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# Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

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## **ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS**

# **10<sup>TH</sup> INTERNATIONAL CONFERENCE ON INSTRUMENTAL METHODS OF ANALYSIS: MODERN TRENDS AND APPLICATIONS", IMA-2017, 17-21 SEPTEMBER 2017, HERAKLION, CRETE, GREECE**

Welcome

We are pleased to announce the 10th anniversary of the International Conference on "Instrumental Methods of Analysis: Modern Trends and Applications", IMA-2017, scheduled to take place from 17-21 September 2017 in the city of Heraklion on the island of Crete in Greece. IMA-2017 will be organized by the University of Crete and the National Technical University of Athens. The conference will be held in the conference center of [Aquila Atlantis Hotel](#) located in the centre of Heraklion city.

IMA is a biannual series of conferences that started in 1999 and covers all areas of modern trends and applications of Chemical Analysis. The past events were held in Chalkidiki (1999), Ioannina (2001), Thessaloniki (2003), Heraklion (2005), Patras (2007), Athens (2009) and [Chania](#) (2011), [Thessaloniki](#) (2013) and [Kalamata](#) (2015) with 250-300 scientific papers presented by scientists from all over the world at each one. For the last 18 years IMA has provided an excellent framework for the presentation of new concepts, instruments, methods, systems, and applications in the area of modern chemical analysis. Researchers and scientists from Universities, Research Institutions, State Organizations, and Industry come together during the meeting to present and discuss the current state of the art in the area of instrumental methods of analysis. At the same time, it provides the grounds for graduate and post graduate students to present their projects, discuss scientific collaborations with other groups, as well as to explore employment opportunities.

### **Topics**

Some of the general themes that will be covered at IMA-2017 include current trends and developments in:

- Spectrochemical and Electrochemical analysis
- Chromatographic, Mass Spectrometric and Microscopic analysis
- Thermal analysis
- Proteomics, Metabolomics, Metallomics and Elemental Speciation analysis
- Chemical- and bio- sensors
- Field analysis - Mobile analytical instruments
- Miniaturized analytical systems (Lab-on-a-Chip)
- Micro- and Nano- fluidics
- Immunoassays
- Electrophoretic separation techniques
- Sampling techniques and strategies

- Sample handling and preparation
- Robotics and Automation
- Quality control-quality assurance in analysis
- Metrology
- Environmental, Biomedical, Pharmaceutical, Food, and
- Materials Analysis (Nanomaterials, Smart/Advanced Materials)
- Archaeometry
- Analytical chemistry markets and possibilities for commercialization

The scientific program will consist of keynote lectures, oral and poster presentations, given by a wide mix of scientists ranging from established academics and world leaders in analytical chemistry, all the way through to dynamic and ambitious graduate students. In addition, we aim to attract contributions from commercial organizations, including presentations of new instrumentation, new applications and assessment of future commercial trends and opportunities. Furthermore, interesting workshops in the framework of IMA2017 will be organized. We therefore anticipate a very energetic and dynamic scientific gathering!

More details you will find soon in our website and our [Facebook group](#).

We look forward to welcome you to Heraklion for IMA-2017, and in return promise a rewarding and enjoyable conference!

The Chair of IMA2017

Prof. Spiros A. Pergantis  
Environmental Chemical Processes Lab.  
Department of Chemistry  
University of Crete

Prof. Maria Ochsenkühn-Petropoulou  
Lab. of Inorganic & Analytical Chemistry  
School of Chemical Engineering  
National Technical University of Athens

Please visit the site: <http://www.ima2017.gr/>

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# **13<sup>TH</sup> CONFERENCE OF THE INTERNATIONAL COMMITTEE FOR THE CONSERVATION OF MOSAICS, BARCELONA, 15-20 OCTOBER, 2017, SECOND CIRCULAR AND CONFERENCE PROGRAM**

The 13<sup>th</sup> Conference of the ICCM Foundation, International Committee for the Conservation of Mosaics [www.iccm-mosaics.org](http://www.iccm-mosaics.org), will be held in Barcelona, October 15-20, 2017, at the invitation of the Barcelona Archaeological Service, a municipal body of the *Institut de Cultura* – Barcelona City Council. The conference is organized by the ICCM Foundation and the Barcelona Archaeological Service with the support of the Getty Foundation.

## **The location**

Barcelona, located on the Mediterranean coast, is the capital of Catalonia and a city with great cultural and economic potential in the Mediterranean. With a marked focus on innovation but without losing sight of its own history and traditions, in recent decades Barcelona has been transformed into a cosmopolitan city with a globally recognised influence.

Barcelona offers excellent and varied services, including local and international transportation, student housing, hostels and a wide range of hotels. Besides, the mild weather and unique heritage make it an ideal place to host this event.

The conference is intended for conservators, restorers, archaeologists, art historians and other professionals who work in the public or private sector in the field of mosaic conservation. The conference also welcomes students and recent graduates.

Within the framework of mosaic production, in addition to fine examples of the Greek and Roman mosaic tradition, such as the Empúries archaeological site or the recently excavated Roman mosaics in la Sagrera, in the city of Barcelona, in Catalonia there is a large range of Art Nouveau mosaics dating from the early 20th century.

In Barcelona, we find mosaics in the most unexpected corners of the city. Examples include the Santa Creu i Sant Pau Hospital and the Palau de la Música with an extensive collection of top-level Art Nouveau mosaics. Moreover various mosaic works, which demonstrate a wide range of materials and techniques, can be found in shops, residences, markets or other public and private buildings. The Barcelona conference aims to highlight the diversity in the technique and function of mosaics from ancient to modern and contemporary times.

## **Venue**

The Conference will be held at the El Born Centre de Cultura i Memòria  
<http://elbornculturaimemoria.barcelona.cat/en/>

## The theme

### **WHAT COMES TO MIND WHEN YOU HEAR MOSAIC?**

#### ***Conserving mosaics from ancient to modern***

With this question, we aim to engage in a debate about the materials and techniques, which architecture has incorporated in all its varied forms in an artistic and functional expression: pavements, murals, roofs; for both interiors and exteriors. Mosaic heritage extends beyond the renown *opus tessellatum*, *opus sectile* or the pebble pavements, to a variety of decorative styles and contexts which the conference aims to promote and disseminate. Art Nouveau mosaics, with the incorporation of the *trencadís* technique, as well as other less known techniques such the Nolla mosaics will be introduced and discussed at the meeting with respect to their cultural significance, conservation and dissemination.

In addition, papers will address the following sub-themes:

- Management and policies
- Methods of survey and documentation
- Conservation of mosaics from ancient to modern
- Conservation, presentation and display
- Education and training
- Conservation and management of sites with mosaics
- Case Studies

## **Presentations**

Presentations will be divided in sessions according to the theme and sub-themes of the conference. Each presentation will be limited to **15 minutes**. A 30 minutes discussion will conclude each session.

## **Poster Session**

A poster session will be organized at the same venue and will be open to the public. It will be divided in two parts, where 35 posters will be displayed in each one. Selected authors are expected to bring their posters printed in the following dimensions: **DIN A0 841×1189 mm**

The posters will be made available at the ICCM website soon after the conference. Poster authors are kindly requested to bring a **high quality PDF file** of their posters.

Printed and digital versions of the posters should be handed to the conference registration desk.

## **Video Session**

### **Mosaic Conservation in Action: Record Your Story – Share it for Impact**

For the first time in the tradition of ICCM Triennial Meetings, a VIDEO SESSION is organized dedicated to video documents related to the theme of mosaics in the widest sense. Manufacturing, art and significance, conservation, presentation, education, best practice are the topics accepted in this session. Videos will be projected during the time of the meeting in a dedicated space close to the conference hall. The members of the scientific committee will nominate an award to the best video presented. Videos will be



projected in loop during the conference time. The winner video will be announced during the conference closure.

### **Language and Translation**

The official languages of the conference will be Catalan, English and Spanish. Simultaneous translation in Spanish and English will be provided. Translation into Arabic will also be available.

**Papers and posters** will be accepted **only in English** for publication.

### **Conference visits and tours**

Aftrnoon guided visits will be offered to the participants, which include the Avinyò Domus (Museu d'Història de Barcelona), the Hospital de la Santa Creu i Sant Pau and the Palau de la Música. One full day excursion to the Greco-Roman archaeological site of Empúries and the city of Girona will also be organised. An optional two-day post-conference tour will be offered at an extra charge (information at the end of this circular)

### **Organising Committee**

The conference is organised by the ICCM in collaboration with and under the auspices of the Servei d'Arqueologia de Barcelona, a municipal body of the Institut de Cultura – Barcelona City Council. The members of the organizing committee are: Roberto Nardi, President of ICCM, Centro di Conservazione Archeologica, Roma; Carles Vicente, Director of Memòria i Història - Institut de Cultura de Barcelona (ICUB); Stefania Chlouveraki, ICCM Vice-President, Technological Educational Institute of Athens; Josep Pujades, head of archaeological interventions - Servei d'Arqueologia de Barcelona/ICUB and Montserrat Pugès, head of heritage interventions - Servei d'Arqueologia de Barcelona/ICUB.

### **Scientific Committee**

Roberto Nardi, ICCM President, *Centro di Conservazione Archeologica*, Rome;  
Stefania Chlouveraki, ICCM Vice-President, *Athens Univeristy of Applied Sciences*;  
Demetrios Michaelides, ICCM President Emeritus, *University of Cyprus*;  
Gaël de Guichen, ICCM Honorary President, ICCROM;  
Anne-Marie Guimier-Sorbets, Affiliated Member AIEMA Representative, *Université de Paris Ouest- Nanterre*;  
Stefano De Caro, Affiliated Member ICCROM Representative, Director-General, ICCROM;  
Jeanne Marie Teutonico, ICCM Secretary, *The Getty Conservation Institute*, Los Angeles.  
John Stewart, ICCM Treasurer, *The English Heritage*, London;  
Evelyne Chantriaux, ICCM Board Member, *Atelier de Restauration de Mosaiques et d'Enduits Peints de Saint-Romain-en-Gal*;  
Aïcha Ben Abed, ICCM Board Member, MOSAIKON Regional Co-ordinator;  
Alessandro Lugari, ICCM Board Member, *Soprintendenza Speciale per i Beni Archeologici di Roma*;  
Hicham Rguig, ICCM Board Member, Curator of the *Archaeological site of Chellah*;

Komait Abdallah, ICCM Board Member, former director of the *Scientific Laboratories at General Directorate of Antiquities and Museums of Syria*;

Montserrat Pugès, Head of Heritage Interventions. *Servei d'Arqueologia de Barcelona/ICUB*

Kusi Colonna-Prete, external collaborator of *Servei d'Arqueologia de Barcelona*.

## Conference Program

### Conference Opening

#### **M. Pulges, K.Colonna-Prete**

My neighbourhood's mosaic: citizen participation for Barcelona's mosaic heritage conservation

### Session 1. Management and Policies

**R. Nardi**, The long road of mosaic conservation, a clear evolution toward the future

**M. Jamhawi, A. Al-Amaireh**, Ancient mosaics in Jordan: a tool for the cross-cultural dialogue

**M. Mertzani, E. Anamaterou, M. Deliprimi, F. Getimoglou, M. Krini, K. Pantazidou, I. Vitsou**

Strategic planning for the protection of mosaics in Greece

**M. Solomidou-Ieronymidou**, Conserving and managing the mosaic heritage of Cyprus: objectives and concerns

**L. Font Pagès**, Conservation program of mosaics on archaeological sites open to the public in Barcelona

### Session 2. Methods of Survey and Documentation

**M. Paz Pérez Chivite**, Methodology of documentation and conservation *in situ*: Roman mosaics of Merida

**T. Navas**, Contemporary mosaics: the case of hydraulic mosaic

**X. Fabrè**, "The Barcelona of Vilassar de Dalt": an extreme example of hydraulic mosaic in the council Library "Can Manyer"

**A. Weichbrodt, M. Kuhn**, Made-to-Measure: developing and employing a PostgreSQL/PostGIS documentation system

**M. Frankovic**, Regional collaboration project: conservation and restoration of ancient mosaic from Villa Urbana in Budva

### Session 3. Conservation of Mosaics from Ancient to Modern

**M.J. García Mulero**, The ornamental suns from the hypostyle hall of the Park Güell, Barcelona: the complexity of this kind of mosaic glass, and its conservation problems

**M. Kindt, F. Lombaers**, Re-appreciating the art of Art Nouveau mosaics in Brussels: challenges in the conservation of mosaics in use

X. Laumain, Key aspects and criteria for the restoration of Nolla mosaics

**S. Llobet**, The Santa Creu i Sant Pau Hospital's mosaics in Barcelona: how new insight into the technique influenced its restoration

**I. Marques**, Mosaics and modern Lisbon: the surrealist panels of Carlos Calvet (1956)

**L. M. Tapini**, Concrete and the revival of mosaics & terazzo floors in Athenian architecture

**R. Cassio**, Mosaics conservation methods in Venetian style floorings restoration,

**S. Şener Yaşar, B. Eskici**, The removal and transportation works of wall mosaics of the year 1956 made by two artists in Ankara

**S. Vella, M. C. Gaetani, U. Santamaria**, The “Tarot Garden” by Niki de Saint Phalle

#### **Session 4. Conservation, Presentation and Display**

**J. Chloros**, A fresh look 56 years later: a Roman mosaic pavement rebuilt

**D. Abramitis, C. Riccardelli, B. Edelstein**, The reinstallation of a Roman mosaic in the collection of the Metropolitan Museum of Art, New York

**B. Al Mahamid, H. Al Taher**, Mosaics of Madaba between past and future

**I. Haj Daoud, A. Rjoob**, Protective shelter for the mosaic floor of the Great Bath Hisham’s Palace, Jericho

**P. Baldassarri**, Enhancing the beauty of ancient remains: technology and promotion in the archaeological site of Palazzo Valentini, Rome, Italy

**C. Martí**, Mosaic and “*trencadís*” at Palau de la Música Catalana

**I. Rabia Isiklikaya Laubscher**, Conservation history of the Antioch mosaics

**S. Borghini, A. Lugari, R. Narducci**, Archaeology in the box: from discovery to explanation in a Roman yard

**M. Tutovski**, What comes to visitors’ minds when they hear mosaic but they can’t see it? Restoration and presentation of the mosaics from the Episcopal Complex in Stobi

**T. Pases Oviado**, Intervention project of the Roman pavements of the Villa Cornelius, L’Ènova, Valencia, Spain

**A. Lugari**, Incrustations: conservation, restoration and reconstruction

**C. Giroire, M. Marque**, An outstanding 19th century restoration: the mosaic of Neptune and Amphitrite from Constantine, present-day Algeria (Louvre Museum A)

#### **Session 5. Education and Training**

**J.M. Teutonico, L. Friedman**, MOSAIKON ten years later: objectives, outcomes, and opportunities

**T. Roby, L. Friedman, M. Chaouali, H. Rhouma, L. Alberti, E. Carbonara**, The conservation plan for mosaics at Bulla Regia, a component of the MOSAIKON model field project

**A. Pencheva**, Workshop on mosaic conservation: sustainable platform for education and site management

#### **Session 6. Conservation and Management of Sites with Mosaics**

**V. Kaltapanidou**, The St Patapios archaeological site in Veria (4th - 5th c.)

**F. Sciorilli**, The restoration of the mosaics of the Memorial of Moses on Mount Nebo

**T. Shaaban**, Impact of the war and crises on the Syrian mosaics

**E. Charalambous**, Akrotiri Lemesou: the importance of preventive conservation and reburial during the excavation of mosaics

**P. Hatice**, The sundial and convivium mosaic from a Late Antique house in Antioch: documentation and conservation works

#### **Session 7. Case Studies**

**E. Chantriaux, M. Hayes, C. Laporte, P. Mercoiret**, Conservation-restoration of mosaics from the area of Antiquaille in Lyon, conducted by the Atelier of Saint-Romain-en-Gal

**D. Gennari, C. Cacace, D. Catalano, R. Ciabattone, L. Conti, V. Massa, L. Medeghini, F. Moro, A. Rubino, G. Sidoti, M. Torre**, The restoration of mosaics in the Caetani Chapel in the St. Pudenziana Church (Rome): initial observations

**A. Gamarra**, The Mamelouk fountain (s.XIV) from the Museum of Islamic Art of Cairo (Egypt): technique and building materials of this Islamic mosaics heritage

**F. Guiducci, K. Schneider**, The Pretty, the Ugly and the Uncommon: conservation of three Roman mosaics from Ostia Antica, Italy

**G. Gasperetti, A. Canu, G. A. Chessa, A. Garau**, The mosaics of the Orpheus's Domus in Porto Torres (SS): conservation issues and recovery projects

**S. Chlouveraki**, The mosaic icon of 'Panagia Pammakaristos': technical and ethical issues in the conservation of 'religious art'

**Y. Doganis, A. Galanos, M. Kappas**, Restoring the legibility of a Byzantine opus sectile pavement, Monastery of the Transfiguration, Messene, Greece

**M. Piranomonte, A. Borzomati**, The colourful mosaics of the gyms of the Baths of Caracalla in Rome: an example of restoration and conservation in a famous Roman monument

**S. Shah, B. Dandona**, Understanding mosaic in Indian heritage buildings of the Colonial Period

### Conference Closure

**J.M. Teutonico**, ICCM XIII Conference, Barcelona 2017: a critical review

### Poster Session

**F. M. Abraços**, The mosaic C6 of the Domus of Cantaber, Conimbriga: past and present and prospects in the future

**N. Abu Jaber, K. Amarna**, Slacking and mixing lime mortar in antiquity: an experimental approach

**M. F. Ali, W. Z. El Blehy**, Restoration and replacement of Byzantine mosaic, Sinai, Egypt

**Y. Ameziane, E. Shahawy, R. El Khoury**, Mosaikon-Arles; Training for the conservation and restoration of mosaics in museums

**E. Anamaterou, N. Delinikolas, F. Getimoglou, M. Krini, P. Loukopoulou, K. Pantazidou**, Towards a tesserae colour chart of Daphni Monastery Byzantine mosaics

**C. Angelelli**, Knowledge and conservation of ancient floors through the virtual restoration of the contexts: the contribution of TESS web portal

**P. N. AVECILLA**, Conservation and restoration of a modernist mosaic from Lluís Bru: a new type of chromatic reintegration?

**B. Al-Braiki, A. Abulkacem**, Risks to mosaic flooring (causes and solutions) in the scope of control effects Tocra

**N. Atanasov, I. Cholakov, V. Georgiev, S. Stanev**, Conservation of 'The Procession of Dionysos' mosaic from Stara Zagora, Bulgaria

**A. K. Badawi**, Relocation of a mosaic pavement onto a lime mortar foundation manufactured after ancient Roman design

- T. Belgacem, F. Chihawi**, *In situ* mosaic conservation in the archaeological area of Pupput Hammamet, Tunisia
- A. Bertral, M.C. Belarte, J. Buxeda i Garrigós, J. Canela, J. López, M. Madrid i Fernández, N. Otero**, The pavements of the Roman site of Costa de La Serra (la Secuita, Tarragonès): a multidisciplinary study
- P. Berzobohaty**, Painting technic of Late Antique mosaics with special regard on the polychrome preparatory painting
- N. Bouzoubaa, A. Dekayer**, The Restoration of an *in situ frigidarium* floor mosaic of the Gallien Baths, Volubilis, Morocco
- A. Cassio**, The role that the mosaicist play when creating an opera and the consequences for future conservation of mosaics
- C. Cecalupo**, First thoughts about tabletops made of ancient mosaics – from the 18th to the 20th century
- V. Crnoglavac**, Mosaics presented *in situ* in Constantine’s villa at Mediana (Serbia, Nis) / Case of three different shelters
- A. Cusò Recasens**, Restoring the trencadís mosaic on the inner face of the Park Güell bench
- A. Dekayir, N. Bouzoubaa, M. Rouai, A. Lachhab, M. Alilou**, Geophysical investigations of *in situ* roman mosaics in Volubilis, Morocco
- T. Escudero**, Transferring mosaics to our computers
- S. Ferdi, P. Fezant**, Chercell’s contemporary mosaics, the new language of stones
- C. Fiorani, A. Borzomati**, The mosaic of fighters in in Ostia Antica: historic data through the conservation work
- L. Friedman, S. Lardinois, Y. Alef, J. Neguer, J. Stewart**, Protective Shelters for Archaeological Sites with Mosaics: a project of the MOSAIKON initiative
- L. Friedman**, An update on Training in the Conservation and Management of Archaeological Sites with Mosaics: A project of the MOSAIKON initiative
- R. Gergian**, Saving the mosaic of Lala Bekaa, Lebanon
- J. Grisot**, Cement tiles: origins and conservation recommendations, 1873-1931
- I. Hernandez**, Byzantine-style mosaics in San José Costa Rica
- W. Hwari**, Interpretation and presentation of the mosaic in the Decapoli Cities: case study from Gadara
- K. Jones Kristen, M. Tutkovski, G. Bevan**, Photogrammetric Documentation of Mosaics from NI Stobi, Republic of Macedonia
- M. Jovanovic**, Conservation of the mosaic from the archaeological site Nebeske Stolice in Serbia
- E. Kantareva-Decheva**, Episcopal Basilica of Philippopolis (Plovdiv, Bulgaria) Conservation of the Mosaic Floor
- S. Karam**, Preservation and presentation of Mosaics in Tyre –World Heritage site in Lebanon
- M. Krini**, Seasonal reburial of mosaics at Ancient Olympia archaeological site: assessment of the new strategy
- B. M. Kurtosi**, Examination and conservation of Hungarian Art Nouveau mosaics: the Róth-workshop
- J. Lazid, A. Oueslati**, History of the evolution of the conservation and restoration of ancient mosaic supports
- L. D. Liviano**, The importance of knowing the mosaic for its restoration and conservation
- P. Loukopoulou**, Gold tesserae from roman times to modern era: the investigation of a luxury material

- F. Marchand-Beaulieu, K. Abdallah Komait**, What comes to mind when you hear mosaic? Conserving mosaics from ancient to modern
- A. Marechaux**, Removal, transfer and restoration of a contemporary mosaic on an asbestos support
- I. Moreno**, 100 years of conservation and restoration of mosaics in the Archaeology Museum of Catalonia-BCN
- S. Noguer, A. Castro**, Barcelona (mural g-333): a case study of the first public ceramic wall by Eduardo Chillida
- E. Pannunzio, L. Bassotto, C. Ferro, G. Fumo**, Baroque *tarsia* in Venice: two case studies of a particular making process
- Ch. Pilalis**, The Haralabi Street mosaic
- M. S. Pisapia**, Ancient restorations of Pompeii and Herculaneum floors
- K. D. Politis, E. Mantzana**, Mosaics on Euboea island, Greece: from antiquity to today
- M. Protic**, Conservation and restoration of mosaic with Christ monogram
- M. Protic, N. Smičiklas, M. Stanišić**, Conservation and restoration of modern ceramic mosaic from an elementary school in Obrenovac
- E. Qilla**, Butrint as an education and training school for future generation of conservators
- M. Raedel**, Research and reconstruction of historic gold mosaics
- M. Rapilliard, H. Tawfick, A-M. Guimier-Sorbets**, A mosaic from Thmuis, Egypt: Continuation of a restoration project and complementary observations on the constituent materials
- L. L. Rodríguez, S. Llobet, J. M. Llorens, M. Àngels Jorba**, The Theseus and Ariadne Mosaic, Bell-lloc del Pla, Girona, 1876-2016: From obscurity to the museum
- M. J. A. Rodríguez**, Mosaic Nolla in Cartagena: models, design and conservation
- F. N. Russo**, The mosaic floors of the roman villa of Patti Marina, Italy: new considerations and ancient restorations of mosaics dating 2th – 3th centuries AD
- S. Abd El Salam**, Report about the mosaic floor of the Dressing Room (Apodyterium) of Trajan's Baths in Cyrene
- S. Abdel Salam**, Mosaics in Libya: deterioration factors and conservation problems
- E. M. Shahawy**, Mosaics in Egypt: Center of Archaeological Information and Preservation of Mosaics in Egypt
- H. Sillini**, Mosaics from cement to Aerolam
- C. Smith**, Conservation of two mosaics in England
- E. Soragni, S. Rindi, S. Gualtieri, R. Fontanelli, M. Macchiarola**, Novel geopolymeric composites for the restoration of a Roman mosaic fragment
- A. Taha**, The mosaic of the Rock and Al-Aqsa Mosque
- F. Tedeschi Loredana, G. Gasperetti, A. Canu, A. Chessa**, Methods of photogrammetric documentation and High Definition 3D analysis applied on mosaics of a patrician residence in Turris Libisonis, Porto Torres, Italy
- A. Tomkovska**, Restoring mosaics in Lebanon: evaluation of earlier decisions and propositions of future actions based on the examples of two case studies
- B. Tosovic-Lazarevic**, SEE Mosaics Meeting III “New perspectives and challenges in mosaic conservation”
- N. Upveche**, Mosaic map of the city of Ohrid and Lihnid
- A. Weichbrodt, M. Kuhn**, Connected archaeological sites – Mosaic climate survey and the IoT (Internet of Things)
- F. Xavier**, Recovery and dignity of a “Roman mosaic” lost done by Mario Maragaliano in the Teatre Principal of Terrassa
- S. Yeşil-Erdek**, Reburial of *in situ* mosaic pavements: comparison of different methods based on experiments

**F. N. Yghil**, Mosaics conservation at the Bardo and Carthage Museums: assessment and conservation plan

**T. N. Zapata**, Casa Batlló: the conservation-restoration of three skylights made of glass trencadís, and ceramic plates, in the main courtyard

**M. Zugaibi**, Byzantine mosaic in Al-Shabatliyah area, Latakia, Syria

### **Registration Form and Fees**

Registrations should be submitted online, by September 30th, 2017, using the registration form at the ICCM website <http://iccm-mosaics.org/conferences/barcelona-2017/>

A total number of 300 participants will be admitted to the conference. Registration will close when this number is reached.

Registration Fee Deadline

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Registration 320€ October 16th, 2017

Student Registration 120€ October 16th, 2017

The Full and Student Registration Fee covers:

- The attendance to conference sessions;
- The booklet of abstracts and all other conference material;
- The acts of the conference (distributed later);
- The opening reception;
- Guided tours and receptions;
- Coffee breaks during the conference;
- ICCM Membership for one year;
- The right to put up candidature for the ICCM Board (not applicable to students fee);
- The right to vote for the ICCM Board at the elections that will take place during the conference.

Attendance certificates will be provided upon request.

Attendees can book for the post-conference tour at an extra charge. Information and booking contact is available at the end of this circular.

Due to safety regulations the number of participants that can be admitted to the lecture hall is 300 and therefore subscriptions will be limited to this number. Accompanying guests who are not registered may not be admitted to the conference activities.

Registration fee can be paid via bank transfer according to the following account:

Banca Popolare di Sondrio

458 - Roma - Agenzia N.29 FAO

IBAN Code: IT24I0569603229000004012X30

BIC/SWIFT Code: POSOIT22XXX

Online payment is available at the following link:

<http://iccm-mosaics.org/conferences/barcelona-2017/>

### **Accommodation**

Participants will be responsible for making their own reservations and payments.

The hotels listed below will provide special discount prices to the conference participants.

### **Hotels near the venue WEB ADDRESS Neighborhood**

Barcelona Colonial\*\*\*\* [hotelcolonialbarcelona.com](http://hotelcolonialbarcelona.com) Via Laietana, 3 El Born

Ciudadella Barcelona\*\*\*\* [hoelciudadellabarcelona.com](http://hoelciudadellabarcelona.com) Av. Del Marquès de l'argentera, 4 Ciudadella  
Hotel Duquesa de Cardona\*\*\*\* [hduquesadecardona.com](http://hduquesadecardona.com) Passeig de Colom, 12 El Born  
Gran Hotel Barcino\*\*\*\* [hotelbarcina.com](http://hotelbarcina.com) Carrer Jaume I, 6 Barri Gòtic  
Hotel Catalonia Born \*\*\*\* [hoteles-catalonia.com](http://hoteles-catalonia.com) Carrer del Rec Comtal, 16-18 Born  
Hotel Ciutat de Barcelona \*\*\* [ciutatbarcelona.com](http://ciutatbarcelona.com) Carrer de la Princesa, 35 El Born  
Hotel del Mar\*\*\*\* [hoteldelmarbarcelona.com](http://hoteldelmarbarcelona.com) Pla de Palau, 19, Born  
Hotel Santa Marta\*\* [hotelsantamartabcn.com](http://hotelsantamartabcn.com) Carrer del General Castaños, 14 Born  
chic and Basic\* [chicandbasic.com](http://chicandbasic.com) Carrer de la Princesa, 50 Born  
Hotel Oasis\* [hoteloasis.es](http://hoteloasis.es) Plaça de Pau Vila, 17 Born  
Hotel Marina Folch\* [hotelscombined.es](http://hotelscombined.es) Carrer del Mar, 16 Barceloneta

### **Hostels**

Hostal som nit born [hostalsomnitborn.com](http://hostalsomnitborn.com) Reina Cristina, 13 Born  
Hello BCN hostel [hellobcnhostel.com](http://hellobcnhostel.com) carrer de lafont, 8 El raval  
Equity Point Gothic [equity-point.com](http://equity-point.com) carrer dels vigatans, 5 Ciudadella  
Hostal Fontanella [hostalfontanella.com](http://hostalfontanella.com) Via laietana, 71 Urquinaona  
Barcelona youth hostel [barcelonayouthhostel.com](http://barcelonayouthhostel.com) Ronda de la Universitat, 15 Raval-Born  
Itaca Hostel [itacahostel.com](http://itacahostel.com) carrer de ripoll, 21 El born  
St. Christophers Hostel [st-christophers.co.uk](http://st-christophers.co.uk) Bergara, 3 Plaça Catalunya

### **Student residence 10€ Discount Participants Code: ICCM17**

La Ciutadella [la-ciutadella-residence-hall](http://la-ciutadella-residence-hall) Ciudadella  
Campus del Mar [campus-del-mar-residence-hall](http://campus-del-mar-residence-hall) Barceloneta  
Investigadors (CSIC) [investigadors-residence-hall/](http://investigadors-residence-hall/) Ciutat Vella

### **Further Information**

Updates and further Information will be posted at the ICCM website and facebook page at <http://iccm-mosaics.org/conferences/barcelona-2017/>

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**ABSTRACT DEADLINE EXTENSION FOR  
THE INTERNATIONAL CONFERENCE:  
“NATURAL STONE FOR CULTURAL  
HERITAGE: LOCAL RESOURCES WITH A  
GLOBAL IMPACT”, PRAGUE (CZECH  
REPUBLIC), SEPTEMBER 19-22, 2017**

Dear Colleagues,

I would like to announce that abstract submission deadline for the international conference **Natural stone for cultural heritage: local resources with a global impact** to be held in Prague (Czech Republic), September 19-22, 2017 **has been extended by Friday, June 30, 2017**. We still can accept some more abstract for both oral and poster sessions of the conference.

Details on conference topics and highlights, together with possibility to submit an abstract and to register can be found at: <https://www.avu.cz/konference>  
I will highly appreciate if you will find the topics of this conference interesting and will find time to share your research with us and other experts in the field of the natural stone research. I will also appreciate your help in disseminating this information amongst your colleagues.

Specifically, we would like to encourage students / young researchers to come, attend the conference, and present their research results. We have possibility to support participation of a limited number of young researchers from a funds that we have received from European Geosciences Union. Details on how to apply can be found on the conference web page (for link see above).

In the case of any further help or information, please do not hesitate to contact me.

I hope to meet you in Prague this September.

With best wishes

Richard Prikryl

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## **ΗΜΕΡΙΔΑ 2017 ΠΑΝΕΛΛΗΝΙΑΣ ΕΝΩΣΗΣ** **ΣΥΝΤΗΡΗΤΩΝ ΑΡΧΑΙΟΤΗΤΩΝ**

Η Π.Ε.Σ.Α. διοργανώνει, για δέκατη χρονιά, την Ετήσια Ημερίδα (2017) των Συντηρητών Αρχαιοτήτων και Έργων Τέχνης του Υπουργείου Πολιτισμού. Το πιθανότερο χρονικό διάστημα διεξαγωγής είναι η τελευταία εβδομάδα του Νοεμβρίου ή η πρώτη του Δεκεμβρίου 2017. Η ακριβής ημερομηνία και ο τόπος διεξαγωγής της Ημερίδας θα ανακοινωθούν σε εύλογο χρονικό διάστημα.

**Αντικείμενο της ημερίδας θα είναι οι παρουσιάσεις Τεχνικών Εκθέσεων και Μελετών, Επεμβάσεων Συντήρησης και Αποκατάστασης Αρχαιοτήτων και Έργων Τέχνης, καθώς και Ερευνητικών Εργασιών. Επιπλέον την φετινή χρονιά θα αφιερωθεί ειδική συνεδρία με θέμα «όροι, προϋποθέσεις και προδιαγραφές για την εκπόνηση μελετών Συντήρησης Αρχαιοτήτων και Έργων Τέχνης»** Δυνατότητα ανακοίνωσης έχουν όλοι οι Συντηρητές Αρχαιοτήτων & Έργων Τέχνης καθώς και όσοι άλλοι Επιστήμονες ενδιαφέρονται να παρουσιάσουν θέματα που άπτονται των ενδιαφερόντων της Συντήρησης Αρχαιοτήτων & Έργων Τέχνης.

Η Ημερίδα θα περιλαμβάνει **προφορικές** ανακοινώσεις καθώς και **posters** (ανακοινώσεις τοίχου).

Οι συγγραφείς ή ομάδες συγγραφέων που επιθυμούν να είναι υποψήφιοι για να ανακοινώσουν στην Ημερίδα 2017 (είτε προφορικά είτε με poster) θα πρέπει να το δηλώσουν ψηφιακά μέσω ηλεκτρονικής φόρμας στο σύνδεσμο: <https://goo.gl/forms/BROTLVMvKBYW0ID63>, όπου θα κληθούν να υποβάλλουν και το κείμενο (χωρίς φωτογραφίες ή άλλο υλικό) της περίληψης της εργασίας τους, με όριο τους 3500 χαρακτήρες. Η περίληψη θα πρέπει να παρέχει μια όσο το δυνατόν πληρέστερη περιγραφή του περιεχομένου της ανακοίνωσης βάσει του οποίου θα κριθεί η επιλογή της. Μέσα στην ηλεκτρονική φόρμα παρέχονται οδηγίες για τη σωστή συμπλήρωση της υποψηφιότητας. (Παρακαλούμε για οποιαδήποτε άλλη πληροφορία εκτός της υποβολής των περιλήψεων απευθυνθείτε στην διεύθυνση της Π.Ε.Σ.Α.: [pesa@pesa.com.gr](mailto:pesa@pesa.com.gr)).

**Τελική ημερομηνία υποβολής των περιλήψεων των ανακοινώσεων είναι η 6η Οκτωβρίου 2017.**

Οι επιλεγμένες εργασίες θα δημοσιευτούν στα «Πρακτικά της Ημερίδας 2017 της Π.Ε.Σ.Α.» που θα εκδοθούν το επόμενο έτος. **Οι συγγραφείς θα ενημερωθούν με ηλεκτρονικό ταχυδρομείο για την επιλογή της εργασίας τους, από την Επιστημονική Επιτροπή.** Η Επιστημονική Επιτροπή διατηρεί το δικαίωμα να μην επιλέξει μια εργασία λόγω ελλείψεων σε πρωτοτυπία, αδυναμία στην οργάνωση ή στη σύνταξη του κειμένου, εξαιρετικής απόκλισης από το αντικείμενο της Ημερίδας, καθώς και λόγω παρέλευσης της ημερομηνίας υποβολής. Σε περίπτωση μη επιλογής, το υλικό θα επιστραφεί στο συγγραφέα.

Οι συγγραφείς των εργασιών, ως κάτοχοι των πνευματικών δικαιωμάτων, παραχωρούν με τη συμμετοχή τους στην Ημερίδα, την άδεια για τη δημοσίευση των εργασιών στο τεύχος των Πρακτικών καθώς και της περίληψης στην ιστοσελίδα της Π.Ε.Σ.Α.

Η παρούσα ανακοίνωση θα αποσταλεί στα μέλη της Π.Ε.Σ.Α. και θα αναρτηθεί στην ιστοσελίδα του Σωματείου. Γραπτή ενημέρωση θα γίνει επίσης και στις Υπηρεσίες και τους Εποπτευόμενους Φορείς του ΥΠ.ΠΟ.Α.

Για το Δ.Σ. της ΠΕΣΑ

Ο Πρόεδρος

Ιωάννης Βερροϊόπουλος

Ο Γεν. Γραμματέας

Βασίλειος Παναγιωτόπουλος

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**DIGITAL HUMANITIES AND RITUAL SPACE,**  
**19-21 OCTOBER 2018, LABORATORY OF**  
**GEOPHYSICAL-SATELLITE REMOTE**  
**SENSING AND ARCHAEO-ENVIRONMENT,**  
**MELISSINOU & NIKIFOROU FOKA 130,**  
**RETHYMNON 74100, CRETE, GREECE**

*An international conference organised by the Unlocking Sacred Landscapes (UnSaLa) network*

This is the second international meeting of the *Unlocking Sacred Landscapes (UnSaLa)* network, initiated by an Irish Research Council/Marie Curie Fellowship, and currently supported by Research Training Group 1878: Archaeology of Pre-Modern Economies of the Universities of Bonn and Cologne. The idea of the Network is based on an agreement of collaboration between the Department of Classics of Trinity College Dublin, the Laboratory of Geophysical-Satellite Remote Sensing and Archaeo-environment of the Foundation of Research and Technology-Hellas, and the Archaeological Research Unit of the University of Cyprus (for further information visit <http://www.ucy.ac.cy/unsala/>). This meeting will take place in Rethymnon, Crete.

The meeting will focus on digital approaches both to ritual space and to artefacts relating to ritual practice and cult. The terms ritual and cult are used broadly to include sanctuaries, temples, and churches, as well as the domestic and funerary spheres of life. We particularly welcome papers with a strong methodological focus on computational developments, digitisation processes and spatial analysis. Although the main focus of the network is the Mediterranean region, we also warmly welcome relevant papers from colleagues working in other areas of the world, with a view to stimulating wider methodological dialogues and comparative approaches. The chronological range is also open, ranging from prehistory to the recent past, and including cultural heritage management.

In particular, we welcome archaeological, art-historical, anthropological, ethnographic, historical, computational, cultural heritage or inter-disciplinary papers dealing with:

- (1) inter- and intra-site Geographic Information System (GIS) approaches and spatial statistics and modelling of ritual space and/or its associated material assemblages,
- (2) digitisation and virtual reconstruction of ritual space and/or its associated material assemblages,
- (3) remote sensing/aerial/satellite approaches to ritual space,
- (4) other computational methods and developments (e.g. space syntax and 3D modelling) applied to ritual space and/or its associated material assemblages,
- (5) digital approaches to culture heritage management and culture heritage studies of ritual space and/or its associated material assemblages,
- (7) digital approaches to phenomenological, performative and experiential analyses related to ritual space and/or its associated material assemblages.

Papers should be 20 minutes long. Posters may also be accepted. The official language of the workshop is English. Selected papers of the workshop will be published in the form of a peer-reviewed collection of studies and not as conference proceedings.

There will be a registration fee (60 euros) to cover coffee-breaks, one dinner, and an excursion on 21<sup>st</sup> of October.

Please submit a 300 words (maximum) abstract to [papantog@tcd.ie](mailto:papantog@tcd.ie) by **30 March 2018**. Notification of acceptance will be made by April 30<sup>th</sup> 2018.

**Convenors:**

Dr Giorgos Papantoniou (University of Bonn)

Dr Apostolos Sarris (Foundation for Research and Technology-Hellas)

Dr Christine E. Morris (The University of Dublin, Trinity College)

Dr Athanasios K. Vionis (University of Cyprus)

**Further information:**

<http://www.ucy.ac.cy/unsala/workshops/rethymnon-2018>

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*Dr Giorgos Papantoniou*

*Research Training Group 1878: Archaeology of Pre-Modern Economies*

*Rheinische Friedrich-Wilhelms-Universität Bonn*

*Institut für Archäologie und Kulturanthropologie*

*Abteilung für Klassische Archäologie*

*Lennéstr. 1*

*D-53113, Bonn*

*Germany*

<http://www.wirtschaftsarchaeologie.de/en/persons/postdocs/dr-giorgos-papantoniou/>

Unlocking Sacred Landscapes Network:

<http://www.ucy.ac.cy/unsala/>

Facebook Page of the Network:

<https://www.facebook.com/unlockingsacredlandscapes/>

Academia webpage:

<https://uni-bonn.academia.edu/GiorgosPapantoniou>

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## **METROARCHAEO 2017, METROLOGY FOR ARCHAEOLOGY AND CULTURAL HERITAGE, CASTELLO CARLO V, LECCE, ITALY, OCTOBER 23-25, 2017**

The word metrology has a long tradition, deriving from the Greek word for measure. The knowledge about anything is complete only when it can be expressed in numbers and something is known about it. Measurements play a fundamental role in every field of investigation and present day scientific and technological progress has resulted from progress in the field of measurements.

Metrology, the science of measurements, includes all aspects both theoretical and practical with reference to measurements, whatever their uncertainty, and in whatever fields of science or technology they occur. Consequently the field of valorisation, characterisation and preservation of Cultural Heritage too is deeply related to the metrological issues for the collection, interpretation and validation of data collected with the different analytical, physical-chemical, mechanical techniques, digital technologies, new ICT tools, etc...

METROARCHAEO2017 wants to gather together Heritage scientists in universities, research institutions, museums, galleries, libraries, archives, small and medium enterprises.

The conference program is conceived to foster exchanges of ideas and information, make connections and collaborations, update innovation on “measurements” suitable for Cultural Heritage among material scientists, chemists, physicists, engineers, archaeologists, conservators, restorers, etc..

Examples of technologies that may be object of presentations are indicated below. Accurate and appropriate measured survey and imaging data is a fundamental requirement for the effective conservation, management and understanding of our cultural heritage. Such data that need to be cost-effective and sensitive to the nature of the site and any interventions proposed may be considered.

Archaeogeophysic methods represent a range of non-invasive surveying with geophysical techniques, as GPR, Geoelectric, EM, Geomagnetic, Gravity, Seismic, which can highlight the buried contrasts between subsurface features and human activity, may be considered, as well as Geoarchaeology, the 'earth-science' approach to archaeological interpretation.

Measurements deriving from the large number of analytical methodologies and tools, molecular and elemental spectroscopic techniques, chemometrics, chemical reactivity and modeling, etc., nowadays available are of interest for the conference. Data on the impacts of natural and anthropogenic environmental stressors, the decaying pathways of the different materials in the surrounding environment, the development of new remediation processes as cleaning, consolidation, rehabilitation, etc., based on the chemical knowledge can be considered.

Summarizing, METROARCHAEO2017 is designed to profit of a multidisciplinary approach to give to the Cultural heritage community, from archaeologists to historians, conservators, engineers, material scientists, etc... a complete picture of the measurements utilizations and data treatments with the ultimate goal of increasing knowledge on the characterization and safeguard of archaeological and historic heritage, generally addressed in sectorial conferences.

## CONFERENCE TOPICS

The main topics include:

- Metrology for Archaeology and Cultural Heritage
- Methodologies, measurement techniques and data analysis
- Sustainable methodologies and measurements for preventive conservation
- Heritage Geomatics
- Non-destructive techniques and testing systems for diagnostic applications
- Ancient scientific instruments
- Bioarchaeology and measurements for heritage food
- Archaeometry
- Computer Science and 3D survey

Please take into account that papers dealing with other Heritage science measurements are welcome as well.

### Special sessions

Attending people are encouraged to propose Special Sessions on topics of interest, specifying the focus for the session before April 30 2017.

[> On-line SPECIAL SESSION proposal](#)

## CONFERENCE PAPERS

### Abstract submission

Authors are kindly invited to submit a **one/two pages abstract**, which clearly indicates the originality and relevance of the work by **June 30th, 2017**.

The selection of the submitted abstracts for Oral or Poster presentation is based on the review by the Technical Programme Committee.

**All accepted abstracts will be published on-line on the conference web site.**

Authors notification: **September 20 th, 2017**.

[> Abstract submission](#)

### Proceedings of IMEKO TC4 International Conference on Metrology for Archaeology and Cultural Heritage

In the case of acceptance, the Authors are encouraged to publish their work in the conference proceeding, uniquely identified by ISBN, by submitting a full paper (4-6 pages) by **September 5th, 2017**.



**Only the submitted full papers will be published in the conference proceedings.**

For preparation of your manuscript, please use the conference templates available on the [Authors page](#).

Please visit the site: <http://www.metroarcheo.com/index.php>

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**SESSION “HUMAN SUBSISTENCE AND  
SETTLEMENT PATTERNS DURING THE  
LATE-GLACIAL AND EARLY HOLOCENE:  
INSIGHTS FROM BONES” AT THE XVIIIIE  
UISPP CONGRESS, PARIS, FRANCE,  
JUNE 4-9, 2018**

Dear colleagues,

We would like to invite you to submit a paper to our session “**Human subsistence and settlement patterns during the Late-Glacial and early Holocene: insights from bones**” at the XVIIIe UISPP congress, which will be held in Paris, France, on June 4-9, 2018.

You will find the description of the subject of this session below and as an attached document.

You can now submit your proposals for communication **until 30/11/17 at:** <https://uispp2018.sciencesconf.org>

Please note that we would be happy if you could send a copy of your submitted abstract also to us for our records.

Please do not hesitate to contact us if you have any questions.

Looking forward to hearing from you,

With kind regards,

Dorothee Drucker and Anne Bridault

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The Late-glacial and early Holocene periods (ca. 16,000-5,000 BC) have witnessed rapid and severe climatic oscillations. The warm phases of the Late-glacial and early Holocene generally correspond to an expansion and intensification of human settlement and important cultural transitions which are reflected by a large number of archaeological sites, rich in faunal remains. Establishing links between cultural innovation and/or persistence with environmental variation requires deciphering local prehistoric frameworks and recording tools at different levels of resolution. For this purpose, skeletal remains (bones, teeth, antlers and horns) of animal specimens and human individuals yield insightful information on diet, environment, phylogeny, and cultural practices through studies in paleoanthropology, zooarchaeology, bone industry, proteomics, stable isotopes, and paleogenetics.

Researchers working in all disciplines related to human subsistence and settlement patterns during the Late-glacial and early Holocene from various geographical contexts and settings are invited to contribute. Papers providing archaeological overviews and/or methodological and theoretical insights relevant to these issues are also welcomed. This session intends to stimulate exchanges and discussions pushing the limits of disciplinary frontiers.

**Key-words:** Paleodiet and trophic webs, subsistence-settlements patterns, predation strategies and territoriality, pre-agricultural management of resources, anthropogenic niche construction, food processing and consumption

**Contact:** [anne.bridault@mae.u-paris10.fr](mailto:anne.bridault@mae.u-paris10.fr), [dorothee.drucker@ifu.uni-tuebingen.de](mailto:dorothee.drucker@ifu.uni-tuebingen.de)

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**XX<sup>TH</sup> INTERNATIONAL CONGRESS ON  
ANCIENT BRONZES, 17.04.-21.04.2018,  
UNIVERSITY OF TÜBINGEN, GERMANY,  
CALL FOR PAPERS AND POSTERS  
(EXTENDED DEADLINE)**

XX<sup>th</sup> International Congress on Ancient Bronzes: Resource, Reconstruction, Representation, Role Our understanding of ancient bronzes has grown significantly in the last decades through several studies and collaborative research projects – including the International Congresses on Ancient Bronzes –, but it is far from complete. We still need to explore questions concerning bronze(s) as resource, on their reconstruction, the motives and subjects represented, and on the function of bronzes in society.

In the ancient world, bronzes – from over-life-size sculptures to small-scale objects – were an omnipresent and integral part of public and private everyday life. Bronze was also a valuable resource. From a scientific point of view, the last decades saw new methods of analyses to reconstruct the production processes of ancient bronzes. Besides modern analysis, research on ancient bronze sculpture is still relying on theories and methodologies developed in art history to discuss the style and chronology. Irrespective of the nature of the object – may it be sculpture, tool, or weapon – the role and function of the bronzes need to be studied in conjunction with the archaeological context with which the objects were once associated. The conference aims at addressing these four key topics and bringing together experts from different backgrounds in order to develop further the study on ancient bronzes.

Submissions may address the following topics:

- **Resource: Bronze(s) as resource:** Bronze was always valued and traded through the ancient world; as bullion, tools, statues, or scrap metal. Papers shall discuss the value of bronze as resource against the backdrop of metal sourcing and trade. Questions of reuse and recycling will also be included.
- **Reconstruction: Ancient methods of production, modern repair and modern analysis:** Our knowledge of ancient production methods has grown in the last decades thanks to modern analyses. Papers will discuss both aspects, including questions on forgery and counterfeiting.
- **Representation: From small-scale objects to the colossus of Rhodes:** Ancient bronze sculptures have survived in different sizes and quality. For instance, some small votive bronzes appear to have been manufactured in mass production; on the other hand, we also encounter unique monumental cast bronze sculptures. Papers shall discuss both strands and study small-scale bronzes as products of everyday life or deal with famous bronze sculpture.
- **Role and function: From sanctuaries to rubbish pits – archaeological context:** Bronze objects are discovered in different archaeological contexts, which allow us to (re-

)construct their original context of use and function. Papers will discuss such phenomena, including the theoretical concepts of biography of objects and agency.

Proposals for papers are invited for the general session and posters session. Please send abstracts for papers and posters in all common scientific languages of no more than 300 words by 31.07.2017 to the organizers. Submissions must also include personal details (Name, affiliation and email). Please note that presentations should not exceed 20-25 minutes.

All submissions will go through a peer review process. The final conference program (including accepted panels) will be announced by the end of August 2017.

A conference fee of 100 € will be charged upon registration. Further details (registration process etc.) will be announced on the webpage with the publication of the conference.

E-Mail: [2018AncientBronzes@klassarch.uni-tuebingen.de](mailto:2018AncientBronzes@klassarch.uni-tuebingen.de)

Webpage: [www.uni-tuebingen.de/ancient-bronze-congress-2018](http://www.uni-tuebingen.de/ancient-bronze-congress-2018)

Organizers:

Dr. Philipp Baas ([philipp.baas@uni-tuebingen.de](mailto:philipp.baas@uni-tuebingen.de))

Dr. Dieta Svoboda ([dieta-frauke.svoboda@uni-tuebingen.de](mailto:dieta-frauke.svoboda@uni-tuebingen.de)).

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**ABSTRACT SUBMISSIONS FOR THE**  
**SESSION “ISOTOPIC STUDIES IN ROMAN**  
**ARCHAEOLOGY: PATTERNS OF**  
**COMMONALITY AND ECCENTRICITIES”**,  
**13<sup>TH</sup> ROMAN ARCHAEOLOGY**  
**CONFERENCE, EDINBURGH, UK, 12-15**  
**APRIL, 2018**

Abstract submissions are invited for the session “Isotopic Studies in Roman Archaeology: Patterns of Commonality and Eccentricities” to be held during the 13th Roman Archaeology Conference in Edinburgh (United Kingdom) from 12 to 15 April 2018.

**Session description**

Isotopic proxies (e.g.  $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ,  $\delta^{18}\text{O}$ ,  $\delta^{34}\text{S}$ ,  $^{87}\text{Sr}/^{86}\text{Sr}$ ,  $^{14}\text{C}$ ) are increasingly applied in Roman archaeology to provide additional valuable information on a wide range of past human activities. Examples include, among others, the reconstruction of past human subsistence or mobility and animal or crop management practices. As isotopic data for the Roman world is accumulated, it becomes possible to enlarge the interpretative scale of research into social structures, rural and urban differentiations, networks of connectivity and mobility, agricultural economy, etc. Through inter-regional and/or diachronic comparisons and syntheses, patterns of commonality and eccentricities for the different activities under study can be identified. This is of particular importance for research of the Roman world given its temporal and spatial extent which certainly accommodated considerable variability. In several instances, isotopic data can provide unique information on relevant issues which is simply not available from historical records. Furthermore, it can be fruitfully combined with other sources of historical and archaeological data under integrated research approaches.

This session welcomes contributions from isotopic studies towards Roman archaeology. Of particular interest are multi-isotopic contributions that adopt integrated approaches by combining multiple lines of evidence. There should be an effort to contrast or place novel case studies within the established general context, highlight uniqueness and new foci of interest, and improve on synthesis efforts. Topics of interest, include, but are not limited to:

- Exploring isotopic dichotomies, for instance: rural vs. urban, core vs. periphery, Republican vs. Imperial, Pagan vs. Christian
- Dynamics in social and economic organisation across the Roman world as suggested by isotopic indicators of diet, nutrition, and mobility
- Regional and temporal comparisons in animal and crop management practices
- Identifying individuality or singularities within generic isotopic patterns

Paper proposals should include the following information: 1) Title of the paper, 2) Name, affiliation, postal address and email of the proposer(s); 3) A short abstract of the paper (not more than 300 words); 4) Title of the session for which the paper should be considered.

**The deadline for the submission of paper proposals is Friday 8 September 2017**

Submissions should be sent by email to the RAC 2018 Organising Committee:  
[rac2018@ed.ac.uk](mailto:rac2018@ed.ac.uk)

Conference website: <http://romansocietyrac.ac.uk/>

Looking forward to meeting you in Edinburgh!

Session organisers,

Ricardo Fernandes

(Cambridge & Kiel Universities. Email: [rf385@cam.ac.uk](mailto:rf385@cam.ac.uk))

Kevin Salesse

(Université libre de Bruxelles & Université de Bordeaux. Email: [ksalesse@ulb.ac.be](mailto:ksalesse@ulb.ac.be))

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

**LECTURER MATERIAL CULTURE STUDIES**  
**(0.8 FTE) VACANCY NUMBER 17-252, THE**  
**FACULTY OF ARCHAEOLOGY, LEIDEN**

**Key responsibilities**

The successful candidate will take over some of the tasks of the head of the Material Culture Studies research group, who is temporarily absent. He/she will be in charge of core educational and management tasks in the daily business of the group.

- Preparing, coordinating and teaching courses on Material Culture in the bachelor's programme Archaeology and the master's programme Material Culture Studies;
- Supervising BA, MSc and PhD students and theses in these fields;
- Conducting management tasks (administrative, financial, HR) in the Material Culture Studies research group.

**Selection criteria**

- PhD degree in Archaeology or Archaeological Sciences;
- Broad expertise in material culture studies and solid knowledge about scientific analyses of archaeological materials and technologies, including use-wear analysis;
- Two years of experience in undergraduate and graduate teaching as well as thesis supervision;
- Experience in running a Material Culture laboratory;
- Excellent English, spoken and written; command of the Dutch language is an advantage.

**Our Faculty/Institute**

The future of the past begins in Leiden. The Faculty of Archaeology is internationally leading for its research, home to a broad array of specializations and notable for the strong connection it fosters between teaching and research. Home to over 500 students in the multidisciplinary world of Archaeology, the Faculty and its researchers from all areas of the archaeological field determine the future of archaeological research. Information about the Faculty of Archaeology can be found at <https://www.universiteitleiden.nl/en/archaeology>.

Information on the Material Culture Studies research group can be found at <https://www.universiteitleiden.nl/en/archaeology/archaeological-sciences/material-culture-studies>.

**Terms and conditions**

We offer a position for a fixed term (1 August to 31 December 2017). Salary range from € 2.588,- to € 4.084,- gross per month (pay scale 10, in accordance with the Collective Labour Agreement for Dutch Universities). Salary scale depends on education and experience.



Leiden University offers an attractive benefits package with additional holiday (8%) and end-of-year bonuses (8.3 %), training and career development and sabbatical leave. Our individual choices model gives you some freedom to assemble your own set of terms and conditions. Candidates from outside the Netherlands may be eligible for a substantial tax break. More at <http://www.workingat.leiden.edu/>.

### **Diversity**

Leiden University is strongly committed to diversity within its community and especially welcomes applications from members of underrepresented groups.

### **Information**

For further information, contact Dr. K. Lambers, head of the Department of Archaeological Sciences at email [k.lambers@arch.leidenuniv.nl](mailto:k.lambers@arch.leidenuniv.nl), telephone +31 71 527 6510.

### **Applications**

To apply for this vacancy, please send no later than June 26, 2017 an email to Ms. Y.M. Haring, departmental secretary, at [y.m.haring@arch.leidenuniv.nl](mailto:y.m.haring@arch.leidenuniv.nl). Please ensure that you quote the vacancy number and attach the following documents in a single PDF file: • A cover letter stating your motivation for this position; • A cv with a list of publications; • Your PhD thesis and a major writing sample, preferably as URLs of freely accessible digital copies of these; • A list of courses taught in fields relevant to the post and a syllabus of one of these courses; • Copies of degree certificates and academic transcripts; • The names and contact addresses of three academic referees, of which at least one must not be a former thesis supervisor or current employer.

The selection procedure will take place in late June/early July, and selected candidates will be invited for an interview via Skype before mid-July. You are kindly requested to be available in this period. Job runs from Aug 1 till Dec 31, 2017.

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## **ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS**

### **SEA PEOPLES" UP-TO-DATE: NEW RESEARCH ON TRANSFORMATION IN THE EASTERN MEDITERRANEAN IN THE 13TH- 11TH CENTURIES BCE**

We are pleased to announce the publication of the volume on the “Sea Peoples Phenomenon” edited by Peter M. Fischer and Teresa Bürge

“Sea Peoples” Up-to-Date: New Research on Transformation in the Eastern Mediterranean in the 13th-11th Centuries BCE”

Series 1: Austrian Academy of Sciences, Denkschriften der Gesamtakademie, Volume: 81

Series 2: Contributions to the Chronology of the Eastern Mediterranean, Volume: 35

Published: 2017

ISBN13: 978-3-7001-7963-4

412 pp., 92 illustrations, 30x21 cm

This volume presents the outcomes of the European Science Foundation workshop “Sea Peoples” Up-to-Date. New Research on Transformations in the Eastern Mediterranean in the 13th–11th Centuries BCE, which took place in November 2014 at the Austrian Academy of Sciences in Vienna. It offers up-to-date research on the Sea Peoples phenomenon during the so called “crisis years” at the end of the Bronze Age. This period encompasses dramatic changes in the political and cultural landscape of mainly the Eastern Mediterranean around 1200 BCE and most of the 12th century BCE. In geographical terms, these changes are noticeable in a vast area stretching from the Italian peninsula over the Balkans, the Aegean, Anatolia and Cyprus, to the Levant and Egypt. The term “Sea Peoples phenomenon” should be considered as an encompassing term, which – in addition to the written records on hostile activities of various ethnic groups in the Eastern Mediterranean – is synonymous with the effect of this turbulent period as reflected in the material remains. As a consequence, these events ended the Late Bronze Age, the first period of “internationalism” in human history.

The papers are presented in five sections: “Overviews: From Italy to the Levant”; “Climate and Radiocarbon”; “Theoretical Approaches on Destruction, Migration and Transformation of Cultures”; “Case Studies: Cyprus, Cilicia and the Northern and Southern Levant”; and “Material Studies”. The reader of this volume gains insights into very complex changes during this period. It will become clear that these changes manifest themselves over decades and not years, and include numerous underlying factors: One single wave of migration, one general military campaign and other simple explanations should be dismissed. The breakdown of Late Bronze Age societies and the

transformative processes that followed in its wake occurred in a vast area but they are mirrored in differing ways at local level.

Please visit the site: <https://verlag.oeaw.ac.at/product?info=16304>

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## **U-SERIES DATING AND CLASSIFICATION OF THE APIDIMA 2 HOMININ FROM MANI PENINSULA, SOUTHERN GREECE**

Antonis Bartsiokas, Juan Luis Arsuaga, Maxime Aubert, Rainer Grün, *Journal of Human Evolution*, Volume 109, August 2017, Pages 22–29

### **Abstract**

Laser ablation U-series dating results on a human cranial bone fragment from Apidima, on the western coast of the Mani Peninsula, Southern Greece, indicate a minimum age of 160,000 years. The dated cranial fragment belongs to Apidima 2, which preserves the facial skeleton and a large part of the braincase, lacking the occipital bone. The morphology of the preserved regions of the cranium, and especially that of the facial skeleton, indicates that the fossil belongs to the Neanderthal clade. The dating of the fossil at a minimum age of 160,000 years shows that most of the Neanderthal traits were already present in the MIS 6 and perhaps earlier. This makes Apidima 2 the earliest known fossil with a clear Neanderthal facial morphology. Together with the nearby younger Neanderthal specimens from Lakonis and Kalamakia, the Apidima crania are of crucial importance for the evolution of Neanderthals in the area during the Middle to Late Pleistocene. It can be expected that systematic direct dating of the other human fossils from this area will elucidate our understanding of Neanderthal evolution and demise.

**Keywords:** Apidima; Greece; Neanderthal; U-series dating; Taxonomy

Please visit the site: <https://doi.org/10.1016/j.jhevol.2017.04.008>

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## **MULTISPECTRAL IMAGING REVEALS BIBLICAL-PERIOD INSCRIPTION UNNOTICED FOR HALF A CENTURY**

Shira Faigenbaum-Golovin, Anat Mendel-Geberovich, Arie Shaus, Barak Sober, Michael Cordonsky, David Levin, Murray Moinester, Benjamin Sass, Eli Turkel, Eli Piasezky, Israel Finkelstein

### **Abstract**

Most surviving biblical period Hebrew inscriptions are ostraca—ink-on-clay texts. They are poorly preserved and once unearthed, fade rapidly. Therefore, proper and timely documentation of ostraca is essential. Here we show a striking example of a hitherto invisible text on the back side of an ostrakon revealed via multispectral imaging. This ostrakon, found at the desert fortress of Arad and dated to ca. 600 BCE (the eve of Judah's destruction by Nebuchadnezzar), has been on display for half a century. Its front side has been thoroughly studied, while its back side was considered blank. Our research revealed three lines of text on the supposedly blank side and four "new" lines on the front side. Our results demonstrate the need for multispectral image acquisition for both sides of all ancient ink ostraca. Moreover, in certain cases we recommend employing multispectral techniques for screening newly unearthed ceramic potsherds prior to disposal.

Please visit the site:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0178400> is posted this article [Go there for full account, download, and new readings of ostraca], Story at <https://www.aftau.org/news-page-archaeology?&storyid4677=2335&ncs4677=3>

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## ***EΙΔΗΣΕΙΣ - NEWS RELEASE***

# **THE FIRST GENOME DATA FROM ANCIENT EGYPTIAN MUMMIES**

Study finds that ancient Egyptians were most closely related to ancient populations from the Near East.

MAX PLANCK INSTITUTE FOR THE SCIENCE OF HUMAN HISTORY—An international team of scientists, led by researchers from the University of Tuebingen and the Max Planck Institute for the Science of Human History in Jena, successfully recovered and analyzed ancient DNA from Egyptian mummies dating from approximately 1400 BCE to 400 CE, including the first genome-wide nuclear data from three individuals, establishing ancient Egyptian mummies as a reliable source for genetic material to study the ancient past. The study\*, published today in Nature Communications, found that modern Egyptians share more ancestry with Sub-Saharan Africans than ancient Egyptians did, whereas ancient Egyptians were found to be most closely related to ancient people from the Near East.

Egypt is a promising location for the study of ancient populations. It has a rich and well-documented history, and its geographic location and many interactions with populations from surrounding areas, in Africa, Asia and Europe, make it a dynamic region. Recent advances in the study of ancient DNA present an intriguing opportunity to test existing understandings of Egyptian history using ancient genetic data.

However, genetic studies of ancient Egyptian mummies are rare due to methodological and contamination issues. Although some of the first extractions of ancient DNA were from mummified remains, scientists have raised doubts as to whether genetic data, especially nuclear genome data, from mummies would be reliable, even if it could be recovered. "The potential preservation of DNA has to be regarded with skepticism," confirms Johannes Krause, Director at the Max Planck Institute for the Science of Human History in Jena and senior author of the study. "The hot Egyptian climate, the high humidity levels in many tombs and some of the chemicals used in mummification techniques, contribute to DNA degradation and are thought to make the long-term survival of DNA in Egyptian mummies unlikely." The ability of the authors of this study to extract nuclear DNA from such mummies and to show its reliability using robust authentication methods is a breakthrough that opens the door to further direct study of mummified remains.

For this study, an international team of researchers from the University of Tuebingen, the Max Planck Institute for the Science of Human History in Jena, the University of Cambridge, the Polish Academy of Sciences, and the Berlin Society of Anthropology, Ethnology and Prehistory, looked at genetic differentiation and population continuity over a 1,300 year timespan, and compared these results to modern populations. The team sampled 151 mummified individuals from the archaeological site of Abusir el-Meleq, along the Nile River in Middle Egypt, from two anthropological collections hosted and curated at the University of Tuebingen and the Felix von Luschan Skull Collection at the

Museum of Prehistory of the Staatliche Museen zu Berlin, Stiftung Preussischer Kulturbesitz.

In total, the authors recovered mitochondrial genomes from 90 individuals, and genome-wide datasets from three individuals. They were able to use the data gathered to test previous hypotheses drawn from archaeological and historical data, and from studies of modern DNA. "In particular, we were interested in looking at changes and continuities in the genetic makeup of the ancient inhabitants of Abusir el-Meleq," said Alexander Peltzer, one of the lead authors of the study from the University of Tuebingen. The team wanted to determine if the investigated ancient populations were affected at the genetic level by foreign conquest and domination during the time period under study, and compared these populations to modern Egyptian comparative populations. "We wanted to test if the conquest of Alexander the Great and other foreign powers has left a genetic imprint on the ancient Egyptian population," explains Verena Schuenemann, group leader at the University of Tuebingen and one of the lead authors of this study.

Close genetic relationship between ancient Egyptians and ancient populations in the Near East

The study found that ancient Egyptians were most closely related to ancient populations in the Levant, and were also closely related to Neolithic populations from the Anatolian Peninsula and Europe. "The genetics of the Abusir el-Meleq community did not undergo any major shifts during the 1,300 year timespan we studied, suggesting that the population remained genetically relatively unaffected by foreign conquest and rule," says Wolfgang Haak, group leader at the Max Planck Institute for the Science of Human History in Jena. The data shows that modern Egyptians share approximately 8% more ancestry on the nuclear level with Sub-Saharan African populations than with ancient Egyptians. "This suggests that an increase in Sub-Saharan African gene flow into Egypt occurred within the last 1,500 years," explains Stephan Schiffels, group leader at the Max Planck Institute for the Science of Human History in Jena. Possible causal factors may have been improved mobility down the Nile River, increased long-distance trade between Sub-Saharan Africa and Egypt, and the trans-Saharan slave trade that began approximately 1,300 years ago.

This study counters prior skepticism about the possibility of recovering reliable ancient DNA from Egyptian mummies. Despite the potential issues of degradation and contamination caused by climate and mummification methods, the authors were able to use high-throughput DNA sequencing and robust authentication methods to ensure the ancient origin and reliability of the data. The study thus shows that Egyptian mummies can be a reliable source of ancient DNA, and can greatly contribute to a more accurate and refined understanding of Egypt's population history.

Article Source: Max Planck Institute for the Science of Human History news release

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\*Ancient Egyptian mummy genomes suggest an increase of Sub-Saharan African ancestry in post-Roman periods.

Authors: Verena J. Schuenemann, Alexander Peltzer, Beatrix Welte, W. Paul van Pelt, Martyna Molak, Chuan-Chao Wang, Anja Furtwangler, Christian Urban, Ella Reiter, Kay Nieselt, Barbara Tassmann, Michael Francken, Katerina Harvati, Wolfgang Haak, Stephan Schiffels & Johannes Krause DOI: 10.1038/ncomms15694

Please visit the site: <http://popular-archaeology.com/issue/spring-2017/article/the-first-genome-data-from-ancient-egyptian-mummies>

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## **WHO'S YOUR MUMMY? GENETIC SECRETS OF ANCIENT EGYPT UNWRAPPED**

The closest genetic ties were to the peoples of the ancient Near East, including Israel.

DNA from mummies found at a site once known for its cult to the Egyptian god of the afterlife is unwrapping intriguing insight into the people of ancient Egypt, including a surprise discovery that they had scant genetic ties to sub-Saharan Africa. Scientists on Tuesday said they examined genome data from 90 mummies from the Abusir el-Malek archaeological site, located about 70 miles (115 km) south of Cairo, in the most sophisticated genetic study of ancient Egyptians ever conducted.

The DNA was extracted from the teeth and bones of mummies from a vast burial ground associated with the green-skinned god Osiris. The oldest were from about 1388 BC during the New Kingdom, a high point in ancient Egyptian influence and culture. The most recent were from about 426 AD, centuries after Egypt had become a Roman Empire province.

"There has been much discussion about the genetic ancestry of ancient Egyptians," said archeogeneticist Johannes Krause of the Max Planck Institute for the Science of Human History in Germany, who led the study published in the journal Nature

"Are modern Egyptians direct descendants of ancient Egyptians? Was there genetic continuity in Egypt through time? Did foreign invaders change the genetic makeup: for example, did Egyptians become more 'European' after Alexander the Great conquered Egypt?" Krause added. "Ancient DNA can address those questions."

The genomes showed that, unlike modern Egyptians, ancient Egyptians had little to no genetic kinship with sub-Saharan populations, some of which like ancient Ethiopia were known to have had significant interactions with Egypt.

The closest genetic ties were to the peoples of the ancient Near East, spanning parts of Iraq and Turkey as well as Israel, Jordan, Syria and Lebanon.

Egypt, located in North Africa at a crossroads of continents in the ancient Mediterranean world, for millennia boasted one of the most advanced civilizations in antiquity, known for military might, wondrous architecture including massive pyramids and imposing temples, art, hieroglyphs and a pantheon of deities.

Mummification was used to preserve the bodies of the dead for the afterlife. The mummies in the study were of middle-class people, not royalty.

The researchers found genetic continuity spanning the New Kingdom and Roman times, with the amount of sub-Saharan ancestry increasing substantially about 700 years ago, for unclear reasons.

"There was no detectable change for those 1,800 years of Egyptian history," Krause said. "The big change happened between then and now."

Please visit the site: <http://www.jpost.com/Middle-East/Whos-your-mummy-Genetic-secrets-of-ancient-Egypt-unwrapped-494467>

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## **DOCUMENTATION WORK BEGINS - STATE- OF-THE-ART TECHNOLOGY IS BEING USED TO DOCUMENT THE ESNA TEMPLE SOUTH OF LUXOR AND THE TANIS ARCHAEOLOGICAL SITE IN THE DELTA, BY NEVINE EL-AREF**

In a step towards scientifically documenting all archaeological sites and monuments in Egypt, the Antiquities Documentation Centre (ADC) of the Ministry of Antiquities has started to document the Esna Temple south of Luxor and the Tanis archaeological site in the Sharqiya governorate in the Delta.

Director of the ADC Hisham Al-Leithi told Al-Ahram Weekly that the documentation of the Esna Temple had started in 1993 but had stopped due to the high level of subterranean water that had leaked inside the temple and the beginnings of the restoration work.

The whole project to document all the archaeological sites in Egypt was also stopped in the aftermath of the 25 January Revolution due to budgetary problems. Al-Leithi said that the ministry had resumed the documentation project earlier this year and had started with the Esna Temple and the Tanis site.

The documentation project, he explained, aims to register every inch of every monument in Egypt according to the most up-to-date scientific and archaeological techniques.

“The actual documentation methods will consist of computer-data sets, plans and sections, as well as photographs, drawings and illustrations, recording forms, logbooks, site notebooks, diaries and dive logs,” Al-Leithi said. He added that GIS systems, 3D reconstructions, applications that support on-site recording processes, modern measuring techniques and data-processing software used in geophysical research would also be used.

The Esna Temple is located in the town of Esna roughly 50km south of Luxor. Its history goes back to prehistoric times, although Esna was first mentioned in the Pharaoh Thutmose III’s annals when it was part of the Upper Egyptian region extending from Al-Kab in the north to Armant south of Luxor.

During the ancient Egyptian Middle Kingdom, Esna was an important centre for trade, as it was the focal point of trading convoys from Sudan going to Thebes. During the Graeco-Roman period, Esna was called Latopolis in honour of the Nile perch that was worshipped there. In 1971, a necropolis dedicated to the Nile perch was uncovered west of the town.

The Esna Temple is one of the most important archaeological sites in Esna, Al-Leithi said, adding that the temple goes back to the reign of the 18th-Dynasty Pharaoh Thutmose III and was built on top of the remains of a Saite temple.

The present temple, he continued, was built during the Ptolemaic era, although most of its engravings and decorations go back to the Roman period.

The temple is dedicated to the god of the Nile, as well as other deities such as the ancient goddess of war and weaving Neith, god of magic Heka, goddess of the Nile Satet, and the lion goddess Menhet.

The temple was built almost nine metres below ground level and was completely uncovered in 1843 during the reign of the khedive Mohamed Ali. Earlier the area had hosted French soldiers during the French expedition to Egypt in 1799. “The names of some of the soldiers are engraved on the upper surface of the Temple,” Al-Leithi said.

Some masonry blocks attesting to the construction during the reign of Thutmose III were reused at the site, and the oldest complete part of the temple is the back wall of the hypostyle hall, built during the Ptolemaic period and showing scenes depicting Ptolemy VI Philometer and Ptolemy VIII Euergetes.

The rest of the temple was built by a series of Roman emperors, including Claudius, and Decius.

The hypostyle hall is decorated with 24 pillars beautifully carved and painted with different floral designs. Texts describing the religious festival that once took place at the temple and depicting Roman emperors standing before ancient Egyptian deities are also inscribed on the pillars.

On the northern wall of the hall, the pharaoh is depicted catching wild birds or conquering evil spirits. The decorations also include a number of calendars, while the ceiling is decorated with Egyptian astronomical figures on the northern side and Roman zodiacal signs on the southern side.

**THE TANIS SITE:** Tanis, or San Al-Hagar, was the capital of ancient Egypt during the Late Period. Many historians and archeologists believe that Tanis may even be the richest historical site in Egypt today. It is located about 150km to the north-east of Cairo and was once the capital of the 19th province of Lower Egypt.

Al-Leithi said that the city of Tanis first took the name “Janet” during the ancient Egyptian period, meaning “the city built in a void.” It is mentioned in the biblical Old Testament under the name Soan, and its Coptic name is San. When the Arabs conquered Egypt in the seventh century CE, Tanis was called San. Because it had many rocks and stones, hagar in Arabic, they called the site San Al-Hagar.

When Napoleon invaded Egypt in 1799, remains were taken from Tanis to Europe, including to the cities of Paris, Berlin and St Petersburg. The first Western archaeologist to excavate in Tanis was the Frenchman Auguste Mariette, followed by the English Egyptologist Sir Flinders Petrie and French Egyptologist Pierre Montet.

Montet began to excavate at the site in 1929, following interest in the connections between ancient Egypt and the Near East. Mariette had already explored the area in 1859, finding a series of sculptures mistakenly assigned to the Hyksos era and causing Tanis to be originally thought to be the ancient capital of the Hyksos called Avaris.

The city is divided into two sections containing the temples and the necropolis. Tanis boasts many ruined columns, obelisks, colossi, and stelae engraved with hieroglyphic texts that date from the Old Kingdom, go through the Middle Kingdom, and end with the New Kingdom.

The most important and largest structure in Tanis is the Temple of Amun constructed by the Pharaoh Ramses II. Inside the temple, there are two wells that were once used as a Nilometer. Beside the temple there is the royal necropolis that dates to the 21st and 22nd dynasties, and from which many golden and silver items have been unearthed and are now on display in the Egyptian Museum in Cairo where they are called “the Treasures of Tanis”.

“There are also the ruins of a sacred lake that the Amun Temple priests used for their rituals,” Al-Leithi said, adding that this lake is considered the second-largest sacred lake that has survived, with the other one being in the Karnak Temples in Luxor.

The geographical location of Tanis and its port situated on the Manzala Lake made the city an important destination until the establishment of Alexandria and its port in the Ptolemaic period.

Some historical records say that Tanis dates back to the Old Kingdom, as some stone blocks found in Tanis have the names of Khufu, Pepi I, and other Old Kingdom pharaohs inscribed on them.

**Please visit the site: <http://weekly.ahram.org.eg/News/20616.aspx> [Go there for pix]**

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## **OLDEST ANATOLIAN TRANSCRIPT FOUND IN ACEMHÖYÜK, BY SERGEN ÇIRKIN**

### **Oldest Anatolian transcript found in Acemhöyük**

The oldest known written document in Anatolia has been found during excavations in Acemhöyük Mound in the Central Anatolian province of Aksaray. The single-line inscription, carved on a piece of rock crystal, is not only the oldest one in Anatolia but also in Europe.

Located in the south of Lake Tuz, Acemhöyük Mound is one of the oldest kingdom centers in Anatolia. This center is made up of a hill (800x700 meter) and a lower city that surrounds it.

The hill was the kingdom's acropolis, where the administrative class lived. The lower city, where traders and the public lived, was a kind of international market place.

The Acemhöyük excavations that were initiated in 1982 by Professor Nimet Özgüç have been carried out by Professor Aliye Öztan since 1989.

### **Middle East metropolis 4,500 years ago**

A total of 12 archaeological layers have been identified in Acemhöyük, dating back to some 4,500 years ago. Özgüç and Öztan compared the results of their excavations with written historical documents and revealed that Acemhöyük was an ancient city of Purushattum.

The first information about the city is mentioned in the Sartamhari (King of War) tablets, which depicts the victories of Sargon, the founder of Akkad city, located in present-day southern Iraq. According to the tablets, traders working in Purushattum complained about the local king of the city to Sargon. Then Sargon came to Anatolia climbing past the Taurus Mountains and seized the city.

### **Oldest known written document in Anatolia**

In the old Middle East, traders used precision weights to measure their valuable goods. Lots of weights made of various materials have been found in Acemhöyük, which was one of the important trade centers in Anatolia. But a sample that was unearthed last year caused excitement in the excavation team. Because there were some cuneiform symbols on this weight.

Made up of rock crystal, the weight was found in an early Bronze Age structure. The layer of this structure dates back to 2250 B.C., according to radiocarbon dating. Therefore this crystal weight unearthed in this layer becomes the oldest known written document in Anatolia and Europe.

Öztan says works have still been carried out by cuneiform experts to read the inscription. That the symbols on the weight are not readable enough makes the analysis of the

inscription hard. This is why it is not still understood if the inscription was written in a local Anatolian language or the international language of the era, Akkadian. But after all, this small finding of 10.4 grams has already gained the title of being the oldest known written document in Anatolia.

### **Silver city of the Middle East: Purushattum**

Assyrian traders in northern Iraq established international markets in Anatolia 4,000 years ago. They brought luxurious fabrics and tins to Anatolia and brought silver to Assyria from Anatolia. The weights were used to measure valuable goods like silver in such exchanges.

According to cuneiform tablets, the Purushattum silver was very famous among the Assyrian traders. Many traders turned their earnings into high-quality Purushattum silver and returned to Assyria.

The Purushattum kings, who became richer thanks to this international trade, were using gilded ivory furniture, vases made of crystal or obsidian and wearing dresses made of imported Mesopotamian fabric.

### **Clay witness of international trade**

Cylinder seals and their impression seals provide very important information about the economy history of the ancient Middle East because most of the tradeable goods did not reach the present day. But the seals that were attached to the packages of these goods have been easily kept for thousands of years.

Traders in the ancient Middle East attached a piece of wet mud on the packages they sent and impressed seal with their own names on this mud. These seals were like today's cargo tags.

The impression seals found in Acemhöyük reveal how the city was a busy center in the trade of the Middle East. Among them are samples owned by the Assyrian King Shamsi Adad I, Syrian princess Nagihanum and Carchemish king Aplahanda. All these people were the super powers of the world trade 4,000 years ago.

Please visit the site: <http://tinyurl.com/y9an9psn> [Go there for pix]

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## **THE OLDEST HUMAN FOSSILS EVER DISCOVERED HAVE STORIES TO TELL, BY ALAN BURDICK**

The first fossil skeleton of a human ever discovered was found, in 1823, in southern Wales, ceremonially buried under six inches of soil in a limestone cave facing the sea. William Buckland, the Oxford geologist who unearthed it, didn't know what he had come upon. Buckland had been busy exploring caves in England and Germany, noting the loamy soils and the animal bones they contained as indications of "the last great convulsion that has affected our planet"-the Biblical flood, he meant. In Goat's Hole Cave, in Wales, he found the bones of a hyena, a bear, a rhinoceros, an elephant (actually a mastodon), deer, rats, and birds, and roughly half of a human skeleton, which had been stained with red ochre and laid to rest with periwinkle shells and an assortment of ivory rods and broken armlets. At first, Buckland thought it was a man-perhaps a taxman killed by smugglers-but then he decided that it was a woman, maybe a fortune-teller, or a witch, or a prostitute from the days of the Roman occupation. He called her the Red Lady of Paviland. Whoever she'd been, Buckland wrote, she was "clearly postdiluvian," a relatively recent deposit.

Only much later was the Lady revealed to be a man after all, and, in 2009, after decades of effort, scientists determined that the skeleton is thirty-three thousand years old-the oldest human remains ever found in Britain. By now, of course, we know that the history of our species is far more ancient, although the evolutionary tree keeps changing shape and sprouting limbs. For a while, it was thought that modern humans, who were present in Europe by at least forty thousand years ago, descended from Neanderthals, which have been known and recognized as separate creatures since the nineteenth century. In fact, though, Neanderthals were our cousins; we shared a common ancestor, and our populations overlapped until about forty thousand years ago, when, probably, we drove them extinct. Starting in the nineteen-sixties, a series of spectacular fossil discoveries made it clear that Homo sapiens arose in Africa. We didn't shuffle off the continent until a hundred and twenty thousand years ago or less, but it turns out that earlier hominins, Homo erectus, had been spilling out of there for ages already, making stone tools and, eventually, fires.

The further back we place ourselves in the Paleolithic, the busier the place seems to get-and the less unique we appear to have been. Today, the story got even richer. In a paper in the journal Nature, an international team of researchers announced that they have pushed back the date of the earliest human remains to three hundred thousand years ago. And the specimens in question were found not in East Africa, which has become synonymous with a sort of paleoanthropological Garden of Eden, but clear on the other side of the continent-and the Sahara-in Morocco. "We're not claiming that Morocco is the cradle of modern humankind," the lead author, Jean-Jacques Hublin, of the Max Planck Institute for Evolutionary Anthropology, said at a press conference yesterday. Rather, he added, our emergence as a species was pan-African. "There is no Garden of Eden in Africa-or if there is, it's Africa," Hublin said. "The Garden of Eden is the size of Africa."



The site in question, Jebel Irhoud, is part of a network of caves that lies about sixty miles west of Marrakesh. In 1960, a mining operation unearthed an array of animal and human bones there, including a nearly complete hominin skull. But the remains were a puzzle—they were initially dated at forty thousand years old and thought to be Neanderthal, not human. Maybe this was a far-flung outpost of the European populations, the occupant a Neanderthal Robinson Crusoe. In 1968, a child's jawbone was found; the teeth suggested that it belonged to *Homo sapiens*, and improved dating techniques put it at a hundred and sixty thousand years old. Maybe this was a human site after all, a backwater branch of those early *Homo sapiens* in East Africa. In 2004, Hublin and his colleagues began to excavate in earnest, and brought the total number of hominin bones to twenty-two. All came from the same stratigraphic layer. Once the researchers had analyzed them, Hublin said, "the dates were a big wow."

In 1823, when William Buckland discovered the Red Lady of Paviland, part of what misled him about its age—in addition to his own inability to envisage "antediluvian" humans—was its appearance. Morphologically, a thirty-thousand-year-old specimen of *Homo sapiens* is all but identical to one walking around today. A persistent question among paleoanthropologists is how far back this similarity goes. Modern humans are distinguishable from, say, Neanderthals by our flatter, more delicate faces and our more globular crania, which encase larger and more complex brains. How closely did the earliest humans resemble us in this regard? How quickly did we come to look the way we do?

To approach an answer, Hublin's team used a tomography scanner to examine the Irhoud fossils and compare them with other examples from around the world. This revealed "a series of features that are basically indistinguishable from those in modern humans," Hublin said. The face was remarkably similar, short and retracted below the brow. "It's the face of people you could cross in the street today," he said. The skull, however, was flatter and more elongated—that's the feature that has changed most since our days in Irhoud, likely in response to a series of genetic mutations that are known to have improved our brain organization, connectivity, and development. "It was face first, brain after," Hublin said. John Fleagle, an anthropologist at Stony Brook University, told me, "If you take a human skull and enumerate fifteen things that make it 'human,' this thing"—the three-hundred-thousand-year-old *Homo sapiens*—"has five or six of them. It doesn't have the full shebang."

But, even with that flatter skull, a human from the early days wouldn't stand out in a crowd, Hublin told me: "In the street you see a lot of different things, eh?" (He added, however, that their "robust" musculature "probably would be the most frightening feature.") The scientific literature sometimes draws a distinction between recent modern humans and early modern humans—R.M.H. and E.M.H.—but Hublin cautioned against thinking of these as actual separate categories. We're all one species, very slowly evolving. "There is no gap, no break point, in the lineage leading from Irhoud to us," he said.

As the number of fossil *Homo sapiens* continues to grow, and as their images proliferate in the literature alongside those of *Homo neanderthalensis*, *Homo heidelbergensis*, *Homo naledi*, and the other members of the budding genus, we start to look less human and more like every other animal in the animal kingdom. The one trait that we think of as most distinctively human, beyond our fine cheekbones and impressive cerebellum, is the

stuff we make, our culture-paintings, beads, figurines, and everything that followed. But this is all relatively recent-within the past hundred thousand years or so-and not unique to us. The Neanderthals used pigments, collected bird feathers, and buried objects with their dead; in March, scientists revealed a raven bone that had been aesthetically carved by a Neanderthal, roughly forty thousand years ago.

In any case, there was a long period-two hundred thousand years, it now appears-during which "human culture" involved only stone tools, as with pretty much every other Paleolithic hominin. Were we like them, or were they like us? We were all subject to the same pressures, and we navigated the same environmental shifts. Africa has seen enormous fluctuations in climate in the past few hundred thousand years, Hublin observed. More than once, the northeast limit of the summer monsoon has moved north, essentially replacing the Sahara with grasslands rich in the kind of wildlife-gazelle, wildebeest, zebra, big cats-whose remains were found in the Irhoud cave. "That is absolutely gigantic," Hublin said. "The Sahara is the size of the United States, an area that stretches from Tanzania to Morocco. And it happened again and again. It blows our minds."

Such episodes would have connected previously isolated regions of Africa, enabling early humans to occasionally disperse across the continent, perhaps in pursuit of migratory game. There would have been relations, a regular exchange of genes, a diversifying, pan-African people. The Paleolithic era starts to sound almost multicultural. Hublin noted that a green-Sahara period occurred around three hundred thousand years ago, just prior to the date of the Irhoud site. The researchers speculate that Irhoud may have been a hunting camp, a pit stop on a longer journey; it's clear that the flint in the tools found there came from miles away. It's also clear that paleoanthropologists will need to expand their search beyond East Africa, which, it now seems, may be considered the cradle of humankind mostly because it's so rich in specimens. "There's a lot of rocks of the right age and a lot of bones to find," Fleagle told me. Have we been looking for our keys under the street lamp, because that's where the light is?

Hublin emphasized that identifying the oldest known human remains doesn't mean they were the first-far from it. Phylogenetic studies indicate that Homo sapiens and Neanderthals last shared a common ancestor, Homo heidelbergensis, about six hundred and fifty thousand years ago, so our species won't turn out to be older than that. Still, he said, "what happened in Africa between six hundred thousand and four hundred thousand years ago is basically unknown."

Alan Burdick, a staff writer, joined The New Yorker in 2012. He is the author, most recently, of "Why Time Flies: A Mostly Scientific Investigation."

**Please visit the site: <http://www.newyorker.com/tech/elements/the-oldest-human-fossils-ever-discovered-have-stories-to-tell>**

## **YALE EXCAVATION IN SYRIA CONTINUES TO REVEAL SECRETS OF WORLD'S EARLIEST, BY KEVIN DENNEHY**

Cities In the 1970s Yale archaeologist Harvey Weiss began excavating an ancient city in present day Syria that would reveal critical insights into the world's first cities. Although the site is now sealed off from research due to the country's civil war, it continues to yield important discoveries - including the agricultural strategies of the earliest civilizations.

Nearly four decades ago, in the Khabur River basin of northeastern Syria, Yale archaeologist Harvey Weiss uncovered a buried city that over the ensuing years would reveal important new insights into ancient Mesopotamia and the origins of civilization.

Beginning in 1979, Weiss's excavation of the site known as Tell Leilan yielded ancient monumental temples containing cuneiform clay tablets kept by the rulers of the city, and more recently a 4,200-year-old palace, once a key center for the lost Akkadian empire. Within these mud-brick buildings researchers also retrieved carbonized grains and animal bones, traces of daily life that offered a glimpse of how this ancient civilization fed itself - and, as Weiss has long argued, evidence of the surprising role of climate change in its ultimate collapse.

While the archaeological site is now effectively closed to researchers, a casualty of Syria's bloody civil war, Tell Leilan is still giving up its secrets.

In a new paper published in the journal Nature Plants and co-authored by Weiss, a team of researchers applied new technologies to plant-based remnants collected at Tell Leilan and other sites to show how agricultural practices in northern Mesopotamia were adapted to feed growing urban centers.

By analyzing carbon and nitrogen isotope values of charred cereal grains and seed samples, the Oxford-led study found that the cities of northern Mesopotamia met the nutritional demands of a growing urban population by farming on larger areas of land, or through so-called extensive agriculture.

In doing so, these ancient farmers were taking advantage of the region's natural rain-fed climate, which allowed them to utilize less labor-intensive practices than were required in drier southern Mesopotamia. By farming across greater swaths of land, they typically offset any reduction in labor or resource-related inputs with a larger absolute scale of production.

In southern Mesopotamia, by contrast, lower annual rainfall required more intensive, labor-heavy agricultural practices, such as the use of manure and irrigation systems.

"These results confirm that there was more than one path to early urbanization," said Weiss, a Professor of Near Eastern Archaeology at the Yale School of Forestry &

Environmental Studies and the Department of Near Eastern Languages & Civilizations. "In fact, there was a second and far more widely distributed pathway."

The results validate a long-held hypothesis promoted by Weiss that suggests that the earliest cities of northern and southern Mesopotamia were supported by two distinct agricultural systems.

"So from the very beginning settled human life was operating on very different environmental bases in northern and southern Mesopotamia," said Gil Stein, another co-author who is professor of archaeology and Director of the Oriental Institute at the University of Chicago. He is also one of Weiss's former students at Yale.

"Just think of how interesting that is: even though the ecology and agricultural systems were so totally different - and with different organizational requirements - these cities developed in parallel even as they operated on different principles. And Harvey was one of the first people to point this out in a very clear and incisive way."

While the early cities of northern Mesopotamia were able to utilize extensive agriculture because the rain-fed climate allowed them to, Weiss says, this reliance on rainfall also made them vulnerable to regular periods of drought.

In previous research he has written that this vulnerability ultimately doomed the Akkadian empire when a prolonged mega-drought struck northern Mesopotamia in the third millennium BC. Other research has shown that shorter droughts are actually typical in the region, including the one that contributed to today's Syrian conflict.

For the new study published in *Nature Plants*, led by Amy K. Styring at the University of Oxford, researchers analyzed carbonized crops from Tell Leilan - which are kept at Yale University - and from the sites of Tell Sabi Abyad, Tell Zeidan, Hamoukar, and Tell Brak. All sites are located in the Khabur and Balikh drainage basins in northern Mesopotamia and all date from 6500 to 2200 BC.

While the researchers say the shift toward lower-input, extensive farming in these early cities most likely developed at household levels, it eventually led to broader socio-economic changes. "The increased importance of land-based wealth constituted a key potential source of political power," the co-authors write, "providing the possibility for greater bureaucratic control and contributing to the wider societal changes that accompanied urbanization."

Weiss says his long-held theories on the differences between rain-fed agriculture and irrigation-based agriculture were based on many years of excavation and survey work in northern Syria. "But with new technologies we are now able to put some of those hypotheses and models to the test," he said.

Employing one of these new technologies, advanced isotope analysis, enabled researchers to measure the ratio of different chemical isotopes in human and animal remains, as well as in plant-based specimens. Thus past applications of animal manure have been found to increase nitrogen isotope values in cereals. Meanwhile, carbon isotope values also provide clues into how water was used in crop management.

"Each cereal grain found buried in an archaeological site holds within it a record of the environmental conditions under which it was grown," said Amy Bogaard of Oxford's School of Archaeology and project leader of the study.

Such technological innovations would not mean as much if not for the rigorous excavation and survey work done at sites such as Tell Leilan, says Gil Stein, who began his archaeological career as a Yale undergraduate working under Weiss. The decades of research done at Tell Leilan and other Syrian sites have become particularly valuable as fieldwork in the country is essentially shut down for the foreseeable future.

"Sites like that are incredibly precious," Stein said. "Basically, they're a gift that keeps on giving as we continue to develop new technologies to analyze materials, including archaeo-metric technologies that can answer questions that you wouldn't have even been able to pose 20 or 30 years ago."

**Please visit the site: <https://environment.yale.edu/news/article/ancient-city-in-syria-continues-to-reveal-its-secrets/>**

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## **3000-YEAR-OLD SCRIPT DISCOVERED IN GEORGIA TO CHANGE WORLD’S HISTORY OF WRITING**

The ancient inscription discovered by the archaeologists of Ivane Javakhishvili Tbilisi State University (TSU) in Georgia dates back to the XI-X centuries BC , the US laboratory says.

The head of the expedition and the director of TSU Archaeology Institute, Vakhtang Licheli says this inscription, found on the Grakliani Hill in eastern Georgia, is of great interest because it is the oldest among all the inscriptions that have been discovered in Georgia so far. Before sending the samples to the US, Licheli had estimated the discovery as being of VIII-VII centuries BC, but the answer received from Florida, Miami laboratory exceeded all the expectations. Miami laboratory has estimated the date of the inscription as being of XI-X centuries BC. In order to be completely sure, Licheli sent the samples to an Italian laboratory as well and the answer is yet to be received.

The principal in charge of Tbilisi State University, Darejan Tvaltvadze says this discovery could change the history of writing or, at least, one stage of the history of writing.

“The archaeological expedition at the Grakliani Hill began in 2008, where the base was set up for the university students as well. From that day on, our archaeologists have made numerous important discoveries. The answer received from US laboratory proves once more that this inscription is unique and it may change at least one stage of the history of the world,” Tvaltvadze says.

The archaeologists have discovered what is thought to be an ancient temple built in honor of a god of fertility, along with two shrines, on which the abovementioned inscription is found. Licheli says it belongs to a completely unknown and individual writing system which has no analogues in the world.

This discovery proves that 2 700-3 000 years ago, there was a civilization in the territory of modern Georgia, which used a certain kind of writing system and it is even older than the one used by Phoenicians.

As the archaeologists also claim, the expedition at the Grakliani Hill also revealed a continuous cycle of human development from the Stone Age to the Antiquity. The artifacts found in 11 different cultural layers revealed the tools left behind by primitive men as well as religious items from later periods.

The archaeologists have obtained a very interesting picture: a group of houses built very close to each other, that was characteristic to that period. Besides, a very important discovery is IV century BC seals whose analogues are found in southern Mesopotamia, in Uruk and a V-IV century BC golden disc, whose analogue is found in Iran's city of Suza.

There are also several ceremonial rooms, including a mill with three hand-mills, where sacred flour was produced, with which bread was baked for ritual purposes.

**Please visit the site: <http://www.georgianjournal.ge/arts-a-culture/32712-3000-year-old-script-discovered-in-georgia-to-change-worlds-history-of-writing.html>**

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## **NOT OUT OF AFRICA? RECENT DNA ANALYSIS APPARENTLY SHOWING THAT THE ANCIENT EGYPTIANS WERE MORE LEVANTINE THAN AFRICAN HAS CREATED CONTROVERSY AMONG EGYPTIAN ARCHAEOLOGISTS, BY NEVINE EL-AREF**

Early this week, scientists and researchers from the Max Planck Institute for the Science of Human History at the University of Tübingen in Germany revealed that the ancient Egyptians were genetically related to ancient Turkey and the Levant and not as African as had previously been thought.

The results were published in the journal Nature Communication after a DNA analysis on 151 Egyptian mummies from a period lasting from 1388 BC to 426 CE when Egypt became a province of the Roman Empire had been conducted.

The mummies came from an area named Abusir Al-Meleq, an ancient community in the middle of Egypt, and the DNA samples were extracted from the bones, teeth and soft tissues of the mummies.

Johannes Krause, a paleogeneticist from the University of Tübingen who made the study, told the US newspaper the Washington Post that the major finding was that “for 1,300 years, we see complete genetic continuity”. Despite repeated conquests of Egypt by Alexander the Great, the ancient Greeks, Romans, Arabs and Assyrians, the ancient Egyptians showed little genetic change.

“The other big surprise,” Krause said, “was that we didn’t find much Sub-Saharan African ancestry.”

Comparing of the results was done with modern Egyptians and Ethiopians, and the results showed that the ancient Egyptians were closely related to people who lived along the eastern Mediterranean coasts and that they also shared genetic material with residents of the Anatolian Peninsula at the time and Europe.

African genes were found in only 20 per cent of the material, and this was due to trade exchange.

In their paper, the researchers acknowledged that “all our genetic data were obtained from a single site in Middle Egypt and may not be representative for all of ancient Egypt.” In the south of Egypt, the authors wrote, Sub-Saharan African influences may have been stronger.

The study has triggered anger among several Egyptian archaeologists who have questioned the results. Egyptologist Zahi Hawass described the studies as



“hallucinations” and told Al-Ahram Weekly that they were not accurate for several reasons.

The mummies that were subjected to the DNA tests dated to the Graeco-Roman period when the mummification process was very poor, he said. They also belonged to people who came from Italy or to Greeks who lived in ancient Egypt and not to native ancient Egyptians.

“How can the ancient Egyptians be genetically from Europe,” Hawass asked, adding that when the ancient Egyptians were busy building their civilisation Europe did not exist in civilisational terms.

“There is no scientific or archaeological evidence that could support such results,” Hawass said, adding that the only discovery that scientists think could indicate the origin of the ancient Egyptians was the Naqad Necropolis discovered by archaeologist Flinders Petrie which houses a collection of tombs from the prehistoric period.

“The ancient Egyptians have Egyptian genes, which are not similar to African or Arab genes,” Hawass said.

He said that recent studies were not the only ones to be published about the genes and the origins of the ancient Egyptians. Thirty years ago, an African clergyman claimed that the ancient Egyptians were Africans because both the pharaohs Ramses II and Tutankhamun had commissioned wooden statues painted black, he said.

The theory was discussed and disproved because all the walls of ancient Egyptian temples depict pharaohs fighting off enemies from Africa and Asia. A European institute had also conducted DNA analysis on samples from Tutankhamun and compared them with others from Europeans, and this had revealed only a 60 per cent similarity.

A piece from Tutankhamun’s mummy had been sent to Europe for study after the discovery of the tomb in 1922 to investigate the reason for Tutankhamun’s early death. The result revealed that the king had died from burns, which was “totally untrue”, Hawass said.

Archaeologist Howard Carter had burned some parts of the mummy using a hot knife in order to remove the precious stones inserted in different parts of it. A burned part of the mummy had then been analysed, vitiating the results.

Yehia Zakaria Gad, professor of molecular genetics at the National Research Centre, the founder of the First Ancient DNA Lab in Egypt and a member of the Egyptian team put together to scan the mummies, told the Weekly that the scientific article published is another evidence against the scepticism of the long survival of DNA in Egyptian mummies. This scepticism was drawn from the failure to replicate the early studies, misconceptions based on papyrus of DNA decay rate [despite the radically different postmortem treatments of the human and animal bodies] and the circulating theories that the hot and humid tomb environment enhances the decay of DNA in buried mummies.

Gad noted that these theories were not substantiated by rigorous studies on the tomb temperatures or humidity levels. “On the contrary to these beliefs, my personal

experience of working for extended hours down several tombs during mummy sampling sessions is that the underground temperatures and humidity were always within the comfortable range irrespective of the outside weather.”

“This scepticism was adopted by a sector of the field scientists despite the results of several research groups, including ours, on human remains, ancient microbes and animal mummies like crocodiles and cats. Specifically, our team has presented data on the 18th Dynasty and Ramses III as well as the application of the most advanced technologies on Egyptian mummies,” Gad asserted.

He added that the importance of the current paper is that it helps in lifting the roadblocks that were crippling the research on ancient DNA from Egyptian mummies.

On another level, he continued, there is no doubt that Egypt was a hub to the ancient world. “It is unfortunate that the published genomic data on ancient Egyptians is quite scarce. Egypt is known to occupy an important place in the history of mankind where it is hypothesised that the early man came from Africa and exited it through Egypt and its corridor to Asia [ie Sinai] and Europe.”

Thus, Gad confirmed, the gene trends (or the DNA sequences that are transmitted from parents to their descendants) show a gradual shift and a continuum among all studied populations. Several studies have shown that contemporary Egyptians share with a higher percentage the gene sequences of Europeans rather than those of Sub-Saharan Africans.

“The presented data in this article shed some light on this issue although it focused largely on studying maternally inherited DNA of the mitochondria and only the nuclear DNA of three males,” Gad told the Weekly. He opines that the effects of a foreign gene pool on that of a local Egyptian population will be gender-sensitive. For example, the impact of mobility of a human group, like a tribe having both male and female subjects, will be different from those of invading troops, which are mostly males.

Moreover, Gad explains, trying to draw major conclusions regarding the shifts in gene trends among Egyptians based on a limited study in a certain location seems to be over-speculation since this may not represent all ancient Egyptian population groups.

**Please visit the site:**

<http://english.ahram.org.eg/NewsContent/9/40/270666/Heritage/Ancient-Egypt/Not-out-of-Africa.aspx>

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## **ANCIENT GRAINS REVEAL ROOTS OF EARLY SOCIAL INEQUALITY, BY LORETTA WALDMAN**

A study published recently in *Nature Plants* sheds new light on the agricultural and political economy that underpinned the growth of some of the world's oldest cities in Mesopotamia, in present-day northern Syria.

An international team that included researchers from UConn and the University of Oxford used stable carbon and nitrogen isotope analysis of charred ancient grains to reconstruct the conditions under which crops grew, building up a picture of how farming practice changed over time.

UConn's Alexia Smith, associate professor of archaeology, had gathered the plant samples from two sites – Tell Leilan in 2006 and Tell Zeidan in 2009.

The ancient grains indicated that as populations in these early cities swelled, increasing demand for more food, farmers strove to cultivate larger areas of land, rather than plow more resources – such as manure – into existing, more intensively managed fields.

“Plant remains can be preserved on archaeological sites for thousands of years providing a record of the range of plants used for food, construction, or fuel,” says Smith, an archaeobotanist. “They document when crops were first domesticated, and give us information on the ways that people used plants to both respond to and create environmental and social change through time.”

Smith looked at the seeds in an archaeological context, asking questions about where the seed might be coming from, such as a hearth or a storage facility, and from an ethnopolitical perspective, to reconstruct the plants' significance.

Extensive, land-hungry agriculture relies heavily on the ability to access more arable land and to exploit specialized plow animals, both of which could be monopolized by powerful families and institutions.

“This is a study very much rooted in ancient plant remains,” Smith says. “They really give us insight into social change, and here we have an insight into how people were responding to social change.”

The findings reveal how the growing importance of arable land, which could be controlled by the ruling few, led to increasing social inequality as urban populations grew.

Project leader and professor Amy Bogaard from Oxford's School of Archaeology, notes, “each cereal grain found buried in an archaeological site holds within it a record of the environmental conditions under which it was grown.”

“We found that the rise of early cities in northern Mesopotamia depended on radical expansion of the scale of farming. As a result, cereals were grown under increasingly poor soil conditions: for example, with less manuring and replenishment of nutrients. It was a solution that enabled enormous urban agglomerations to develop, but was risky when environmental or political conditions changed.”

The team involved in the study included researchers from Leiden University, National Museum of Denmark, University of Cambridge, Harvard University, Lawrence University, University of Warsaw, University of Chicago, University of Pennsylvania, and Yale University.

Smith’s work on the study was funded by the National Science Foundation.

Please visit the site: <http://today.uconn.edu/2017/06/ancient-grains-reveal-roots-early-social-inequality/>

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## **DNA STUDY REVEALS TALE OF CAT DOMESTICATION**

Cat domestication is thought to be linked to the beginning of agriculture, when early farmers first stored rodent-attracting grains.

According to a report in *Seeker*, a team led by Claudio Ottoni of the University of Leuven analyzed the DNA of 200 domestic cats who lived over a period spanning 9,000 years in the Near East, Egypt, Europe, north and east Africa, and southwest Asia. The study suggests that all domesticated cats descend from the African wildcat *Felis silvestris*, and were first tamed in the Near East some 10,000 years ago.

The animals traveled with migrating farmers to Europe, and later spread out from Egypt on rodent-infested trade ships. Ottoni explained, however, that it is unclear whether the Egyptian domesticated cat descended from domesticated cats imported from the Near East, or whether a second, separate, domestication took place in Egypt. Most house cats alive today descend from cats that can be traced back to Turkey, Lebanon, Syria, Iraq, Israel, Jordan, Saudi Arabia, and Egypt.

The DNA analysis also revealed that the blotched coat pattern did not become common in cats until the medieval period. Until then, most cats were striped. For more on felines in the archaeological record, go to "Baby Bobcat."

Please visit the site: <http://www.archaeology.org/news/5668-170619-dna-cat-domestication>

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# **THE MUMMY RETURNS: EGYPTIAN DIGNITARY'S FACE AND BRAIN RECONSTRUCTED, BY ROSSELLA LORENZI**

An international team of researchers has reconstructed the face and brain of a 3,500-year-old Egyptian mummy, revealing a unique "packing" embalming treatment.

Consisting of a well-preserved head and canopic jars containing internal organs, the remains belong to Nebiri, an Egyptian dignitary who lived under the reign of the 18th Dynasty pharaoh Thutmose III (1479–1425 B.C.).

"He was between 45 [and] 60 years old when he died," Raffaella Bianucci, a bioanthropologist in the Legal Medicine Section at the University of Turin, told Live Science. "His tomb in the Valley of the Queens was plundered in antiquity and his body deliberately destroyed."

In 1904, Italian Egyptologist Ernesto Schiaparelli found what remained of the mummy, now housed at the Egyptian Museum in Turin.

Now, after his desecration, Nebiri has been brought back to life through modern forensics. Using a type of computed tomography and facial reconstruction techniques, the researchers produced an impressive facial approximation.

Nebiri appears as a man with a prominent nose, wide jaw, straight eyebrows and moderately thick lips.

"The reconstruction is nice, but this is not just art in my eyes," Philippe Charlier, a forensic pathologist and physical anthropologist at the University of Paris 5, told Live Science. "It is a serious forensic work based on the latest techniques of facial reconstruction and soft tissues over skull superposition. Beyond beauty, there is anatomical reality."

Preliminary chemical data presented at the World Mummy Congress held in Rio de Janeiro in 2013 showed that the linen bandages had been treated with a complex mixture of an animal fat or plant oil, a balsam or aromatic plant, a coniferous resin and heated Pistacia resin. The recent CT scans revealed the bandages were carefully inserted almost everywhere in the head, in the nose, ears, eyes and mouth.

Nebiri's mummified head is the result of a "perfect packing," Bianucci, Charlier and colleagues explained in a paper published in the journal *Forensic Science, Medicine and Pathology*.

Additional packing was introduced into the mouth to fill the cheeks.

"The meticulous packing created a barrier to protect the body from insect colonization. At the same time, it had a cosmetic purpose, allowing the facial features and neck to maintain their original lifelike appearance," Bianucci said.

Intriguingly, CT scans showed a tiny hole in a honeycomb-like bone structure known as the cribriform plate, which separates the nasal cavity from the brain. However, the brain was not taken out.

"Given the meticulous treatment of the head, it can be speculated that the perforation of the cribriform plate was not performed to extract the brain, but to insert the linen packing," the researchers wrote.

Indeed, fragments of linen strips can still be seen within the dehydrated cerebral tissue.

Using data from the CT scan, the researchers could perform a 3D brain surface reconstruction, which allowed them to reconstruct soft tissues destroyed or modified by post-mortem alterations.

"No anatomical anomalies were detected," Bianucci said.

The elaborate treatment of the head is like the embalming found in the nonroyal couple Yuya and Thuya, the researchers noted. DNA analysis conducted in 2010 identified the couple as the great-grandparents of Tutankhamun.

"We were able to add strength to the argument that Nebiri was [a] high elite," the paper's first author, Robert Loynes, at the KNH Center for Biomedical Egyptology at the University of Manchester in England, told Live Science.

Loynes noted the head is a rare example of a high-status funerary treatment of an early 18th Dynasty nonroyal individual.

"It's a unique finding that predates the developments seen in later 18th to 20th Dynasty kings, queens and kin," Loynes said.

Dario Piombino-Mascali, an anthropologist at the University of Messina in Sicily, who next month will begin a mummy field school in Sicily (giving students field experience investigating mummies), found it striking that the head alone could reveal so much about mummification.

"Using a combination of non-invasive techniques, the researchers have been able to find a particular treatment of the brain, which did not require its removal," Piombino-Mascali, who is not involved in the study, told Live Science.

At the crossroads of forensic anthropology and osteo-archaeology, the research opens new possibilities for the study of mummies.

"The brain reconstruction was produced from the Dicom file of the CT scan and, therefore, could be reproduced on any other mummy which had been CT scanned," Loynes said.

Please visit the site: <https://www.livescience.com/59530-egyptian-mummy-face-and-brain-reconstructed.html> [Go there for pix]

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## **1,600-YEAR-OLD MOSAIC FOUND IN TURKEY’S ADIYAMAN**

A mosaic structure dating back to the 4th century has been found in the Gölbaşı district of the eastern Turkish province of Adıyaman.

Two brothers who work locally as farmers discovered the mosaic structure, which features Ancient Roman characteristics, while they were working in their field in Gölbaşı.

They informed the local authorities about their finding, after which technical teams visited the field to make inspections.

Following this process, the mosaic structure was submitted to the Adıyaman Museum Directorate. Archeologists in this unit found that the mosaic structure was nearly 1,600 years old.

Adıyaman is one of the most archeologically significant provinces in Turkey. Among its archeological sites are the caves of Perre, the fortresses at Gerger and Samsat, the “Cendere” Bridge, and Mount Nemrut, a ceremonial and burial tumulus for King Antiochus I of the Kommagene kingdom.

**Please visit the site: <http://www.hurriyetdailynews.com/1600-year-old-mosaic-found-in-turkeys-adiyaman-.aspx?PageID=238&NID=114479&NewsCatID=375>**  
**[Go there for pict]**

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## **STUNNING DISCOVERY ACHIEVED WITH IMAGING TECHNIQUE USING MODIFIED HOUSEHOLD DIGITAL CAMERA, BY AMANDA BORSCHEL-DAN**

Revolutionary technology reveals dazzling ‘hidden’ text on biblical-era shard Pottery from almost 3,000 years ago found to feature previously unseen rare First Temple Hebrew writing; other finds from same era now also to be reinvestigated

Using a modified household digital camera and a revolutionary new technique for performing multispectral imaging, an interdisciplinary team from Tel Aviv University has discovered never-before-seen Hebrew inscriptions on a First Temple-era shard. The discovery raises the possibility that other “blank” shards from the period may also contain undiscovered texts, and there are now plans for a wider reexamination of all shards from that time period.

A corpus of 91 ink-on-clay shards (or ostraca) written on the eve of the Kingdom of Judah’s destruction by Nebuchadnezzar was unearthed at Tel Arad, west of the Dead Sea, in the 1960s. A remarkable find, the shards were found together on the floor of a single room, and what legible writing was discerned was thoroughly deciphered by top scholars. For the past 50 years, they have been prominently displayed in the Israel Museum.

Containing lists of supplies and orders from military quartermasters, the shards’ value to the study of the Hebrew language, the sociology and the economy of the time period is immeasurable.

Now, though, with the discovery of previously “invisible” words, and even sentences on the “blank” verso side of one of the first shards to be examined with the new technology, the pieces have become still more important.

It is speculated that the majority of correspondence and literature of this historical period was written on biodegradable papyrus. Therefore, most surviving biblical-period Hebrew inscriptions are on ostraca. Once unearthed, however, ink on clay fades rapidly; many shards previously thought of as “blank” have been summarily disposed of at digs or during artifact recording.

The new, user-friendly multispectral imaging technique, developed by a team of applied mathematicians, archaeologists and physicists — co-directed by archaeology Prof. Israel Finkelstein and physics Prof. Eli Piasezky — will give these “blank” pottery pieces the chance to reveal any hidden treasures.

In an article published Wednesday in the PLOS One peer-reviewed scientific journal, the team describes the experiment in multispectral (MS) imaging it conducted on an ostrakon (Ostrakon No. 16, Israel Antiquities Authority number: 1967-990, dated to ca. 600 BCE) from the Tel Arad hoard.

The results of the experimental MS imaging were increased clarity of text on the already studied facing side — and the entirely unintentional discovery of new lines of text, undetectable by the human eye, on the verso.

The new text on the verso side of Ostrakon No. 16 was discovered by chance. While photographing the known facing text, Michael Cordonsky, the imaging lab and system manager at the School of Physics and Astronomy, had the idea of flipping the shard — just in case — and found three lines of writing from two and a half millennia ago that would otherwise have been lost to the annals of history.

“We thought we had a great technique, but it turns out that we looked for she-asses and found a kingdom,” said mathematician Barak Sober, alluding to the biblical story in which the future king Saul searches for his father’s donkeys and meets up with the prophet Samuel who anoints him.

Multispectral imaging camera set-up used by the Tel Aviv University interdisciplinary team. (courtesy Tel Aviv University)

The multispectral imaging camera setup used by the Tel Aviv University interdisciplinary team. (Courtesy Tel Aviv University)

Through the new MS imaging, some 45 new characters were added to the facing side of Ostrakon No. 16, meaning almost 20 words with a changed reading — half the total. On the unknown verso side, the text bears more than 50 characters, creating 17 new words.

The clay shard was photographed in a dark room with the team’s modified Canon SLR 450D digital camera. Different lenses and filters were used, including a Tamron SP AF90mm F/2.8 Di 1:1 Macro lens. And the internal Canon IR cut filter was removed by Lifepixel and replaced with transparent glass having the same refractive index, according to the article.

Most cameras institutions purchase to perform the MS imaging cost around \$100,000. The Tel Aviv team’s bootlegged version cost well under \$5,000.

“This research suggested a simple procedure for acquiring the most legible MS image out of a group of images taken at different wavelengths... Based on these conclusions, a low-cost MS acquisition system was constructed and compared to a more sophisticated and costly MS imaging device. The potential for legibility improvement was found to be comparable in these two systems,” according to the article.

The Times of Israel spoke with team member and applied mathematician Arie Shaus, whose doctorate deals with the mathematical and statistical techniques used for picture processing. According to Shaus, the modified MS imaging camera used by the interdisciplinary team is a game changer for archaeological studies.

“It means that every university or archaeological dig can build the camera,” Shaus said, and potentially discover previously overlooked inscriptions.

Shaus said the team will continue to photograph other ostraca from this First Temple period; he estimates that the project will be finished by the end of the year.

However, noted Shaus, scholars will still be presented with two challenges: ostraca that are outside the borders of Israel; and a new need to re-decipher and reexamine any inscriptions found on previously studied artifacts.

“That is very labor intensive and time consuming,” he said.

For many linguists, however, finding new insights and rare glimpses into First Temple Hebrew will be a labor of love.

Scholarly importance of the new inscriptions

According to the scientific secretary of the Academy of the Hebrew Language, the existent inscriptions found in the Arad pottery hoard are already very important to the study of ancient Hebrew.

The 91-piece trove largely consists of a correspondence between military supply masters, mostly addressed to a person named Elyashiv, who is thought to be the quartermaster in the fortress. Unsurprisingly, most of the language deals with words centering around foodstuffs and shipment orders.

According to the PLOS article, “The inscriptions contain commands regarding supply of commodities (wine, oil and flour) to military units and movement of troops, set against the background of the stormy events in the final years before the fall of Judah. They include orders that came to the fortress of Arad from higher echelons in the Judahite military command system, as well as correspondence with neighboring forts.”

Ostacón No. 16 is a letter sent to Elyashiv from Hananyahu — the team speculates he was a quartermaster in Beersheba — and discusses the transfer of silver. After the MS imaging experiment, newly discovered inscriptions show that Hananyahu also asked for wine.

“While it’s true that many of the ostraca deal with wine or other supplies, there are findings that go well beyond that in terms of their importance. The trove teaches about grammar, vocabulary, on the form and development of the writing, spelling, and also about the Hebrew used at that time,” said Ronit Gadish, the scientific secretary of the Academy of the Hebrew Language.

But they also shed light on the sociology and economy of the era. Through ordered supplies, we know what foodstuffs could be found at that time in Israel and the quantities requested, noted Gadish.

“Every letter, every chance to decipher anything improves our understanding of the text and the history, the economy, and the language of this period,” Gadish added. “It’s amazing because it can suddenly be so easily seen. This is a very important development.”

Shaus told The Times of Israel that, due to the reasonable cost of the imaging, he hopes that all institutions and archaeological digs will implement this technology in the near future as an inseparable tool in their research.

“We want to be sure that the human eye doesn’t overlook any more inscriptions,” said Shaus.

“My heart aches when thinking of all the inscriptions [on finds believed to be blank] that were perhaps thrown into the trash, because it was impossible to discern them in the field,” he added.

**Please visit the site: <http://www.timesofisrael.com/revolutionary-technology-reveals-dazzling-hidden-text-on-biblical-era-shard>**

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## **JERUSALEM TOWER YOUNGER THAN THOUGHT - ULTRA-PRECISE DATING TAKES NEARLY 1,000 YEARS OFF ITS AGE**

Gihon Spring, just downhill from the ancient city of Jerusalem, was crucial to the survival of its inhabitants, and archaeologists had uncovered the remains of a massive stone tower built to guard this vital water supply. Based on pottery and other regional findings, the archaeologists had originally assigned it a date of 1,700 BCE. But new research conducted at the Weizmann Institute of Science provides conclusive evidence that the stones at the base of the tower were laid nearly 1,000 years later. Among other things, the new results highlight the contribution of advanced scientific dating methods to understanding the history of the region.

Dr. Elisabetta Boaretto, Head of the Weizmann Institute of Science's D-REAMS Radiocarbon Dating Laboratory and track leader within the Max Planck-Weizmann Center for Integrative Archaeology and Anthropology, had the opportunity to date the tower as part of her ongoing cooperative research projects with the Israel Antiquity Authority (IAA). Since 2012, Dr. Joe Uziel and Nahshon Szanton of the IAA, in continuing the excavations around the tower, have discovered that the base of the tower was not built on bedrock. "The boulders in the tower's base, in and of themselves," explains Boaretto, "do not yield any information other than the fact that whoever placed them there had the ability to maneuver such heavy stones. But underneath the boulders, the soil exhibits the layers typical of archaeological strata, and these can reveal the latest date that the site was occupied before the tower was built."

The unique and methodical approach of the D-REAMS lab team begins by planning and executing the field sampling and excavation from the beginning - together with the site archaeologists. "Getting one's hands dirty is all part of building a reliable chronology," says Boaretto. During field work conducted with the archaeologists and later in her laboratory with postdoctoral fellow Dr. Johanna Regev, Boaretto identified several clearly-delineated strata. From these, they carefully collected remains of charcoal, seeds and bones - organic matter that can be definitively dated through radiocarbon dating.

The first dating was conducted on mid-to-lower levels of sediment, and these dates indeed agreed with those originally proposed. "But there was another half-meter of sediment between the material we had dated and the large cornerstone," says Boaretto. "At a glance, we thought this might represent another few hundred years before the stone was placed." The presence of separate, sequential layers, which they identified using microarchaeological tools and radiocarbon dating, enabled the researchers to attach dates to the strata just below the tower.

The radiocarbon dating method is based on counting the radioactive  $^{14}\text{C}$  atoms in a sample. These carbon atoms are found in all living things in a small, but stable ratio to that of regular carbon, and they begin to decay at a known rate after death. At the Weizmann Institute of Science, the count of  $^{14}\text{C}$  atoms in a sample is performed with an accelerator, so it can return highly accurate results on something as small as a seed.

The date revealed by this radiocarbon dating was sometime around 800-900 BCE. That is nearly 1,000 years later than thought, and it moves the building of the tower to another historical period entirely, from the Middle Bronze Age to the Iron Age.

To complete the study, Boaretto and her team asked whether any explanation could allow the tower to have been built earlier - repairs, for example - but the presence of the large boulders sitting above layers of earth containing the remains of everyday activities would appear to be fairly conclusive evidence that the later date is the correct one. Boaretto: "The conclusive, scientific dating of this massive tower, placing it in a later era than was presumed, will have repercussions for other attempts to date construction and occupation in ancient Jerusalem."

Dr. Elisabetta Boaretto's research is supported by the Dangoor Accelerator Mass Spectrometer Laboratory.

Please visit the site: <http://wis-wander.weizmann.ac.il/chemistry/jerusalem-tower-younger-thought> [Go there for linx and pix]

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## **SALVAGING KHUFU’S SECOND SOLAR BOAT - INSIDE ONE OF THE WORLD’S LARGEST ONSITE ARCHAEOLOGICAL LABS, BY MEREDITH BRAND**

In the scorching heat of the Giza plateau, the Egyptian Ministry of Antiquities and a team from Waseda University in Japan are engaged in the daunting task of lifting a 4,700-year-old wooden ship from a pit in the ground, just a few meters south of Khufu’s great pyramid.

This is no ordinary excavation; the wooden pieces from the 42-meter-long boat are so delicate that the archaeologists cannot simply remove them from the ground without extensive onsite conservation.

It’s the reason why the team – funded by Japan International Cooperation Agency (JICA) – has built the Giza Second Solar Boat lab, one of the world’s largest onsite conservation labs to save this ancient ship.

### **A boat in danger**

Archaeologists have known of this boat’s existence since 1954, when an Egyptian team found two pits during cleaning, according to Mamdouh Taha, project supervisor and chief inspector of excavations at the Giza plateau. Both pits contained one carefully dismantled wooden boat, stacked neatly, with hieroglyphics directions inscribed on the planks. Ancient Egyptians believed the inscriptions helped reconstruct the boats in the afterlife.

Before a single piece of wood could be removed, the team needed to create a comprehensive conservation plan.

Given its better preservation, the earlier archaeologists chose to excavate the first boat – that is now on display in the Solar Boat Museum at Giza.

As Taha points out, these boats are the only objects ever found that definitively belonged to Khufu, the builder of the Great Pyramid, making these boats historical important.

The boat’s fate changed in 1987, when the National Geographic and the Ministry of Antiquities drilled a tiny hole through the second pit’s limestone cover and sent a small camera on an exploratory mission.

“When they put the camera inside they were astonished ... because they found some black beetles moving. It meant that there were cracks, giving insects the chance to get inside,” Taha says.

The boat was also damaged by water that might have leached in from the construction of the Solar Boat Museum only a few meters away, according to Eissa Zidan Abd ElBadie, supervisor of conservation at Khufu Second Boat Project and general director of first aid



conservation at the Grand Egyptian Museum (GEM). These cracks also altered the pit's temperature and humidity, further destabilizing the boat.

Khufu's second boat was in a dire situation until 2009 when Waseda University – with JICA funds – approached the Ministry of Antiquities with a plan to save the boat. With technological advancements in materials conservations and a steady stream of funding, the ambitious plan to save Khufu's boat began.

### **Building a lab in the desert**

Khufu's second boat is destined for the Grand Egyptian Museum (GEM), where it will be on display in a specially built gallery following its full conservation. Yet, the wood is in such bad condition it was impossible to excavate the boat without bringing a full-scale conservation lab to the desert.

The boat pit's climate is completely different from the surrounding Giza plateau, explains Youssef Khaled, the project's chief engineer. The constant humidity is 90% inside the pit and the temperature is 25–26°C.

Ancient wood is very sensitive. Fluctuating temperature and relative humidity is a fundamental reasons wooden objects deform and crack because of swelling and shrinking, says Eman H. Zidan, archaeological conservator at the Ministry of Antiquities.

Working without heavy equipment to protect the site, the team hand-built a 35m-wide and 6m-tall hanger with two buffer zones, covering the boat pit, in addition to a conservation lab. Once work got underway, archaeologists began to uncover planks of wood over 20m-long, which necessitated building larger lab that was opened in March 2017.

### **Doing the impossible**

Before a single piece of wood could be removed, Eissa and the Japanese team needed to create a comprehensive conservation plan. The preparation work was extensive, they say.

The team performed radio carbon (C14) dating, identified the types of wood, and analyzed pigments from paint. Once the materials were identified, conservators carried out experimental studies to find the best methods of conservation. As ElBadie says, “We can't apply any materials directly without an experimental study” to know how it would impact the wood.

Next, the team consolidated the wood fragments inside the pit, with each individual piece numbered, photographed, and coated in a protective material. Once the fragments were lifted with a special crane, the conservation team had to do a full evaluation of each piece, says ElBadie.

Since 2009, the team has removed around 700 wood pieces from the pit. Based on the amount of fragments from the first boat, the team estimates that this constitutes more than half of the boat.

Conservators painstakingly cleaned each individual piece, filled in gaps with conservation materials, and re-joined broken fragments. The work is usually slow, ElBadie explains; it takes the team roughly one month to stabilize a 20m plank of wood for transport to the GEM.

The ultimate goal of the project is to reassemble the boat, so with this in mind, the team takes a 3D laser scan of every piece of the boat. This will allow the GEM conservation team to re-assemble the boat digitally in a 3D puzzle, without handling the wood and risking further damage.

The results, however, are usually astounding, as per the scientists.

Removing a layer of protective covering, ElBadie showed me a conserved plank of wood that looked as if buried yesterday. Placing his gloved finger on the plank, ElBadie explains, “Before consolidation, if you touched it, it would break. Now you can touch it, it’s very strong.”

**Please visit the site:**

**<http://www.natureasia.com/en/nmiddleeast/article/10.1038/nmiddleeast.2017.109>**

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## **MINI POMPEII FOUND IN ROME DURING METRO LINE EXCAVATIONS**

Excavations to finish metro Line C in the capital continue to throw up ancient Roman archeological finds. After a military barracks last year, the latest discovery is two Pompeian buildings near the Aurelian Wall.

Two ancient Roman edifices have been discovered during excavations to extend Metro Line C in Rome. Archeologists were undertaking reinforcement works on monuments near the new public transport line when the ancient solarium was discovered, still in excellent condition, not far from metro station Amba Aradam in the capital, near the city's Aurelian Walls.

The discovery came about as archeologists had descended to more than 10 metres below ground level to reinforce the Aurelian Walls, which lie near where the new public transport line is being extended. The discovery of the solarium follows that of an army barracks in Via Ipponio, also during the construction of Line C.

The structure found has Pompeian qualities, according to the experts who discovered it, in that the solarium and adjacent structures were preserved thanks to a fire on site during the 3rd century AD. Archeological discoveries are not rare in Rome, although sites where wood is preserved are "extremely rare given the age of the site," according to a press release by the Ministry of Culture.

Such well-preserved sites only occur thanks to exceptional climactic conditions or, equally rarely, in places such as Ercolano and Pompeii. Pompeii was destroyed by an eruption from Mt. Vesuvius in AD 79 and the city was preserved in volcanic ash. The preservation of wooden parts, such as in the solarium recently discovered however, is unique for Rome as wood is only preserved over such a long period in exceptional circumstances, albeit carbonized.

Frescoes and plaster fragments were also recovered at the site. Besides pieces of furniture, sculptures and windows, the skeleton of a dog was also found on the doorstep of the house, carbonized on impact during the fire.

Italy's National Institute of Geophysics and Vulcanology is set to undertake a study to determine whether seismic activity could have been the cause of the fire.

One hypothesis suggests the structure was part of the aristocratic homes on the Caelian Hill, near where it was found, one of the Seven Hills of Rome. Archeologists have descended to 10 metres below ground level to assess the impact of the metro line works on ancient Roman monuments. Reinforcements will continue for another 4 metres still.

**Please visit the site: <https://www.thelocal.it/20170626/mini-pompeii-found-in-rome-while-digging-metro-line>**

## **EVIDENCE OF PLANT DYES FOUND IN KING SOLOMON ERA TEXTILES**

Evidence of the use of plant dyes from the time of King Solomon has been recovered. Excavations conducted since 2013 in the Timna Valley and directed by Dr. Erez Ben-Yosef of Tel Aviv University have recovered dozens of fragments of 3,000-year-old textiles, which were preserved thanks to the region's extreme arid climatic conditions. The textiles date to King Solomon's reign, in the Iron Age (eleventh–tenth centuries BCE), and some are decorated with a red-and-blue bands pattern.

The research, published Wednesday in the prestigious journal PLOS ONE, was led by Dr. Naama Sukenik of the Israel Antiquities Authority and Dr. Erez Ben-Yosef of Tel Aviv University, in cooperation with a research team from Tel Aviv University, Bar-Ilan University, and the Israel Antiquities Authority.

These are the earliest examples to have been found in the country and in the Levant (Eastern Mediterranean) of the remains of plant-based dyes. The dyes were identified at the Bar-Ilan University laboratories using HPLC advanced analytical equipment. On analysis, the data indicated the use of two main plants: Madder, whose roots provided a red dye, and indigotin – probably produced from woad, a European plant of the cabbage family – which was used as a blue dye in a long and complex process involving reduction and oxidization that lasted a number of days. Both these plants are among the best-known plant dyes in the ancient world. Once grown specifically for dyeing in Eretz Israel, their use continued up to the discovery of synthetic colors. The textiles from Timna were colored with true dye, which is characterized by a chemical bond between dye and fiber, attesting to professional knowledge and skill in the art of dyeing during this period.

The colored woolen textiles surprised the researchers, since during the Iron Age Timna was principally an important smelting and mining site for the production of copper. According to Dr. Erez Ben-Yosef of Tel Aviv University and Dr. Naama Sukenik of the Israel Antiquities Authority, “the findings indicate that the society at Timna, identified with the Kingdom of Edom, was hierarchical and included an upper class that had access to colorful, prestigious textiles.”

The context in which the textiles were found suggests that the metalworkers responsible for operating the smelting furnaces were members of this class.

The task of turning stone into copper demanded considerable skill. It was one of the most specialized crafts of the ancient world and the metalworkers apparently enjoyed high social status and wore distinctive, colored garments. In this sense, the findings are a real innovation, since they contradict the previous research supposition that the furnaces in the heart of the desert were operated by slaves.

The rare find of 3,000-year-old dyed textiles provides an exceptional opportunity to review intriguing research questions, including: The “fashion” of elite in the Iron Age, social stratification and organization of early Edom, the economic status of the local population, trade connections, technological capabilities, etc. The three-millennia-old

textiles are being kept under strict climatic control in the Israel Antiquities Authority's organic-materials storage facility.

Research partners included: Dr. Naama Sukenik, Dr. Erez Ben-Yosef, Dr. David Iluz, Dr. Alexander Varvak, Prof. Zohar Amar, Ms. Vanessa Workman, and Dr. Orit Shamir.

Please visit the site: <http://www.jewishpress.com/news/israel/evidence-of-plant-dyes-found-in-king-solomon-era-textiles/2017/06/28/>

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## **DEAD HEADS: TURKISH SITE REVEALS MORE EVIDENCE OF NEOLITHIC 'SKULL CULT' - FRAGMENTS OF THREE SKULLS FOUND AT GÖBEKLI TEPE HAVE HALLMARKS OF BEING CARVED WITH FLINT AFTER BEING SCALPED AND DEFLESHED FIRST**

Fragments of carved bone unearthed at an ancient site on a Turkish hillside are evidence that the people who spent time there belonged to a neolithic "skull cult" - a group that embraces rituals around the heads of the dead.

The remains were uncovered during field work at Göbekli Tepe, an 11,000-year-old site in the south-east of the country, where thousands of pieces of human bone were found, including sections of skulls bearing grooves, holes and the occasional dab of ochre.

Pieces of three adult skulls recovered from the site have hallmarks of being carved with flint after being scalped and defleshed first. Evidence that the latter was not always an effortless affair is found in multiple scrape marks where the muscles once attached to the bone.

But the intentional carvings look very different to other marks on the skulls. "The carvings are very deep lines in the bone and are definitely intended," said Julia Gresky at the German Archaeological Institute in Berlin. "It's the first evidence we have for carved human skulls anywhere."

The scientists discovered the bits of skull in two trenches at the 300 metre-wide site on a hilltop about 30 miles (50km) north of the Syrian border. Excavations which began at the site in the mid-1990s uncovered eight large oval buildings there. At the centre of each stand two T-shaped pillars which resemble people rising to more than 5 metres high. Smaller pillars of the same design are built into the walls.

Other artefacts found at the site support the suspicion that those who frequented Göbekli Tepe had a special relationship with the skulls of others. One carving found on a pillar at the site shows a human who has just lost their head. Meanwhile, figurines hold heads as apparent gifts or have been decapitated themselves, according to a report in Science Advances.

One skull found at the site has a hole in the right position that would allow it to hang level if suspended. Meanwhile, the grooves would prevent cord from slipping when it was tied around a skull to prevent the lower jaw from falling off when it is hung up. "It allows you to suspend it somewhere as a complete object," she said.

The site dates to a time when people were in transition from hunter-gatherers to farmers. The people of Göbekli Tepe had not domesticated plants or animals, but settled in the area, and used what resources they found around them.

Lee Clare, another scientist on the study, said that the shift towards settled life will have brought on new challenges as the population grew. The site itself would have served to build the group's collective identity, one which could have been bolstered by the rituals of the skull cult.

Please visit the site: <https://www.theguardian.com/science/2017/jun/28/turkish-site-evidence-of-neolithic-skull-cult-gobekli-tepe>

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