-Insights-from-Archaeoanthropology-Historiography-and-Archaeogenetics-at-the-St-Isidore-Cathedral-of-Chios-Island-Greece.pdf](https://www.researchgate.net/profile/Anagnostis-Agelarakis/publication/400225069_Sacred_Space_and_Identity_Insights_from_Archaeoanthropology_Historiography_and_Archaeogenetics_at_the_St_Isidore_Cathedral_of_Chios_Island_Greece/links/697bde2042f94d1212a4f059/Sacred-Space-and-Identity-Insights-from-Archaeoanthropology-Historiography-and-Archaeogenetics-at-the-St-Isidore-Cathedral-of-Chios-Island-Greece.pdf)

## **EΙΔΗΣΕΙΣ - NEWS RELEASE**

# **EARLIEST EVIDENCE OF INDIGO-DYED TEXTILES AND SINGLE-NEEDLE KNITTING DISCOVERED IN BRONZE AGE ANATOLIA, BY KOÇ UNIVERSITY, EDITED BY STEPHANIE BAUM, REVIEWED BY ROBERT EGAN**

A research team led by Assoc. Prof. Dr. Çiğdem Maner from Koç University's Department of Archaeology and History of Art has uncovered remarkable textile fragments at Beycesultan Höyük that rewrite our understanding of Bronze Age craftsmanship in Anatolia. Published in the journal *Antiquity*, the study presents the earliest evidence of indigo-dyed textiles and a sophisticated single-needle knitting technique previously unknown in the region.

The discovery came from two separate burnt textile fragments found during excavations between 2016 and 2018 at the ancient settlement at Beycesultan Höyük in Çivril northwest of Denizli. Soil humidity usually prevents the long-term preservation of fabric in the region, and earlier excavations of the site have uncovered Bronze Age structures that were substantially damaged by fire, leaving little trace of any organic materials. The fragments create a rare window into textile production from nearly four millennia ago.

### **Oldest Anatolian evidence of nalbinding**

The first fragment, dating to approximately 1915–1745 BC, a period also known as the Middle Bronze Age, was found adhered to the ground. Advanced microscopic and chromatographic analyses revealed that it was made using a technique called nalbinding, also known as single-needle knitting, where fabric is created by looping yarn with a single needle rather than weaving on a loom. This represents the first example of this technique ever found in Anatolia or the broader Near East.

Even more remarkable, the hemp fabric was dyed with indigo from the woad plant, making it the oldest blue-dyed textile discovered in Bronze Age Anatolia.

### **Workshop context and elite connections**

The second fragment, from a slightly later period around 1700–1595 BC, probably dating to the Old Hittite Period, is a plain tabby weave, also made from hemp. Both textiles were discovered in spaces that appear to have functioned as textile workshops, surrounded by spindle whorls, loom weights, needles, and other tools of the craft.

The significance extends beyond the technical achievement. Cuneiform texts from Bronze Age Mesopotamia and the Hittite Empire mention blue wool and garments as luxury items worn by royalty and elites, often exchanged as valuable gifts between rulers.

Blue textiles appear in Egyptian tombs, such as in Pharaoh Tutankhamon's tomb, and on Minoan palace frescoes, always associated with elite status.

The presence of such sophisticated textiles at Beycesultan suggests that the settlement was not just producing everyday textiles and garments but manufacturing luxury textiles and decorations for the elite.

### **What the finds reveal about production**

Earlier excavations have revealed dozens of spindle whorls and loom weights of varying weights and sizes, indicating significant weaving activity and specialized production of different yarn thicknesses and fabric qualities. A disk-shaped stone weight found on top of the indigo textile, combined with nearby postholes, likely from a loom, paints a vivid picture of Bronze Age craftspeople at work in a textile workshop, creating textiles that would likely have been precious commodities in their time.

This discovery at Beycesultan adds new evidence to our understanding of technological capabilities and innovations in Bronze Age Anatolia, revealing that ancient artisans possessed sophisticated knowledge of plant fibers, dyestuff chemistry, advanced textile techniques, and the production of luxury garments.

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Çiğdem Maner et al, Untwisting Beycesultan Höyük: the earliest evidence for nålbinding and indigo-dyed textiles in Anatolia, *Antiquity* (2024). DOI: 10.15184/aqy.2024.194

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Please visit the site: [https://phys.org/news/2026-02-earliest-evidence-indigo-dyed-textiles.html#google\\_vignette](https://phys.org/news/2026-02-earliest-evidence-indigo-dyed-textiles.html#google_vignette)

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## **ANCIENT CONE-SHAPED VESSELS MAY HAVE SERVED AS BEESWAX LAMPS DURING RITUAL PROCESSIONS, STUDY FINDS, BY SANDEE OSTER**

Chalcolithic cornets are conical ceramic vessels produced exclusively during the Chalcolithic period, recovered in abundance at some archaeological sites but absent at others. Their function has long been debated. However, in a study published in Tel Aviv, Sharon Zuhovitzky and her colleagues, Paula Waiman-Barak and Yuval Gadot, present the first systematic study of one of the most extensive cornet collections discovered at the Chalcolithic site of Teleilat Ghassul.

The study examined the likely material sources, morphological characteristics, and shaping techniques and tested the hypothesis that these cornets may have been used as beeswax lamps.

### **Chalcolithic cornets**

Cornets are cone-shaped ceramic vessels found exclusively during the Chalcolithic era. Typically coated in light or red slip, they also sometimes featured two or four handles. They have been found in abundance at sites such as Ashkelon, 'En Gedi, Abu Hof and Grar, typically within specific locations sometimes identified as favissae (cultic storage spaces), though they are rare or even absent at others such as Safadi, Abu Matar, and Shiqmim.

Most cornets were procured locally, likely by local residents, although some examples exist of cornets produced farther away by specialized potters. For the most part, there is no clear, uniform classification system for cornets, with subtypes classified differently across sites.

Their function has long been debated, with theories ranging from their use in the then-emerging dairy industry to their use in "lost-wax" copper-smelting due to the presence of beeswax residue. Another theory proposes they may have served as beeswax lamps; however, the hypothesis has been disputed due to the absence of soot marks within the vessels.

### **Analyzing Teleilat Ghassul's cornets**

In an effort to systematically analyze the Chalcolithic cornets, 35 complete and 550 cornet sherds from the Pontifical Biblical Institute Museum's collection were analyzed. The cornets and cornet sherds stemmed from excavations of Teleilat Ghassul (Jordan) site between 1929 and 1999.

Analysis revealed four main types of cornets, which were procured locally mainly by local residents, though Type 3 cornets, due to their uniformity and superior quality, were likely made by specialized potters.

The vessels were created from a single lump of clay, which was shaped using a round-cut stick inserted lengthwise, with the base of the vessel hand-pulled to create the characteristic cone shape. All in all, this process, which was confirmed through experimentation, took approximately 10 minutes per vessel.

Additionally, some vessels were observed to have soot residue in their interiors. This, alongside experimental replication, strongly supports the hypothesis that the cornets functioned as beeswax lamps.

Zuhovitzky noted, "In my experimental work, beeswax-filled cornets burned for up to nine hours. This duration depends on the quantity and quality of the wax; in my experiments, I filled roughly half the height of the cornet using modern, high-quality beeswax.

"...Beeswax in this period is generally assumed to have been harvested from wild hives, implying limited availability and a destructive extraction process. While the earliest direct evidence for apiculture in the region comes from the Iron Age beehives at Tel Rehov, there is no inherent technological barrier to suggest that such practices could not have existed earlier.

"Since traditional beehives are typically constructed from unfired clay, as seen both ethnographically and at Tel Rehov, it is reasonable to assume they would not be preserved in the Chalcolithic archaeological record. In any case, beeswax was a valuable material, which fits well within a cultic context.

"I have suggested that the cornets may have been partially filled with another substance, such as clay, before the wax was added. This would reduce the volume of wax required and improve the lighting function by positioning the flame higher in the vessel. In my experiments, I filled the bottom half with clay and cast the wax on top of it."

Given their location in cultic contexts with colorful wall paintings depicting processions, masks, and animals, it is likely the lamps served a purpose during these rituals, after which they were destroyed, as evidenced by blow marks and the abundance of cornet sherds.

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### **More information**

Sharon Zuhovitzky et al, The Cornets of Teleilat Ghassul as a Vigil Object, Tel Aviv (2025). DOI: 10.1080/03344355.2025.2546274

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Please visit the site: <https://phys.org/news/2026-02-ancient-cone-vessels-beeswax-lamps.html> [Go there for pix] [Full study at <https://www.tandfonline.com/doi/full/10.1080/03344355.2025.2546274>]

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## **3D SCANNING AND SHAPE ANALYSIS HELP ARCHAEOLOGISTS CONNECT OBJECTS ACROSS SPACE AND TIME TO RECOVER THEIR LOST HISTORIES, BY CARLO RINDI NUZZOLO**

Today the world of Egyptology faces a silent crisis – not of looting, although that plays a part, but of disconnection. Walk into any major museum, from Copenhagen to California, and you see glass cases filled with what could be called orphaned artifacts: remarkable objects, often acquired in the 19th and early 20th century, that have been completely stripped of their histories. You can see what they are – a mummy’s painted foot case, a golden mask – but we have no idea where they came from. They are beautiful, but historically they are mute.

Many objects entered museum collections at times when excavation and collecting practices were very different from today. In the past, excavated objects were often divided between institutions around the world, and display was prioritized over documentation. Over time, connections between pieces were lost. As a result, museums around the world hold remarkable artifacts whose backstories are thin, fragmentary or missing altogether.

Archaeologists like me working in the field today regularly uncover fragments: broken pieces of objects that once formed part of something larger. In some cases, those fragments may share the same underlying geometry with objects already held in museums. For example, a mummy’s foot case and a newly found shard may have been produced using the same mold, so they share a consistent three-dimensional form even if they are now separated by time, distance and absence of documentation.

Traditionally, evaluating whether a fragment matches up with a specific museum object has relied on visual judgment and incomplete records, rather than a quantitative comparison of shape.

This gap between excavation archaeology and museum collections is one of the most persistent challenges in the field. My research asks a simple question: Can we use digital tools to test whether fragments and museum objects might be related and, in doing so, recover parts of their histories that were previously inaccessible?

### **A long-standing problem in archaeology**

Archaeology is, by nature, fragmentary. Objects break, decay or are disturbed over centuries. Traditionally, archaeologists have relied on visual inspection, stylistic comparison and written records to propose connections between fragments and objects. These approaches are still essential, but they also have limits. Visual judgments can be subjective, and archival documentation is often incomplete or inconsistent.

As a result, many potential links between excavated material and museum artifacts have remained speculative or have never been proposed at all. An object in a museum may appear complete yet still have a fragmented history. Without a way to test relationships systematically, fragments often remain sidelined as secondary or uninformative.

More than a century ago, the archaeologist Flinders Petrie argued that an object's value lies not in its beauty but in the information it carries. An unremarkable fragment with a known history, he believed, could be more important than a finely made object without one. Today, digital tools are giving archaeologists new ways to put that idea into practice.

### **Turning objects into data that can be compared**

One of those tools is 3D scanning. Using portable scanners, it is now possible to capture the full surface geometry of an object with high precision, without touching or damaging it. Every curve, contour and variation in thickness can be recorded digitally.

Once scanned, an artifact becomes more than an image. It becomes data: a detailed digital model that can be rotated, measured, compared and analyzed. Importantly, this process is noninvasive. Fragile objects do not need to be moved, dismantled or physically tested.

For archaeologists and museum curators, this process opens up new possibilities. Objects held in different institutions, or fragments stored in excavation archives, can be compared digitally, even if the originals never leave their locations.

Scanning is only the first step. The real challenge lies in comparison. Rather than asking whether two pieces look similar, computational shape analysis allows researchers to ask a more precise question: How similar are their shapes?

In simple terms, the computer compares the geometry of two surfaces. It looks at curvature, thickness and spatial relationships, measuring how closely one surface matches another. It's like comparing a kind of geometric fingerprint.

This approach doesn't replace expert judgment. Instead, it supports it by providing measurable evidence that can confirm, refine or challenge visual impressions. It allows archaeologists to move from intuition to testing.

### **When a fragment meets a museum object**

In a recent study published in the journal *Heritage Science*, I applied these methods to Graeco-Roman Egyptian funerary artifacts made of cartonnage, a composite material of linen, plaster and paint.

I created high-resolution 3D scans of excavated cartonnage fragments and compared them with an intact funerary mask held in a museum collection. The goal was not to reconstruct the object physically but to test whether their shapes were compatible in meaningful ways.

The comparison focused on three-dimensional geometry rather than decoration. This matters because cartonnage masks were often shaped in molds: If two objects were

formed in the same mold, they can share highly consistent curvature and thickness patterns even when their painted surfaces differ.

I used a distance-mapping approach called deviation mapping. After aligning the 3D model of an excavated fragment to the corresponding region of the intact museum object, the algorithm calculates the distances between the two surfaces at thousands of points. Areas where the distances were consistently small are geometrically very similar. Areas with consistently larger distances indicate that the fragment’s shape diverges from the reference surface.

In this case, the surfaces corresponded closely, with differences generally of less than a millimeter – a level of agreement consistent with production in the same mold rather than a coincidental visual resemblance.

What mattered most was not a single “match” but the ability to evaluate relationships transparently and reproducibly, using shared digital evidence.

One of the most powerful aspects of this approach is that it works across distance. Researchers can easily share digital models, allowing them to compare fragments and objects held in different institutions, without transporting fragile artifacts. Excavation archives, museum collections and research institutions can begin to speak the same digital language, reconnecting evidence that has long been separated by geography and history.

### **Digital tools are reshaping collections research**

The work I describe here, part of my recent CRAFT Project, does not use artificial intelligence or machine learning. It relies on computer-based shape comparison and careful interpretation of metrological results. But it sits within a broader movement in heritage research.

Across the world, researchers and institutions are beginning to combine 3D scanning with machine learning to explore collections in different ways. For example, the EU-funded RePAIR project uses AI and robotics to help reassemble fragmented archaeological artifacts, while major institutions such as the Smithsonian are experimenting with AI-driven analysis of large 3D collections.

Together, these projects point to a future in which digital tools play an increasingly active role in how museums and archaeologists understand the past.

Digital archaeology is sometimes associated with flashy reconstructions or virtual displays. But its deeper value lies elsewhere. By giving fragments a new analytical role, digital methods allow archaeologists to recover relationships that were long thought irretrievably lost.

New digital methodologies are breathing new life into a long-standing archaeological principle: Modest fragments can carry outsized significance when they clarify an object’s origins and its lost context, finally allowing it to find its way back home.

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### **The CRAFT Project**

(<https://www.craft-project.net/>), led by Dr. Carlo Rindi Nuzzolo from 2022 to 2025, received research funding from the Marie Skłodowska-Curie Actions under the European Union's Horizon 2020 Scheme.

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Please visit the site: <https://theconversation.com/3d-scanning-and-shape-analysis-help-archaeologists-connect-objects-across-space-and-time-to-recover-their-lost-histories-273077> [Go there for pix]

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## **IRON AGE PHOENICIAN SCARAB SEAL DISCOVERED IN A REMOTE SARDINIAN SETTLEMENT, BY NISHA ZAHID**

Archaeologists excavating the Nuragic complex of Ruinas in Sardinia have identified an unusual find far from its cultural homeland: an ancient Phoenician scarab seal carved from steatite. The object was uncovered in the mountainous heart of Sardinia, a region better known for fortified Nuragic towers than for foreign luxury goods.

The site lies near Arzana, where excavations focus on a village built around a large stone nuraghe. The surrounding terrain, part of Barbagia di Ollolai within Ogliastra, is steep, isolated, and defensible. Researchers say that the setting makes the discovery especially significant.

### **Evidence points to a Phoenician origin**

Specialists attribute the scarab to the Phoenician world based on its material, shape, and engraved signs. Steatite was commonly used in the eastern Mediterranean to produce small but durable seals. The object is dated to the Iron Age and likely originated in the region of modern-day Lebanon, centuries after the construction of the nuraghe itself.

The seal was found inside domestic rooms of the settlement rather than in a ritual or burial context. Archaeologists say this detail suggests everyday use. The scarab was part of daily life, not a ceremonial curiosity.

### **A tool of identity and authority in the ancient world**

In Phoenician society, scarab seals carried both symbolic and practical meaning. They were often worn as amulets for protection. At the same time, they functioned as personal seals used to mark clay or wax. Each impression was unique, tied to an individual's identity, authority, or property.

No two scarabs were alike. This individuality explains the wide variation seen among the thousands known from the ancient Near East and Mediterranean.

### **Conservation work focuses on hidden details**

The artifact is now undergoing conservation and scientific analysis in the laboratories of the Archaeological Superintendency. Researchers are using non-invasive techniques to stabilize the stone and examine its surface.

Once conservation is complete, specialists will study the finely cut hieroglyphic symbols in detail. The inscription may preserve a personal name, a religious phrase, or a marker of power.

### **The Ilienses and Sardinia's mountain societies**

The Ruinas site lies in territory traditionally linked to the Ilienses, a Nuragic population also known as the Ioleos and later as the Diagesbei. Ancient authors described them as among the island's earliest inhabitants. The Roman geographer Pomponius Mela referred to them as the oldest people of Sardinia.

Archaeologists say the Ilienses occupied wide areas of central and southern Sardinia during the second millennium BCE. Their lands stretched from the Campidano plain to the Tirso River, with strongholds concentrated in the interior.

### **Material traces of far-reaching connections**

Archaeological evidence shows these inland communities were not isolated. Fragments of Mycenaean and Aegean pottery have been found inside major nuraghes, including Nuraghe Antigori and Nuraghe Arrubiu. Copper ingots shaped like oxhides, likely imported from Cyprus, have also been recovered across central and southern Sardinia.

Local goods traveled outward as well. Sardinian gray pottery, produced in the Iliense area during the 13th and 14th centuries BCE, has been identified at distant sites, such as the palace of Knossos and Cannatello.

### **Debates over identity and wider Mediterranean roles**

Some scholars argue that the Ilienses played a central role in Nuragic Sardinia. The archaeologist Giovanni Ugas has suggested a possible link between them and the Shardana, one of the Sea Peoples mentioned in Egyptian records.

The theory remains debated, but researchers agree that the archaeological record shows sustained contact across the Mediterranean.

### **A small object with a long journey**

The Ruinas scarab likely traveled more than 2,000 kilometers by sea and land before reaching an inland village. Archaeologists say it reflects the movement of merchants, craftsmen, or specialists who carried goods, skills, and symbols between the Levant and the western Mediterranean.

Further study will determine how the seal was used and when it fell out of circulation. Once the analysis is complete, the find will be formally presented to scholars and the public, and authorities will decide where it will be displayed.

For researchers, the scarab provides clear evidence that even Sardinia's most remote Nuragic communities were part of extensive Mediterranean exchange networks, connected to worlds far beyond the island's mountains.

**Please visit the site: <https://greekreporter.com/2026/02/06/phoenician-scarab-seal-nuragic-ruinas-site-sardinia/> [Go there for pix]**

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## **SCENTS OF THE AFTERLIFE: IDENTIFYING EMBALMING RECIPES BY 'SNIFFING' THE AIR AROUND EGYPTIAN MUMMIES, BY PAUL ARNOLD**

If you have ever stood close to an ancient Egyptian mummy, you may remember a distinctive, lingering odor. For a long time, it was assumed that this was simply due to age and decay. However, scientists have discovered that this musty aroma is actually a complex mix of volatile organic compounds (VOCs). What's more, these scents of the afterlife contain clues about the ingredients used to make the balms and when the mummies date from.

Typically, identifying the ingredients in a mummy's balm is a tricky affair. It involves cutting away a piece of the bandage, which can cause irreparable damage, and dissolving it in chemicals.

But a team from the School of Chemistry at the University of Bristol has found a way to avoid this entirely. Instead of taking a physical sample, they have developed a method to analyze the air around a mummy.

### **Sniffing the past**

They used a technique called HS-SPME-GC/Q-TOFMS to identify the chemical fingerprints of 35 samples of balms and bandages from 19 different mummies covering more than 2,000 years of history.

The process involves capturing gases floating in the space above the mummified remains and the containers they are kept in. Then the gases are fed through a type of molecular scanner that separates different molecules, allowing the researchers to identify which oils, waxes, and resins were used in the original balm recipes.

Representative chromatograms of embalming materials composed of 100 % fat/oil obtained from a bandage (A), a human tissue (B) and a resinous material (C). \* indicates siloxane contamination. Credit: Journal of Archaeological Science (2026). DOI: 10.1016/j.jas.2026.106490

The team identified 81 different VOCs across the samples from four main ingredient groups. These were fats and oils, beeswax, plant resins, and bitumen.

As they detail in their study published in the Journal of Archaeological Science, the researchers found that mummies from different eras have different chemical signatures. For example, earlier mummies were mainly prepared with simple fats and oils, while those from later periods often had more complex recipes involving expensive resins and bitumen.

They also showed that different parts of the body were sometimes treated with different mixtures. The head, for instance, might have a different VOC signature than the torso,

suggesting that the ancient embalmers used different recipes for different organs or areas of the body. "VOCs can be used as a fast and sensitive screening tool to indicate the composition of ancient embalming substances," commented the researchers in their paper.

### **Protecting the past**

This new approach could give curators and researchers a simple way of studying fragile remains without destroying them. "VOC analysis can be used as a rapid, non-destructive, preliminary screening method to obtain useful analytical information without compromising the integrity of the sample."

However, the team notes that, at this stage, the sniffing technique is suitable for initial work. Physical samples may still have to be taken.

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Wanyue Zhao et al, Volatile compounds reveal the composition of embalming materials used in Egyptian mummification, Journal of Archaeological Science (2026). DOI: 10.1016/j.jas.2026.106490

Journal information: Journal of Archaeological Science

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## **GENETIC ANALYSIS OF DEEP MANIOT GREEKS REVEALS A UNIQUE LINEAGE IN THE BALKANS, BY UNIVERSITY OF OXFORD, EDITED BY SADIE HARLEY**

A new genetic study has revealed that the people of Deep Mani, who inhabit one of the remotest regions of mainland Greece, represent one of the most genetically distinctive populations in Europe, shaped by more than a millennium of isolation. The findings, published in *Communications Biology*, reveal that many lineages can be traced back to the Bronze Age, Iron Age and Roman period of Greece.

Set among rugged mountains, dramatic coastlines, and distinct stone tower houses, the Mani Peninsula of the Peloponnese, Greece, has long captivated travelers, historians, and writers, most famously, Jules Verne and Sir Patrick Leigh Fermor.

Now, an international research group has found that the Deep Maniots living at the very southernmost tip of the peninsula form a rare genetic "island" within mainland Greece—predating the major population movements that reshaped the ancestry of mainland Greeks and other populations in the Balkans after the fall of Rome.

The research team, comprising scientists from the University of Oxford, Tel Aviv University, the National and Kapodistrian University of Athens, the Areopolis Health Center, the European University Cyprus, and FamilyTreeDNA, found that Deep Maniots largely descend from local Greek-speaking groups living in the region before the Medieval era.

In contrast to many other mainland Greek populations, they show little evidence of absorbing later incoming groups, such as the Slavs, whose arrival transformed the genetic and linguistic landscape of much of southeastern Europe.

The findings revealed that most paternal lineages trace back to Bronze Age, Iron Age, and Roman-era Greece. Their geographic and temporal dispersal lineages closely mirror the distribution of Deep Mani's characteristic and globally unique megalithic residential and religious structures, supporting the hypothesis that present-day Deep Maniots may descend from the same communities that built and inhabited this landscape more than 1,400 years ago.

"Our results show that historical isolation left a clear genetic signature," said lead author, Associate Researcher Dr. Leonidas-Romanos Davranoglou (Oxford University Museum of Natural History, University of Oxford, Tel Aviv University, and National and Kapodistrian University of Athens).

"Deep Maniots preserve a snapshot of the genetic landscape of southern Greece before the demographic upheavals of the early Middle Ages and likely descend from the same people who constructed the unique type of megalithic buildings that are found exclusively in Deep Mani."

He added, "Our study demonstrates how geography, social organization, and historical circumstances can preserve ancient genetic patterns in certain regions long after they have become altered elsewhere."

### **Maternal heritage and patriarchal society**

Maternal lineages, however, were found to be more diverse, reflecting sporadic contacts with populations from the eastern Mediterranean, the Caucasus, western Europe, and even North Africa.

Senior author Professor Alexandros Heraclides (European University Cyprus) said, "These patterns are consistent with a strongly patriarchal society, in which male lineages remained locally rooted, while a small number of women from outside communities were integrated. Our study is the first to recover the untold histories of Deep Maniot women, whose origins were largely obscured by male-centered oral traditions."

The study also revealed that over 50% of present-day Deep Maniot men descend from a single male ancestor who lived in the 7th century CE. Such an extreme pattern points to a period when the local population was reduced to very few families, likely because of plague, warfare, and regional instability.

In addition, the research team used state-of-the-art tools from molecular biology that allowed them to date the origins of the founders of certain Deep Maniot clans and understand the relationships between them. As the study's results indicate, the founders of some of the present-day clans lived in the 14th and 15th centuries, suggesting that Deep Maniot clans may trace their origin to that period.

"Many oral traditions of shared descent, some dating back hundreds of years, are now verified through genetics," said Athanasios Kofinakos, co-author and research advisor on Deep Mani genealogical and historical matters.

"Deep Mani's geographical isolation and limited economic resources galvanized the warlike character of the locals. In such a harsh environment, family alliances became paramount for individual and collective survival."

### **Genetic isolation and historical background**

The team included researchers from FamilyTreeDNA, who curate the most extensive human phylogenetic trees. By carrying out high-resolution analyses of paternal (Y-chromosome) and maternal (mitochondrial DNA) lineages, the researchers compared Deep Maniot genomes with more than one million modern individuals from around the world, as well as with thousands of ancient DNA samples.

The analysis found almost no matches to other populations, showing how isolated and distinctive Deep Maniots are from a genetic perspective.

The inhabitants of Deep Mani have long intrigued historians and archaeologists. While much of the Balkans experienced repeated waves of migration during Late Antiquity, historical sources describe Deep Mani as unusually resistant to outside control. Even the Eastern Roman Emperor Constantine VII Porphyrogenitus (905–959 CE) remarked on

the Deep Maniots' unusual origins, noting that they "are not of the lineage of the Slavs, but of the Romans of old who were called Hellenes."

He further recorded that Deep Maniots continued worshipping the Olympian gods well into the 9th century, which is an extraordinary oddity since the empire had been fully Christianized many centuries earlier.

Together, these historical observations have long suggested that the inhabitants of Deep Mani followed a demographic and cultural trajectory distinct from much of the Greek-speaking world. The new genetic findings provide strong biological evidence supporting this view.

As many villages in Deep Mani are inhabited by a single clan, the research team worked closely with the community to ensure volunteers originated across multiple villages and clans, so that a representative range was included in the study. This approach was made possible by long-standing relationships of trust built over years of local medical and community service by co-author Dr. Anargyros Mariolis, MD, Director of the Areopolis Health Center.

### **Community collaboration and future research**

Dr. Mariolis said, "The community was engaged in every stage of the research—from planning our sampling strategy and helping their fellow Deep Maniots interpret the results of our research. This study gives a voice to the stories of our ancestors. As a Deep Maniot myself, I wish my forefathers could have witnessed many of their oral histories being verified through genetics. It is a moment of immense pride and connection to our history."

Looking ahead, the brother of Anargyros, co-author Prof. Theodoros Mariolis-Sapsakos, MD, (National and Kapodistrian University of Athens), said, "The team aims to re-engage with the community to explore whether further genetic analysis on the Deep Maniot population may also be relevant for clinical and public-health research, ensuring that scientific insights continue to benefit the people who made the study possible."

**Please visit the site: <https://phys.org/news/2026-02-genetic-analysis-deep-maniot-greeks.html>**

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## **MASS GRAVE IN JORDAN SHEDS NEW LIGHT ON WORLD’S EARLIEST RECORDED PANDEMIC, BY RICHARD LUSCOMBE**

Researchers tell ‘human story’ about crisis during plague of Justinian, which killed millions in Byzantine empire

A US-led research team has verified the first Mediterranean mass grave of the world’s earliest recorded pandemic, providing stark new details about the plague of Justinian that killed millions of people in the Byzantine empire between the sixth and eighth centuries.

The findings, published in February’s Journal of Archaeological Science, offer what researchers say is a rare empirical window into the mobility, urban life and vulnerability of citizens affected by the pestilence.

DNA taken from bodies at a mass burial ground at Jerash in modern-day Jordan show the grave represented “a single mortuary event”, instead of the normal, gradual growth over time of a traditional cemetery, according to the team that last year identified *Yersinia pestis* as the microbe that caused the plague.

The new research focused on the victims, how they lived, their susceptibility to the disease and why they were in Jerash, a regional trade hub and the epicenter of the pandemic that raged from AD541 to AD750.

“Earlier stories identified the plague organism. The Jerash site turns that genetic signal into a human story about who died, and how a city experienced crisis,” said Rays Jiang, the study’s lead author and associate professor in the University of South Florida’s department of global, environmental and genomic health sciences.

“Pandemics aren’t just biological events, they’re social events. By linking biological evidence from the bodies to the archaeological setting, we can see how disease affected real people within their social and environmental context.

“This helps us understand pandemics in history as lived human health events, not just outbreaks recorded in text.”

A multidisciplinary team of archaeologists, historians and genetic experts from the University of South Florida, Florida Atlantic University and the University of Sydney produced the paper, with Jiang and her researchers looking at DNA extracted from teeth.

They found that a diverse demographic range of victims, which she said showed that a largely mobile population was together and effectively stuck in the same place by the disease, similar to how travel shut down during the Covid pandemic.

“People move. They’re transient, and vulnerable, and normally they are disturbed, dispersed. Here, they were brought together by crisis,” Jiang said, adding that ancient

pandemics thrived in densely populated cities shaped by travel and environmental change.

Excavations revealed more than 200 people were buried in the grave at the hippodrome in Jerash, known as the Pompeii of the Middle East for its preserved Greco-Roman ruins. Jiang said they were a mix of men and women, old and young, “people in their prime, and teenagers”.

“At that time there were slaves, mercenaries, all sorts of people, and our data is consistent with this being a transient population. That’s not a new thing,” she continued.

Jiang said the research exposed other parallels in more modern pandemics, particularly Covid, dismissed by Donald Trump in its early days as “a hoax”.

“There’s a whole school of thought that says the first pandemic did not happen,” she said. “The denialists argue that if you look at census data, the population did not collapse like the Black Death, if you look at economic tracking, you don’t see anything, if you study residence density maps you don’t see a disruption. And plus, no one had found a mass grave.

“But the first plague is actually much easier to untangle than Covid. We have *Yersinia pestis* as the microbe; we have a mass grave, and bodies, hard evidence that it happened. Whether society or institutions collapsed is a separate matter. You can have a disease rampage through and don’t have to have a revolution, a revolt, a regime change to prove that it did.”

Please visit the site: <https://www.theguardian.com/science/2026/jan/31/plague-of-justinian-pandemic>

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