BABAO 2025

26th Annual Conference of the British Association for Biological Anthropology and Osteoarchaeology

18 – 20 September 2025

UNIVERSITY OF LEICESTER

WELCOME

We are delighted to welcome you to the 2025 BABAO Annual Conference, held at the University of Leicester from 18th – 20th September

The 26th annual conference of the British Association for Biological Anthropology and Osteoarchaeology is being hosted by the School of Heritage and Culture at the University of Leicester — a vibrant and diverse city, a leading UK university with a rich history, and world-class teaching and research-inspired learning.

BABAO is the largest professional body of biological anthropologists and osteoarchaeologists in the UK, and acts as an advocate to encourage discussion of new research discoveries. It provides a forum for intellectual exchange for professionals and students in all areas of biological anthropology.

This year, we are putting on a varied scientific programme, including a full day of workshops on Thursday 18th September — aimed at addressing current themes, methods, and issues relevant to the discipline — as well as the Annual General Meeting on Saturday 20th September. You can also look out for our social events at Leicester Cathedral and in the city during the evenings of the conference.

The University of Leicester has contributed to an extraordinary range of fields, from the seminal analysis of English history through place and people to the identification of super-massive black holes and the invention of genetic fingerprinting — pioneered by Sir Alec Jeffreys in the 1980s.

Archaeology is also a significant facet of Leicester's identity. The University boasts an award-winning commercial archaeological unit — University of Leicester Archaeological Services (ULAS) — that undertakes important excavations and educational outreach work throughout the Midlands. Our institution was integral to the discovery and analysis of the skeletal remains of King Richard III, discovered under a Council car park in 2012, and the Rutland Roman Mosaic, discovered in 2020.

In Leicester you can delve into the city's 2000 years of history, including Roman architecture still standing at Jewry Wall, the exquisite Guildhall built in the fourteenth century, the history of the Plantagenets at the King Richard III Centre, and discover the universe at The National Space Centre. We hope you'll find time to explore our wonderful city!

CONTENTS:

VENUE INFORMATION:

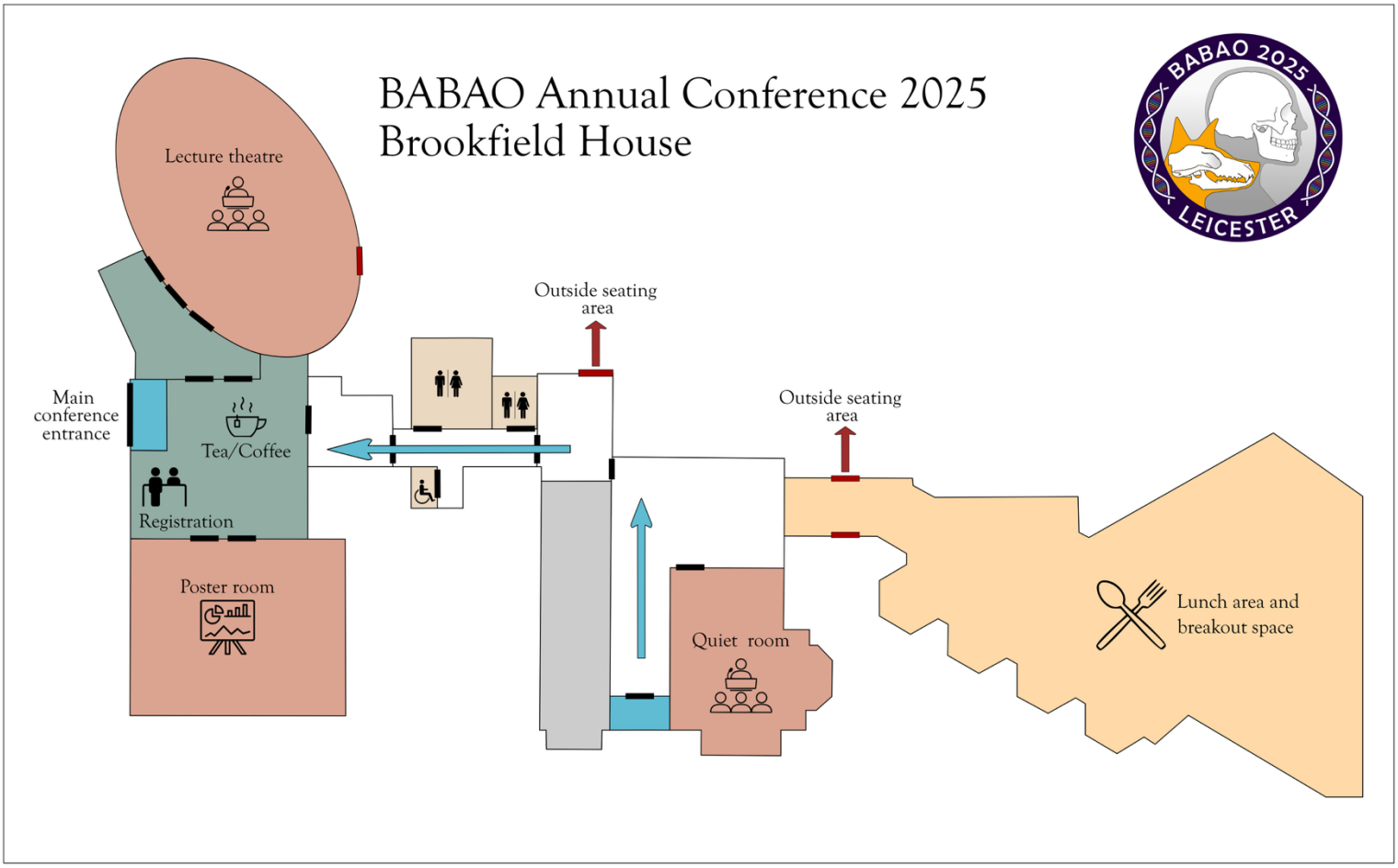
BROOKFIELD CAMPUS *266 London Road, Leicester LE2 1RQ*

The main conference will take place on the University of Leicester's Brookfield Campus. The campus is located just a 25 minute walk from Leicester train station, or a 15 minute walk from the main university campus and is served by bus stops from the city centre (see Getting To The Conference Venue, p. 6)

All rooms used for the main conference will be located on the ground floor with step-free access. The building also contains a prayer room.

A quiet room with a video feed of the conference talks will be available for anyone who needs a break from the hustle and bustle of the main lecture theatre. The lunch area also boasts 'breakout pods' for quiet spaces to catch-up with friends and colleagues.

A buffet lunch and refreshments will be served throughout the two days of the main conference.



The workshops on Thursday 18th September will take place on the University's Main Campus. The campus is located just a 15 minute walk from Leicester train station, or a 30 minute walk from St. Margaret's Bus and Coach Station.

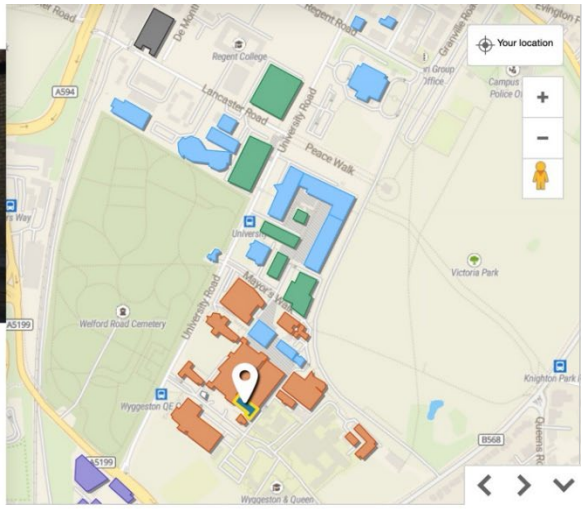
Workshops 1 and 2 will take place in the Fielding Johnson South Wing Building. Workshops 3, 4 and 5 will take place in the Kathleen Kenyon Building (Campus Map).

Workshop and early conference registration will take place in the entrance lobby of the Kathleen Kenyon Building. This area will act as a help point throughout the day. Meet here at least fifteen minutes before your workshop start time to register and be guided to the right room.

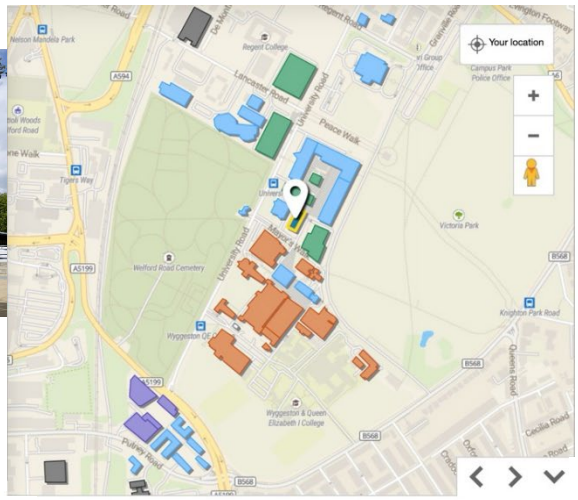
Please note that rooms used for the workshops may be located on upper or lower floors of various university buildings. All rooms will be accessible via lifts.

Tea and coffee will be served during the workshops. Lunch can be purchased from one of our campus outlets. Ask one of our volunteers for a recommendation!

Fielding Johnson South Wing
University Road, LE1 7RH



Kathleen Kenyon Building
University Road, LE1 7RH



Walking

Brookfield can be reached from the Train Station via a 25 minute walk straight up London Road (A6). Set off uphill from the train station and follow this road all the way and across the roundabout until you reach the sign for Brookfield Campus.

From St Margaret's Bus and Coach Station it is a 45 minute walk.

Bus from Leicester Train Station

The 31/31A/X31 can be caught from stand EE outside the train station and takes approximately 6-10 minutes. Disembark from stop Elmfield Avenue and continue along the road until you see the sign for Brookfield Campus.

The X3/X7 can be caught from stand ED outside the train station and takes approximately 6-10 minutes. Disembark from stop St John's Road and walk back along the road until you see the sign for Brookfield Campus.

Bus from St. Margaret's Bus and Coach Station

To get a bus to Brookfield Campus from the Coach Station you will need to make a 5 minute walk to Haymarket Bus Station, by turning down Sandacre Street and continuing straight until you reach the end of Savoy Street.

From here the 31/31A/X31 can be caught from stand HK and takes approximately 10-15 minutes. Disembark from stop Elmfield Avenue and continue along the road until you see the sign for Brookfield Campus.

You can also catch the X3/X7 from Haymarket Bus Station at stand HJ, which takes approximately 10-15 minutes. Disembark from stop St John's Road and walk back along the road until you see the sign for Brookfield Campus.

Arriving via Taxi

There are taxi ranks located next to both the Train Station and St Margaret's Bus Station. Prices can vary from around £10 to £20 depending on the distance and time of day.

Arriving via Car

We will have a number of free parking spaces available on the 19th and 20th of September at the rear of the Brookfield campus, accessed via Holmfield Road **(Sat Nav: LE2 1SD)** Please email the conference team if you require one of these spaces. Upon arrival at the car park, drive up to the barrier and press the buzzer and inform reception you are here to attend the BABAO Conference. They will then raise the barrier for you.

1: St. Margaret's Bus and Coach Station

2: Leicester Train Station

3: Main Campus

4: Brookfield

INFORMATION FOR DELEGATES PRESENTING:

PODIUM PRESENTATIONS

Each podium presentation has a 15 minute time slot. Please try and aim to make your presentation between 12-14 minutes, so that we have time to bring up and introduce the next speaker. We will hold signs up at the 11 and 13 minute marks.

To ensure the conference doesn't run late, we will unfortunately have to cut you off at 14 minutes, so please do try to keep to time!

Questions will be asked at the end of each session during a dedicated 'questions' time slot.

Please email your presentation slides (preferably in Powerpoint format) the day before you give your talk at the very latest. This will allow us to set up a smooth transition between speakers well in advance. It's recommended to also bring a back-up copy on a memory stick, just in case!

The student podium prize will be evaluated by judges across the two days and the final prize will be awarded on the Saturday at the end of the conference.

POSTER PRESENTATIONS

Posters should be a visual representation of your research, including both text and images.

We leave the formatting up to your imagination and creativity! (Please keep in mind, posters that are very busy, or have a lot of writing, unusual font, or very small text are difficult to read and will put people off!)

Please note, our poster boards are best suited for A0 size posters (c. 84 x 119cm) and will only be able to accommodate posters that are in portrait orientation.

Poster presentations have been split across the two days of the conference. All poster presenters are expected to be present at their posters for their specific poster session slot (see Poster Sessions), which will take place during the breaks on Friday 19th September and Saturday 20th September.

If you are presenting a poster, please make a note of the session you are in and the day this session takes place.

The poster room will be available from 8am on the day of your session to put up your poster, and you must take it down by 5.30pm of that same day. Please keep a note of your poster number, as this will tell which board to put your poster up onto.

For our virtual attendees and those that didn't have time to view all the posters at the conference, we will also be uploading a copy of your poster to view online. This will be under a password protected section of the website, so will only be viewable to our attendees. Attendees will be able to view but not download the file, and the file will only be temporarily available for the duration of the conference. Can you please provide a high-quality digital copy of your poster to the conference organisers no later than Wednesday 17th September, but preferably earlier, so that there is time to upload the poster to the website.

There will be two student poster prizes – one for each day of the conference. If you are running for the prize, please make sure to stand by your poster during your allotted poster session as the judges might have questions for you!

OUR VIRTUAL CONFERENCE

VIRTUAL ATTENDANCE

We are very excited to welcome all our virtual delegates. Just because you are unable to make it in person doesn't mean the conference shouldn't be exciting and interesting for you too!

A Zoom joining link will be sent to all online delegates prior to the event. This will be monitored by our on-site IT team to make sure your experience is smooth and enjoyable. Our IT team will make sure any questions asked online will be raised to our presenters, so please make full use of the Zoom chat functions to raise questions or let us know if there is a technical issue.

We'll have a live discussion board running on Padlet throughout the conference, where all attendees can drop thoughts, questions and interesting discussion points that other guests can interact with: https://padlet.com/babaoconference2025/DiscussionBoard

We also encourage our online attendees to visit our virtual poster room (see below), where they can view the wide range of posters

THE VIRTUAL POSTER ROOM

Whether you're attending online or in-person, our virtual poster room can be accessed at any time during the conference. The password to get into this space will be emailed to all attendees prior to the conference start date and will be posted about the conference venue.

Too busy chatting to old friends during the break? Conference room too full? Look out for our QR codes around the conference venue, which will give you quick access to our virtual poster room on your phone – perfect for when you can grab a spare moment.

If you have a question for a specific poster presenter, think about adding it to our Discussion Board. Our IT team will make sure it's passed onto the poster presenter.

CONFERENCE SCHEDULE:

Thursday 18th September 2025

8.00 – 16.00	**Workshop/early conference registration and help point** Venue: *Kathleen Kenyon Building, Room 0.02*

PARALLEL WORKSHOPS	
9.00 – 17.00	***WORKSHOP 1: A Practical Introduction to Transition Analysis 3*** Provided by George Milner and Jesper Boldsen Venue: *Fielding Johnson South Wing, Ogden Lewis Seminar Rooms 2 and 3*
9.00 – 12.00	***WORKSHOP 2: A gentle introduction to R for bioarchaeologists*** Provided by Bjørn Bartholdy Venue: *Kathleen Kenyon Building, Room 1.21*
13.00 – 16.00	***WORKSHOP 3: Understanding dental data with R*** Provided by Bjørn Bartholdy Venue: *Kathleen Kenyon Building, Room 1.21*
9.00 – 12.00	***WORKSHOP 4: Standardising the diagnosis of chronic maxillary sinusitis: A new approach developed by the Bioarchaeology Respiratory Network*** Provided by Maia Casna and Anna Davies-Barrett Venue: *Kathleen Kenyon Building, Room 1.20*
13.30 – 16.30	***WORKSHOP 5: Bone lives: Interpreting human remains through osteobiographies*** Provided by John Robb and Marianne Hem Eriksen Venue: *Fielding Johnson South Wing, Ogden Lewis Seminar Room 1*

19.00 – 21.30	**Drinks Reception** at Leicester Cathedral (located in Leicester town centre)

8.00 – 9.00	Registration opens, tea/coffee
9.00 – 9.15	Welcome/opening remarks

9.15 – 10.30	**SESSION 1** **Chair: Sarah Inskip** ***Innovative science in the world of bioarchaeology***
	Ragnheiður Diljá Ásmundsdóttir et al. *1. Variations within the archaeological human bone proteome*
	Alice Rose et al. *2. Commensal connections: Investigating rat dietary ecology and human-rat interactions in medieval and post-medieval Europe through stable isotope analysis*
	Aimée Barlow et al. *3. Tracing hormonal signatures to reconstruct reproductive histories*
	Pedro Andrade et al. *4. Relief, Ritual, and smoke: Long-term use of Tobacco (Nicotiana spp.) on the Arid Coast of Northern Chile*
	15 mins for QUESTIONS

10.30 – 11.00	Break / **POSTER SESSION 1** – Imaging, digital archaeology, and unusual scientific techniques

11.00 – 12.15	**SESSION 2** **Chair: Jo Appleby** ***Revelations in age estimations***
	Valentina Perrone et al. *5. Narrowing age estimation in adult skeletal remains: a new approach with cementochronology*
	Varsha Warrier et al. *6. Prevalence of directional asymmetry within the acetabulum and its implications for age estimation*
	Azahara Salazar Fernandez et al. *7. Bone in transition: Geometric morphometric insights into subadult shoulder development*
	Marta San-Millán et al. *8. The relevance of the reference sample in acetabular age-at-death estimation: Implications of biological sex and sample size*
	15 mins for QUESTIONS

12.15 - 13.15	Lunch

13.15 – 13.45	**KEYNOTE 1** ***Building community through osteology: Volunteering at the Northamptonshire Archaeological Resource Centre*** Ben Donnelly-Symes, Dale Munn & Carmel Crawley, Northamptonshire Archaeological Resource Centre

13.45 – 15.00	**SESSION 3** **Chair: Trisha Biers** ***Reflections and forward directions in our field***
	Gemma Craven et al. *9. From race to population affinity: Rethinking language in forensic anthropology*
	Taylor Peacock *10. Troubling binaries: Sex estimation in bioarchaeological literature*
	Anna Freed *11. Bioarchaeologies of disability: Disabled people's perspectives*
	Brian Costello et al. *12. Same smoke, different pipe: Educating archaeological discoveries of past tobacco use to school aged children*
	15 mins for QUESTIONS

15.00 – 15.30	Break / **POSTER SESSION 2** – Exploring disease and lifestyle in the past

15.30 – 17.00	**SESSION 4** **Chair: Alette Blom** ***Bioarchaeological narratives, European stories***
	Allegra Rafaschieri et al. *13. Prevalence of hallux valgus and osteoarthritis in two post-medieval populations from the Netherlands: A shoe problem?*
	Daniela Lorente *14. Peasant living conditions and labour in late medieval Valencia: Bioarchaeological findings from the maqbara of Benieto (13th-16th c.)*
	Emily May Wales-Ferguson et al. *15. Unearthing Sicily's past: A historical and methodological review of bioarchaeological research in Sicily*

	Astrid A. Noterman et al. *16. Bonds of doing: Dental modifications and activity markers in early churchyard burials from Gotland, Sweden*
	Jack Eggington et al. *17. Diet, health and social inequality in London: A mother-infant perspective (1789-1853 CE)*
	15 mins for QUESTIONS

17.00 – 17.05	Friday student poster **prize** award

17.05 – 17.35	**KEYNOTE 2** ***From bones to ancestors: Embodiment, structural violence, and social justice*** Linda Mbeki, Independent Researcher

End of Day 1

19.00 – 23.00	**Conference Dinner** at City Rooms (located in Leicester town centre) and BABAO quiz

Saturday 20th September 2025

8.00	Registration opens, tea/coffee
8.50 – 9.00	Welcome/opening remarks

9.00 – 10.15	**SESSION 5** **Chair: Sarah Inskip/TBC** ***Detangling disease in humans and animals***
	Kerttu Majander et al. *18. From mummies to museum specimens: potential and preservation of ancient pathogen DNA*
	Rachael Hall et al. *19. Exploring proteomic analysis as a method for identifying brucellosis in archaeological human skeletons*
	Elliot Elliott *20. Skeletal lesions associated with leprosy in S. vulgaris (red squirrel)*

	Steffi Vassallo et al. *21. Diving into the accuracy and reliability of four 3D imaging techniques when assessing palaeopathological cases*
	Alette Blom et al. *22. The osteological paradox in medieval leprosy: who is affected? An osteobiographical analysis of medieval people with leprosy*

10.15 – 10.45	Break / **POSTER SESSION 3** – Biomolecular analyses in bioarchaeology

10.45 – 11.15	**KEYNOTE 3** ***Where have all our skeletons gone? The legal, ethical and research imperatives for a centralised human remains database in the UK to manage legacy collections.*** Mary Lewis, University of Reading, et al.

11.15 – 12.15	**SESSION 6a** ***The state of our bones: mortuary practices, taphonomy, and the conundrum of comingling*** **Chair: Jess Thompson**
	Heidi Dawson-Hobbis et al. *23. The Winchester Cathedral mortuary chests: Curating the bones of Kings?*
	Xander King et al. *24. 'Refitting in dry dock': Considering archaeological naval cemetery populations through commingled and fragmented human remains*
	Iseabail Wilks *25. Caring for the dead: Results of archaeothanatological analysis of burials from the early Neolithic of central Europe*
	Haley Goren et al. *26. Mortuary treatments in early bronze Age Britain: A micro-CT evaluation of bacterial diagenesis in bone to investigate burial practices*

12.15 – 13.00	Lunch
13.00 – 14.00	**Annual General Meeting of BABAO** (or extended lunch for those not attending)

14.00 – 14.45	**SESSION 6b** ***The state of our bones: mortuary practices, taphonomy, and the conundrum of comingling*** **Chair: Jess Thompson**
	Catherine Roberts et al. *27. Testing the waters: The effect of deposition environment on dental diagenesis*

	Elżbieta Jaskulska *28. Assessing bias in cremated remains deposits: The role of fragmentation and deposit size in skeletal element identification*
	15 mins for QUESTIONS

14.45 – 15.30	**SESSION 7a** ***Marginalisations, childhood, and the life course: Britain through time*** **Chair: Sharon Clough**
	Katie Erin Faillace et al. *29. Population dynamics and cultural transitions: Using biodistance to investigate social networks and mobility from the Iron Age to Early Medieval period in Wessex, England*
	Elisha Meadows et al. *30. Towards an integrated bioarchaeological perspective on York in the Roman Empire*
	Chris Chinnock et al. *31. Collaboration is key: Analysis of a 5th-7th century cemetery in Northamptonshire*

15.30 – 16.00	Break / **POSTER SESSION 4** – Insights in the fields of osteoarchaeology and forensics

16.00 – 17.15	**SESSION 7b** ***Marginalisations, childhood, and the life course: Britain through time*** **Chair: Malin Holst**
	Mackenzie Masters and Jordi Ruiz Ventura et al. *32. Bioarchaeological insights into a catastrophic population from medieval Leicester*
	Isobel Grimley et al. *33. The price of progress: Childhood frailty in England across the medieval (11th-15th centuries) to post-medieval (16th-19th centuries) transition*
	Lauren McIntyre et al. *34. "…many would rather die": Osteological evidence for deprivation in post-medieval Hull*
	Sharon Clough et al. *35. Evidence of anatomisation from the 19th century Bristol Union workhouse cemetery*
	15 mins for QUESTIONS

17.15 – 17.30	Closing remarks/**prizes**
End of Day 2	

POSTER SESSIONS:

Poster Session 1 – Imaging, digital archaeology, and unusual scientific techniques
10.30 – 11.00, Friday 19th September

POSTER 4 *Investigating Beta-Thalassaemia in micro-CT scans of deciduous teeth*
Elizabeth Garnett et al.

POSTER 5 *Harris lines and their impact on trabecular bone microarchitecture: A microcomputed tomography investigation*
Margarethe Becker et al.

POSTER 10 *The trouble with 'tooth worm': Evidence of rare Anglo-Saxon dentistry of dental caries manipulation*
Charlie Robertson

POSTER 21 *Modernising facial reconstruction: Method development for remains with leprosy*
Amy Mercy et al.

POSTER 22 *Optimising the preparation of small flat bone samples for micro-CT*
Charlotte G. Lawrence et al.

POSTER 25 *Lend me your ears: Comparing the accuracy of 3D modelling vs. microscopic measurements of ear ossicles*
Jennifer K. Wilburn et al.

POSTER 26 *A multi-method approach investigating incudo-malleolar joint fusion arising from a possible traumatic injury*
Jennifer K. Wilburn et al.

POSTER 27 *Dying to meet you: Investigating the paleodemographic profile of the people of Roman Colchester – a pilot study*
Morwen Siân Thomas et al.

POSTER 32 A life cut short: Using an osteobiographical approach to interpret complex and multifactorial pathology in ancient Egyptian mummified children using CT scan technology
Eleanor Chipps et al.

POSTER 39 *From the mouths of Manx mothers: An introduction to maternal health during the medieval period of the Isle of Man (AD500 – 1500)*
Marie C. Weale et al.

POSTER 45 *Bone mineral density in human auditory ossicles: An assessment of ossicle mineralisation*
Naomi Kilburn et al.

POSTER 54 *The curious case of the Candia skull: Unravelling the identity of a fossilised legacy-collection human skull using minimally destructive methods*
Miranda Evans et al.

POSTER 57 *Incidence and prevalence of Wormian bones in the human skull*
Grace Godfrey et al.

POSTER 66 *From excavation to interpretation: Multidisciplinary approaches to the late medieval cemetery of Cencelle (VT)*
Giulia Casagrande et al.

POSTER 69 *Cranial morphology as an indicator of kinship in an Egyptian population from the age of pyramid builders*
Tereza Meinerová et al.

POSTER 70 *Not one way to file: Microscopic variation in Viking-Age tooth filing*
Fin Taylor et al.

POSTER 75 *A multimethod approach in trauma investigation*
Milena Grzybowska

POSTER 77 *Beyond the 2nd metacarpal: Evaluating radial geometry as an osteoporosis indicator in a documented 19th century population*
Eleana Stathaki et al.

Poster Session 2 – Exploring disease and lifestyle in the past
15.00 – 15.30, Friday 19th September

POSTER 2 *Craniofacial asymmetry: Identifying developmental stress in adult skeletons*
Lauren Antle

POSTER 7 *Deciphering disability narratives in 3rd-4th century Roman Irchester*
María Serrano Ruber

POSTER 11 *Tracing respiratory health and sociopolitical change at Tombos, Third Cataract (1400–650 BCE)*
Maia Casna et al.

POSTER 12 *Winter is coming: Climate change and maxillary sinusitis in the Late Antiquity Little Ice Age*
Leon Corneille-Cowell

POSTER 14 *Osteological presentations of sinusitis in sailors from the British Royal Navy*
Sasha Spencer et al.

POSTER 24 *Metabolic bone health differences in Industrial Period Manchester, North Shields, and Derby, England*
Wade Bittleston et al.

POSTER 29 *From the vaults: Two uncommon palaeopathological cases from PCA's archives*
James Langthorne et al.

POSTER 33 Preliminary insights into the lived experience of an adolescent with a rare congenital hip anomaly in Romano-British Irchester
Devyn Caldwell et al.

POSTER 35 The effects of corsetry on the female skeleton from observations of a 19th century workhouse cemetery population
Frankie Wildmun

POSTER 44 *Demography and health at the 7th–9th century cemetery of the Lincoln Eastern Bypass, Lincoln, UK*
Paola Ponce et al.

POSTER 47 *An exploration of two cases of unhealed proximal ulna fractures in skeletons excavated from an early medieval cemetery in Lincoln, UK*
William Wells et al.

POSTER 49 *Bioarchaeological Indicators of Stress and Adaptive Strategies at the Bronze Age Huoshaogou Cemetery, Gansu, China*
Meixu Ye et al.

POSTER 50 *A child from medieval York with multiple congenital skeletal anomalies: A case study and differential diagnoses*
Elīna Pētersone-Gordina et al.

POSTER 52 *Spinal Pathologies from the site of Wad Ben Naga*
Gabriela Vrtalová

POSTER 53 *Walking their way up the social ladder: Social and gender differences in early Egypt and Nubia through the study of daily mobility*
Veronica Tamorri et al.

POSTER 55 Kaasjongens en melkmeisjes*: A paleopathological approach to gendered child labour practices in post-medieval Dutch dairy farming*
Alex Tutwiler et al.

POSTER 65 *Diagnosing DISH-order: When ossification won't sit right*
Emma Scott

POSTER 68 *Ploughs, pews & patterns: Identifying sex-based variations in upper limb activity markers and entheseal changes in the later medieval population of St Saviours Friary Haverfordwest, Pembrokeshire*
Neve Rust et al.

POSTER 74 *A Viking life: Osteobiography of a 9th-11th century individual from Gotland (Sweden, Baltic Sea)*
Celtia Ansemil Mariño et al.

Poster Session 3 – Biomolecular analyses in bioarchaeology
10.15 – 10.45, Saturday 20th September

POSTER 1 *The Holocene brown bear (Ursus arctos L.) in Morocco: A study of its diet by ZooMS and isotopic analysis*
Iken Shaymae et al.

POSTER 20 *Pilgrims or Islanders? An isotopic analysis of Early Medieval individuals buried on Lindisfarne*
Matthew J. Lee et al.

POSTER 28 *Exploring diet across the life course: An isotopic study of individuals at the archaeological site of Bulla Regia, Tunisia*
Stephanie Demetriou et al.

POSTER 30 *Recommended practices for destructive sampling of human remains in collections: An at-a-glance infographic*
Trish Biers et al.

Poster 31 *Comparing childhood and adulthood diet in a Viking Age population from Latvia: a pilot study*
Elīna Pētersone-Gordina et al.

POSTER 36 *Investigation of the relationship between diet and physiological stress in two conflict-affected populations from medieval Croatia*
Emma Smith et al.

POSTER 40 *The echoes of a tooth's time: Incremental dentine analysis of carbon and nitrogen isotopes from leprosy-affected individuals to investigate disease-related metabolic disruption*
Aishani Sukhdeo et al.

POSTER 41 *Viking Age (750 – 1050 CE) diet on the Island of Gotland*
Isobel Rennie et al.

POSTER 43 *Strontium isotope analyses of cremated bone reveal inter-variation in Early Medieval Transylvania*
Kori Lea Filipek et al.

POSTER 48 *Reconstructing mobility patterns in Middle Neolithic France: a multi-proxy approach using strontium isotopes, osteological and funerary evidence*
Bria Milligan et al.

POSTER 56 *The invisible smoker: Interdisciplinary approaches for better understanding tobacco-use in seventeenth to nineteenth century England and Netherlands*
Anna Davies-Barrett et al.

POSTER 58 *Isotopic provenancing of 7 individuals from the Battle of Stoke Field*
Erin Riley et al.

POSTER 59 *Reconstructing diet in Early Anglo-Saxon Bishopstone: A carbon and nitrogen isotope analysis*
Joseph Lyne et al.

POSTER 60 *A Palaeopathological and Biomolecular Case Study on Disease, Diet and Conditions in Roman Britain: Bioarchaeological Insights from Driffield Terrace, York*
Anastasija Radivojevic

POSTER 64 *Bones, Bioarchaeological data and integrated methods: Revisiting burial practices in post-Roman Central Italy*
Ileana Micarelli et al.

POSTER 72 *Dietary insights into the early life Neolithic subsistence practices from the Cotswold-Severn chambered tomb at Thornwell Farm*
Vlada Sosis et al.

POSTER 73 *Institutionalised lives: Exploring origin and diet of individuals from Blackberry Hill (Bristol), an 18th-/19th-century prisoner of war camp and workhouse, through a multi-isotope analysis*
Antonia Price-Hood et al.

Poster Session 4 – Insights in the fields of osteoarchaeology and forensics
15.30 – 16.00, Saturday 20th September

POSTER 3 *The origins of animal traction in Britain*
Phoebe Liu

POSTER 6 *Osteological evidence of 'sea legs': An interpretation of bilateral sub-cortical cavitation of the tibial M. Popliteal of a Georgian sailor*
Grace Smithers

POSTER 8 *Skeletons in the closet: The legacy of anatomised remains*
Abigail Leigh-Gilchrist et al.

POSTER 9 *Human remains from a newly discovered cave church in Addis Ababa, Ethiopia: Results of the investigation of an extensively disturbed but rare cemetery site*
Katie White-Iribhogbe et al.

POSTER 13 *Are we there yet? Comparing osteological sex to chromosomal sex in non-adults*
Madison Robinson et al.

POSTER 15 *Pursuing equity of open access publishing in bioarchaeology*
Bjørn Peare Bartholdy

POSTER 16 *Palaeoimaging as digital conservation: A case study of a partially mummified individual from Ancient Sudan*
Vasiliki Louka et al.

POSTER 17 *Where are we with artificial intelligence in forensic anthropology?*
Charlotte Primeau

POSTER 18 *Where did it go? Taphonomic staining, the environment and timelines*
Charlotte Loy et al.

POSTER 19 *A biocultural exploration of Anglo-Saxon nonadults at Church Walk Cemetery, Hartlepool: A case study*
Caitlin Hendrie

POSTER 23 *Identifying and tracking scavengers of remains in a forensic context*
Sarina Riechmann

POSTER 34 *Blackberry Hill, Bristol Union Workhouse cemetery c.1832-1896*
Frankie Wildmun et al.

POSTER 37 *The Greek Necropolis of Santa Panagia in Syracuse (6th-5th centuries BC): preliminary archaeological and anthropological results from the 2019 excavation*
Elena Varotto et al.

POSTER 38 *Into the trash heap: False alarms and concealed bones in a Sicilian forensic case*
Elena Varotto et al.

POSTER 42 *Mapping out biological distance in the Memphite region, Egypt: Preliminary results from Saqqara West*
Iwona Kozieradzka-Ogunmakin et al.

POSTER 46 *Echoes of Empire: An anthropological study of Ottoman-Era burials from Constanța*
Andreea Toma et al.

POSTER 51 *Biological distance analysis in early medieval Wales: Exploring kinship and post-marital residence*
Ciara O'Brien Butler et al.

POSTER 61 *Do you see what I see? Introducing a refined surface preservation recording method for cortical bone*
Emily Zerbe et al.

POSTER 62 *Queering forensics: Transgender representation in forensic anthropology*
Forest Bird et al.

POSTER 63 *Assessment of the disarticulated human skeletal remains from the Kent Street Operations Notice, York*
Alex Andrews[1]

POSTER 67 *A Disabled combat soldier: Multiple skeletal anomalies with Klippel-Feil syndrome*
Hyejin Lee et al.

POSTER 71 *Forensic investigation and the discovery of two early-medieval burials*
Dario Innocenti et al.

POSTER 76 *Archaeothanatological and histotaphonomical analysis of an early medieval Welsh cemetery site*
Georgia Goold-Jones et al.

KEYNOTE LECTURES:

KEYNOTE 1:

Building community through osteology: Volunteering at the Northamptonshire Archaeological Resource Centre

Ben Donnelly-Symes[1], Dale Munn[1], Carmel Crawley[1]

[1]Northamptonshire Archaeological Resource Centre

This paper will discuss a unique volunteering activity taking place at the Northamptonshire Archaeological Resource Centre (ARC), where members of the public, with no archaeological or osteological background, have supported work on the ARC's osteological collections. The project grew organically from a single researcher turned volunteer who visited in 2022 and has since helped teach 15 volunteers how to age, sex, determine height, identify pathologies and identify trauma. Over the past three years the group has studied remains of over 1200 individuals (including around 600 from un-/under-published sites) from Northamptonshire. The volunteers' work has helped support multiple PhD students using the collections and has identified previously unknown assemblages. In this talk, we will discuss the origins of the project, how it has developed, what the future aims and outcomes will be, and how academic and professional archaeologists are involved. We will explore the robustness of the data, how that can be tested, and the suggested ways in which it can heighten the accessibility and research value of the collections held at NARC. We will also touch on the impact this work has had on the volunteers themselves, how engagement with what can be considered specialist collections can engender lifelong learning, the development of public engagement activities as a result of their work, and what lessons we can learn from this type of engagement.

Ben Donnelly-Symes

Ben is the archaeological curator at the Northamptonshire Archaeological Resource Centre, the county archaeological store for Northamptonshire, which opened in 2021. Ben has been instrumental in facilitating access to these recently pooled collections, championing ongoing research by PhD students and academic researchers from all over. His work in developing a stand-out volunteer programme at the Centre has enabled the mass documentation of hundreds of archaeological skeletons for which little was previously known.

He has also played a vital role in making archaeology accessible to school children and members of the public as part of Chester House's and University of Leicester's award-winning archaeological outreach programmes.

Before this, Ben worked in archaeological archives and Historic Environment Record roles in Cambridgeshire and Suffolk. He is also a part-time PhD by-practice student at the University of Leicester, studying the impact that engagement with archaeological archives can have on non-specialist users. He is currently the Chair of the Society for Museum Archaeology, the Arts Council England subject specialist network for museum archaeology in the UK.

Dale Munn

Dale is a retired secondary school deputy head teacher who, in his retirement, took up his life-long ambition to study archaeology. He has an MSc in Landscape Archaeology from University of Oxford and a MSc in Forensic Anthropology from University College London. Over the past five years, he has volunteered with, and supported, three museums in Leicestershire, Northamptonshire, and Cambridgeshire with their osteological collections.

His valuable work with 15 volunteers at the Northamptonshire Archaeological Resource Centre has been instrumental in allowing for the mass osteoarchaeological documentation of hundreds of skeletons for future research.

Carmel Crawley

Carmel began volunteering at the Northamptonshire Archaeological Research Centre in 2021 and has been involved with the ARC's osteoarchaeology volunteering project since its inception in 2022. She has an archaeology degree but has never worked professionally in the field, choosing a career in adult education instead. Despite this, Carmel has continued to pursue her love of the field, developing an impressive background and experience in community archaeology.

She has been involved with Middle Nene Archaeology Group (MIDNAG) for over 40 years, where she helps organise their annual excavation, and runs their archiving and finds processing. Carmel is also a trustee for Oundle Museum.

From bones to ancestors: Embodiment, structural violence, and social justice

Linda Mbeki[1]

[1]Independent Researcher

For those whose lives were incompletely recorded in ledgers, reading the body archive is the natural choice to reconstruct their lived experience. What if the body is silent? When is science violence? Measurements, samples, statistics, and plots are an enumeration of lives lived. Taking enslavement in North America and South Africa as my starting point, I will demonstrate how reading the body archive is inherently political, and invites archaeologists to engage with social justice. Rather than ruptures, history follows a linear path from enslavement to land hunger. From labour extraction through incarceration and immobilisation in barracks to the disintegration of families and communities. The ”Rainbow Nation” miracle glosses over deep trauma and silences narratives that deviate from the “Non-racist, Non-sexist” idyll. We are told to forget when spatial apartheid keeps the poor a safe distance away from affluent suburbs. When a generation’s dreams were crushed by an inferior curriculum, what are the odds of poverty alleviation for children and grandchildren? One need not look far to trace the roots of wealth disparities and poor health outcomes. The wounds may or may not be visible, but they are still deep. Perhaps we have been asking the wrong questions of the ancestors. We can go some way to addressing the injustices the ancestors experienced in the past, in the now. Their lives are immeasurable, yet the legacies of their oppression and resilience live on.

Linda Mbeki

Dr Linda Mbeki is an interdisciplinary scientist with research specialisms that combine chemistry, bioarchaeology, history, and museology. Her PhD at the Vrije Universiteit Amsterdam focussed on contextualising the experiences of enslaved people in Cape Town between 1700 and 1850, using isotopic and archival data. She later worked as postdoctoral fellow at the University of Pretoria in South Africa and an assistant curator at Iziko Museums of South Africa. During this time, she further investigated the impacts of enslavement, coercion, and colonialism in Cape Town and South Africa's gold and diamond mines.

She has also been a Research Fellow in Black Heritage at the McDonald Institute for Archaeological Research, University of Cambridge.

Linda has championed the voices of marginalised people in creative ways and is passionate about public engagement. She has worked with filmmakers and artists to co-create a short film on experiences of oppression during Apartheid and has recently co-authored a guest editorial paper in Antiquity, titled 'How can archaeology help shape decolonial futures?'. In it, Linda and her colleagues outline the way in which archaeological research is inherently influenced by colonial discourse and is a thought-provoking read for any archaeologist. Linda's consideration of the experiences of marginalised people in South Africa and elsewhere in the world, on which her Keynote will focus, demonstrates how interactions between the past and now are vital in changing perspectives.

Where have all our skeletons gone? The legal, ethical and research imperatives for a centralised human remains database in the UK to manage legacy collections

Mary Lewis[1], Rebecca Pitt[1], Solange Bohling[2]

[1]University of Reading, [2]University of York

In the 1980s, Simon Mays, the Human Remains Specialist for Historic England, began to record the location of skeletons excavated from sites across the UK. The result was a Human Remains Database (HRD) which, for a time, was available through the BABAO website. Although not an official database, it is one of the most useful resources in the country for identifying and locating collections for research. The current HRD contains information on 114,744 inhumations and 13,569 cremations excavated from over 1000 sites between 1869 and 2008. However, of the 1014 sites yielding human skeletal remains listed, 350 (34.5%) are currently in an unknown location – that is, they are missing. This equates to 25,762 of our ancestors. This paper discusses the legal, ethical, and research implications of our missing heritage, and suggests ways in which this situation can be mitigated. For example, there is currently no imperative for institutions holding human remains listed under the Ministry of Justice license to report when the remains they hold are relocated after their primary deposition. A comprehensive survey of all holding institutions (museum, universities, country councils – and even commercial archaeological organisations) is required. For smaller museums, where time and resources are limited, the location of skeletons from these sites could be identified through the use of research student placements to survey the stores. Finally, the need for a long-called for centralised database for human skeletal remains excavated in the UK is revisited.

Mary Lewis

Mary Lewis is a Professor of Bioarchaeology at the University of Reading and past President of the Paleopathology Association. Her research has often focussed on the bioarchaeology and life course of children and adolescents, on which she has published two books. Her work in this area has been instrumental in the development of a bioarchaeology that has a greater focus and consideration for children and their experiences in the past, and her books have provided an invaluable starting point for many bioarchaeologists.

Mary has also undertaken key work in developing new methods for identifying puberty stages in the human skeleton, including the exploration of menarche timings in the past.

Together with Rebecca Pitt (University of Reading) and Dr Solange Bohling (University of York), Mary has also been exploring the challenges of locating human remains collections from across England, and the ethical, legal, and research imperatives for doing so. This work, on which her keynote will focus, is a vital step in establishing a centralised database of human skeletal remains in the UK and enabling transparency and accessibility in the ethical research of British archaeological skeletal collections.

PODIUM ABSTRACTS:

PODIUM 1 Variations within the archaeological human bone proteome

Ragnheiður Diljá Ásmundsdóttir[1], Gaudry Troché[1], Jesper V. Olsen[1], Sarah Schrader[2], Frido Welker[1]

[1]University of Copenhagen; [2]Leiden University

Sample selection strategies are an important aspect of biomolecular archaeology, especially when it comes to studying precious archaeological human skeletal remains. These strategies have been optimised within various fields. They have, however, not been optimised for the application of palaeoproteomic methods, where sample selection strategies are currently based on sample availability. A common theme is that the bone proteome is considered to be uniform across different skeletal elements. Taking into account the heterogeneity of the skeleton through differences in ossification, as well as differences in bone tissues, we hypothesise that the bone proteome composition is influenced by its formation and maintenance during life, leading to variation in proteome composition across the skeleton. We furthermore hypothesise that this heterogeneity should be recoverable from archaeological skeletons. To test these hypotheses, we studied the bone proteomes of ten adult skeletons from the Medieval cemetery of Saint Eusebius church, Arnhem, the Netherlands, utilising liquid chromatography-tandem mass spectrometry (LC-MS/MS) methods. From each individual, samples were taken from four skeletal elements: the petrous, parietal, rib, and femur. We observe larger proteomes within bones formed through endochondral ossification compared to bones formed through intramembranous ossification. For both ossification processes, cortical bone proteomes are larger and better preserved compared to trabecular bone proteomes. The petrous bone proteome is observed to be the largest and contain the most variation compared to the other skeletal elements in this study, indicating that the petrous bone is an ideal source of ancient proteins, especially for hominin phylogenetic studies.

Keywords: Biomolecular archaeology; Palaeoproteomics; Skeletal biology; Sampling selection strategies

PODIUM 2

Commensal connections: Investigating rat dietary ecology and human-rat interactions in medieval and post-medieval Europe through stable isotope analysis

Alice Rose[1], Michelle Alexander[1], Eric Guiry[2], Michelle Feider[1], Sam Greeves[1], David Orton[1]

[1]University of York; [2]Trent University

Black rats (*Rattus rattus*) and brown rats (*Rattus norvegicus*) are among the most successful commensal species, spreading globally beyond native ranges in southern and eastern Asia by colonising niches around human settlements. Although rats live in close association with human societies, their experiences and ecological interactions differ from those of other animals, making them valuable proxies for understanding past human mobility, economic exchange and urban development. The RATTUS project aims to investigate interactions between European rat populations and human societies over the past c.2500 years by integrating archaeological, biological and historical methods, testing new proxies for documenting and exploring complex socioeconomic and cultural phenomena that have been overlooked—or remain otherwise invisible—in the archaeological record. RATTUS is employing a multiproxy approach (zooarchaeology, ZooMS, ancient DNA, radiocarbon dating, population modelling, isotope analysis) to generate taxonomic, morphological, genetic, chronological, and dietary data for rats across Europe. This paper will present the results of ongoing bulk stable isotope (δ13C, δ15N) analysis of bone collagen from black and brown rats (n = >150), as well as comparative faunal species from medieval and post-medieval contexts in Britain and the Netherlands. This data represents the first large-scale isotopic study of archaeological rats in Europe. By comparing data from black and brown rats across different settlement types (e.g., urban residential, rural farmstead, manorial complex, castle) and across chronological phases, isotopic analysis reveals inter- and intra-site shifts in rat dietary ecology, which may be closely tied to human subsistence and settlement patterns, as well as inter-species competition.

Keywords: Zooarchaeology; Stable isotope; Niche ecology

PODIUM 3 Tracing hormonal signatures to reconstruct reproductive histories

Aimée Barlow[1], Elizabeth Craig-Atkins[1], Katie A. Hemer[2]

[1]University of Sheffield; [2]University College London

***CONSIDERATION FOR THE STUDENT PRIZE**

The sex steroid hormones oestrogen, progesterone, and testosterone have not previously been investigated in human skeletal tissues. These hormones hold the potential to provide insight into the reproductive histories of women in the past. Progesterone, in particular, is a measurable biomarker for pregnancy in human blood serum, hair, saliva, and urine. Thus, its detection in bone and dental tissues could provide a means of identifying pregnant individuals in archaeological assemblages. Through our novel methodology, enzyme-linked immunosorbent assay (ELISA) analysis was performed on ten individuals dating from the 1st to 19th centuries CE, including seven females of mixed parity status, and three control males. Analysis of the second and third molar dentine and enamel, dental calculus, and bone was undertaken to examine whether sex steroid hormones could be identified for the first time in these tissues. Secondly, quantifiable concentrations (pg/mL) were evaluated for their use as biomarkers for pregnancy in the sampled skeletal remains. Oestrogen, progesterone and testosterone were successfully detected in the dentine, enamel, and tooth roots of second and third molars and bone. Progesterone and testosterone were also measurable in dental calculus. Here we present an overview of the protocol developed to prepare the tissue samples for ELISA analysis, and discuss the hormonal profiles of the individuals studied. In doing so, we will demonstrate how the analysis of these hormonal biomarkers offers new insights into the lived experiences and reproductive life histories of the studied individuals.

Keywords: Enzyme-linked immunosorbent assay; Hormones; Fertility; Pregnancy; Puberty

PODIUM 4

Relief, ritual and smoke: Long-term use of tobacco (Nicotiana spp.) on the arid coast of Northern Chile

Pedro Andrade[1], Claudia Mardones[1], Daniela Nova[1], Lucas Romero[1], Vania Arancibia[2], Luis Bustamente[1]

[1]Universidad de Concepcion; [2]Independant scholar

The human use of Nicotiana species in the Americas is well attested, with archaeological evidence tracing its presence back to the terminal Pleistocene and its widespread adoption in the Central Andes during the Formative period. Traditionally consumed by chewing, smoking, or inhalation, tobacco held multiple functions in pre-Columbian societies. In Chile, most research has focused on identifying Nicotiana remains in pipes, with relatively few studies employing chemical methods to detect alkaloids in human samples—primarily hair, which presents preservation challenges. This study analyses 22 dental calculus samples from diverse archaeological contexts along the desert coast of Antofagasta, northern Chile, covering approximately 6,300 years, from the Archaic to the Late Intermediate period. Using gas chromatography–mass spectrometry (GC–MS) with a triple quadrupole Agilent 7000 system and multiple reaction monitoring (MRM), cotinine—an endogenous metabolite of nicotine—was detected in individuals of both sexes across all periods. Significantly, one Archaic sample constitutes the earliest bioarchaeological evidence of Nicotiana use currently known on a continental scale. While the use of non-local Nicotiana species cannot be excluded, the data point towards the preferential consumption of Nicotiana solanifolia warp, a species endemic to the Chilean coast. The findings suggest a diachronic shift in modes of intake—from chewing to smoking and inhalation—without mutual exclusivity from the Formative period onwards. Contextual information supports a multifunctional use of tobacco, encompassing medicinal, ritual, and recreational practices, with a sustained social value over millennia.

Keywords: Northern Chile; Pre-Columbian tobacco use; Dental calculus; Cotinine

PODIUM 5 Narrowing age estimation in adult skeletal remains: A new approach with cementochronology

Valentina Perrone[1,2], Sarah Inskip[2], Ed Schwalbe[1]

[1]Northumbria University; [2]University of Leicester

Ageing skeletal adult remains still represents one of the biggest challenges in biological anthropology. Approaches require researchers to observe individual-specific bone alterations that are often caused by wear and tear and, therefore, lead to wide and unsatisfactory age estimates. Cementochronology is a tool that provides narrower adult age estimations. Relying on the circannual pattern of the acellular dental cementum (AEFC), this technique is capable of estimating adult age between ~10 to 2 years from real age. This study aims to evaluate the accuracy of the estimates obtained through traditional cementochronology from real age, and explore the potential of predictive models for a less subjective and time-consuming application of the technique. The cohort assessed included a total of 138 modern and archaeological teeth with known metadata, of which 88 were used to train the predictive models and 50 were used as testing samples to evaluate the accuracy and efficiency of the models. Teeth were processed following cementochronology protocols and analysed using ImageJ and R/R studio software. Preliminary results showed that, on average, cementochronology estimated age in adult remains within ± 10 years from real age using the traditional method and with the predictive models, both in the training and testing cohorts. More interestingly, the estimates narrowed to ±5 years from real age when predictive models were applied on specific age groups, demonstrating the potential of this approach and indicating a possible route for future investigation.

Keywords: Age estimation; Cementochronology; Life history reconstruction; Adult skeletal remains

PODIUM 6

Prevalence of directional asymmetry within the acetabulum and its implications for age estimation

Varsha Warrier[1], Marta San-Millán[2], Tanuj Kanchan[3]

[1]University of Derby; [2]University of Girona; [3]All India Institute of Medical Sciences

Age estimation is a prerequisite for human identification. Within the skeletal framework, pelvic acetabular variables constitute a promising age marker. Previous investigations with the pelvis have utilised either acetabulum for age estimation whilst assuming bilateral symmetry, with two published studies reporting significant bilateral asymmetry within acetabular variables. The present study delves into this aspect of bilateral asymmetry further, and explores the prevalence and impact of these side differences on age estimation. Data, obtained from 463 CT scans collected ethically from a medical institute in India and previously scored using a CT-based modification of the San-Millán Rissech acetabular age estimation method, was statistically analysed to illustrate the prevalence of asymmetry. The Wilcoxon test, Chi-square tests, mean % directional asymmetry values and equivalency ratios were utilised to assess population level lateralisation within the acetabulum. Furthermore, the association between asymmetry, and biological sex and chronological age was investigated, and the impact of asymmetry on age estimation was evaluated using Bayesian regression analysis. Statistically significant bilateral differences were observed in both males and females, and all five variables indicated left lateralisation in their scoring. Males largely demonstrated a greater degree of directionality, and directionality was seen to increase with age in both sexes. The right, and/or younger scoring acetabulum consistently garnered most accurate age estimates, contradicting previous assumptions of the left half being more reliable, leading to its selective utilisation. Further, in-depth, investigation is wanting with regards to anatomical factors and lived experience of individuals capable of rationalizing these findings.

Keywords: Forensic Age estimation; Pelvis; Acetabulum; Directional asymmetry; Bayesian regression

PODIUM 7 *Bones in transition: Geometric morphometric insights into subadult shoulder development*

Azahara Salazar Fernández[1], Laura Rodríguez[1,2], José Miguel Carretero[1,3], Rebeca García-González[1]

[1]University of Burgos; [2]Universidad de León; [3]Unidad Asociada de I+D+i al CSIC

Growth reflects incremental increases in size, whereas maturity signifies the attainment of a fully developed and functionally specialised adult form. These two interrelated processes form the foundation of skeletal development. While this topic has been predominantly studied using radiographic techniques, research based on dry bone analysis remains notably underrepresented in scientific literature. This scarcity presents significant challenges for age estimation and individual identification in both forensic and archaeological contexts. To address this gap, the present study focuses on the morphometric development of shoulder elements, an anatomically and biomechanically significant region that remains understudied in subadult individuals. The sample comprises individuals aged from birth to 20 years from two osteological collections. The first, housed at the Bocage Museum (National Museum of Natural History, Lisbon), includes individuals of known sex and age at death. The second consists of non-adult individuals excavated from the Dominican Convent of San Pablo (Burgos), curated at the Laboratory of Human Evolution (University of Burgos). Age-at-death estimates for this group were based on dental crown and root development. A total of 111 scapulae, 103 clavicles, and 108 humeri were analysed using geometric morphometric techniques to quantify shape changes across developmental stages. The results indicate that morphological variation associated with age progression is closely linked to the emergence and fusion of ossification centers, hormonal changes, and biomechanical influences. These patterns enable the definition of age groups based on skeletal maturity. This research provides a novel morphometric framework for age estimation from dry bones and enhances our understanding of postcranial ontogeny in humans. Moreover, its applicability extends to comparative analyses across hominid species, offering a valuable perspective for evolutionary and paleoanthropological research.

Keywords: Subadult skeletons; Ontogeny; 3D geometric morphometrics; Shoulder development; Biological anthropology

PODIUM 8

The relevance of the reference sample in acetabular age-at-death estimation: Implications of biological sex and sample size

Marta San-Millán[1], Varsha Warrier[2]

[1]University of Girona; [2]University of Derby

The acetabulum has been proposed as a reliable and precise age marker in medicolegal and bioarchaeological contexts. Although significant differences in the rate of acetabular aging appear to exist between sexes, the influence of the intrinsic characteristics of the reference sample—particularly in terms of sex composition and sample size—on the accuracy of age estimation is currently lacking. This study aimed to analyse the relevance of using sex-specific reference samples to test acetabular methodology accuracy and its software performance, and statistically compare the results using different sample sizes. Age was estimated using the most updated acetabular method on 611 documented skeletons from the Lisbon Collection (Portugal). The estimation error was calculated as the mean absolute error (|estimated age-chronological age|/n). A paired Student t-test was conducted to compare the results of age estimation in the same test sample using a sex-specific reference sample against different pooled or non-sex-specific reference samples of different sizes. In both the complete male and female samples, using sex-specific reference samples reduces the mean absolute error, but the inaccuracy differences were not significant, except when estimating age in female individuals using a comparatively small reference male sample. When results were divided by age groups, the mean absolute error was significantly lower using sex-specific reference samples only for males aged 40–64 years and females over 65 years. To conclude, using large, sex-specific reference samples minimizes both the mean absolute error and the number of un-estimated individuals by the associated software when the acetabular method is applied.

Keywords: Acetabulum; Age-at-death estimation; Accuracy; Reference sample

PODIUM 9

From race to population affinity: Rethinking language in forensic anthropology

Gemma Craven, Satu Valoriani[2], Nicholas Márquez-Grant[3]

[1]AOC Archaeology Group; [2]Liverpool John Moores University; [3]Cranfield University

Forensic anthropology has traditionally relied on 'racial' groups when attempting to identify the deceased. However, this terminology is inappropriate as it lacks biological accuracy and maintains outdated categorisations. As a result, 'ancestry', and now 'population affinity', has largely replaced 'race' in contemporary research and casework. This paper examines the evolving landscape of terminology across international forensic science journals and reference textbooks, highlighting both historical usage and emerging preferences within forensic anthropology. The results for the literature suggest that the common three-group classification, namely 'African', 'European', and 'Asian', continues to be widely used, though it is expected that more specific terminology will evolve as methods of ancestry/population affinity estimation advance. The term 'Indigenous' is currently preferred over 'Native' or 'Aborigine', but an alternative, 'First Nations', should be acknowledged and used in parallel to support wider acceptance. Similarly, inclusive terms like 'Latin/Latiné' and 'Latinx' are gaining traction over 'Hispanic' due to their broader cultural relevance and gender neutrality. Further debate is required to be able to standardise those terms in forensic anthropology and in consideration to missing persons bureaus and the media.

Keywords: Ancestry; Population affinity; Three-group classification

PODIUM 10 Troubling binaries: Sex estimation in bioarchaeological literature

Taylor Peacock[1]

[1]University of Cambridge

Skeletal sex estimation is considered part of routine skeletal analysis to help develop the biological profile. However, rising posthumanism and feminist critiques of skeletal sex estimation have demonstrated how binary approaches to skeletal bodies obfuscate intermediacy and place great importance on sex as difference. Despite the increasing critiques of skeletal sex estimation, there has been little research done on its publication in bioarchaeological literature. Therefore, this study examines 686 journal articles over five years from seven journals to understand a) how sex estimation is reported, and b) how authors deal with ambiguity. The results indicate that reporting skeletal sex estimation is common practice (82.2% of total articles), but that relatively few articles include intermediate individuals in their sample summaries (32% of total articles), and only 15% included them in the analysis. The absence of intermediate individuals suggests that the goal of sex estimation is to sort individuals into male and female. Such an approach is reinforced by the rise of aDNA as a 'confirmatory' testing. When males and females are compared in journal articles, sex is found to be significant in only 45% of cases, troubling the notion that males and female differences are always present in the past. When articles are examined by their main thesis, violence-based studies reported sex estimation of individuals in all cases. These patterns underscore how entrenched binary frameworks continue to shape bioarchaeological practice, often at the expense of recognising sex diversity in the past and demand critical reflection on bioarchaeological sexing practices.

Keywords: Gender; Literature review; Sex estimation

PODIUM 11 Bioarchaeologies of disability: Disabled people's perspectives

Anna Freed[1]

[1]University of East Anglia

Archaeologists often talk of our duties to the public, with an awareness of how archaeology has been weaponised by, or actively perpetuated, ideologies that cause harm to the living. Despite working with disabled bodies since its inception, bioarchaeology arguably remains reluctant to discuss disability in language familiar and accessible to contemporary disabled people. As a disability activist and archaeologist, I also felt that the works that do try to address disability, interfacing with Critical Disability Studies, are not necessarily reflective of the British disabled public's understandings of disability. But there is little existing research on public viewpoints for bioarchaeologists to incorporate into their academic or public outputs. My MA dissertation aimed to fill this gap – I held focus groups and interviews with 12 disabled people, with varying levels of archaeological knowledge, based in the UK and US. We discussed three case studies and common themes in bioarchaeology, such as care and epidemiology. Their opinions and perceptions offer insight into how disabled people perceive bioarchaeology, and how some feel alienated by current framings of disability in bioarchaeological research. Their insights into case studies, and suggestions for future collaboration, consultation, and co-creation also showed the value these engagements can have for both research and public-facing work. This talk hopes to encourage UK-based bioarchaeologists to collaborate with disabled descendant community members, and with the British disabled community, to both enrich our research, and ensure our public outputs do not contribute to the increasingly negative sociopolitical climate around disability.

Keywords: Disability; EDI; Palaeopathology; Community collaboration

PODIUM 12 Same smoke, different pipe: Educating archaeological discoveries of past tobacco use to school-aged children

Brian Costello[1], Sarah Inskip[1]

[1]University of Leicester

The Tobacco, Health and History Project (THH) has identified many new discoveries related to tobacco consumption in past human remains through palaeopathological, osteoarchaeological, and biomolecular analyses. The education to school-aged children on such complicated topics provides a difficult, yet potentially impactful area of outreach. Today, tobacco consumption has come full circle with new methods, such as vaping and e-cigarettes, now being utilized by a wide range of age groups. The health risks associated with tobacco tend to be forgotten, avoided, or overlooked alongside these new methods, attracting younger groups to its uses. However, given the prominent results of the THH project, utilising archaeological evidence has provided an interesting and engaging medium to (re)educate the public on the health risks tobacco holds. A pilot study was conducted in two different venues: an outreach event for Keystage 4 and 5 students at a local school in Leicestershire, and at the Irchester Field School Learning Program of Keystage 2 and 3 students. This paper highlights the results of the pilot study, analysing changes to the understanding of school-aged children through the teaching of aspects from the Tobacco, Health and History Project. In total, this project has used research-based teaching to reach over 1800 school-aged children and educate on the impacts of tobacco consumption, highlighting the role of bioarchaeology as a useful component in developing impactful societal education and change.

Keywords: Palaeopathology; Biomolecular archaeology; Education; Outreach

PODIUM 13 Prevalence of hallux valgus and osteoarthritis in two post-medieval populations from The Netherlands: A shoe problem?

Allegra Rafaschieri[1], Rachel Schats[1], Maia Casna[1]

[1]Leiden University

Footwear contributes significantly to foot health issues today. Research shows ill-fitting shoes drive hallux valgus development. Studies have investigated health effects of shoe styles, like high heels and narrow-toed footwear, linked to foot discomfort and poor podiatric health. While modern populations receive clinical attention due to the complexities in diagnosing conditions such as hallux valgus, historical foot health research is limited. However, analysing foot health could provide crucial information for reconstructing ancient lifestyles, showing footwear's historical health impacts. Foot pain affected past daily lives, causing discomfort and mobility issues. Osteoarchaeology is invaluable for reconstructing these aspects and understanding individuals' life histories. Our research examined hallux valgus and osteoarthritis in two Dutch post-medieval populations, considering footwear, social standing, and sex. This study analysed 100 individuals from Delft (high socioeconomic status) and Arnhem (low economic status), examining the first metatarsal to diagnose hallux valgus and osteoarthritis. The results showed no significant difference in hallux valgus rates between the groups (Arnhem, 16.6%; Delft, 19.23%) or sexes. However, a significant difference in osteoarthritis prevalence was found between Delft (21.5%) and Arnhem (2.1%) individuals, with a notable contrast between wealthy (22.2%) and lower-status (0%) females. Statistical analysis demonstrated a significant association between hallux valgus and osteoarthritis. These results suggest that investigating the co-occurrence of hallux valgus and osteoarthritis could lead to a better understanding of foot health in the past. Innovative approaches could limit the development of these conditions and discomfort in the future.

Keywords: Hallux valgus; Foot health; Ill-fitting shoes; Osteoarthritis

PODIUM 14 Peasant living conditions and labour in late medieval Valencia: Bioarchaeological findings from the maqbara of Benieto (13-16th c.)

Daniela Lorente[1]

[1]Universitat de Valencia

This study presents preliminary bioarchaeological findings from the Islamic cemetery (maqbara) of Benieto in La Safor, Valencia (Spain), dated between the 13th and 16th centuries. This project forms part of a broader study that aims to conduct a comparative analysis of Muslim and Christian communities in the region, with a particular focus on health, quality of life, and social treatment under Christian rule in the Duchy of Gandia. A sample of 50 individuals, selected from approximately 300 burials, was analysed using standard anthropological methods to assess biological sex, age-at-death, stature, pathological conditions, and skeletal stress markers. The goal was to reconstruct the lived experiences of this community and evaluate the extent of physical labour, disease, and care. Preliminary results suggest relatively good health and low incidence of chronic stress indicators, pointing to a population that, while physically active, was not subjected to the severe conditions typically associated with enslaved groups. These findings challenge traditional historiographical interpretations that depict the Muslim population as marginalized or expendable. Instead, the evidence supports the view that they were a valued and skilled labour force, particularly in the management of local agroecological systems. This research contributes a new bioarchaeological perspective to current debates on the role of Muslim communities in late medieval Iberia and underscores the importance of integrating human remains analysis into broader historical and socio-economic interpretations.

Keywords: Osteoarchaeology; Feudal society; Quality of life; Christian and Islamic cemeteries

PODIUM 15 Unearthing Sicily's past: A historical and methodological review of bioarchaeological research in Sicily

Emily May Wales-Ferguson[1], Dario Piombino-Mascali[2], Kirsty Squires[1]

[1]University of Staffordshire; [2]Vilnius University

***CONSIDERATION FOR THE STUDENT PRIZE**

Sicily's strategic position in the Mediterranean has long rendered it a crucial crossroads for cultural exchange, colonisation, and demographic transformation. Despite the island's rich archaeological record, bioarchaeology has frequently occupied a secondary role in archaeological research. As a result, there remains a significant gap in our understanding of the individuals who inhabited Sicily throughout both prehistoric and historical periods. Addressing this gap is essential, as bioarchaeological analysis provides critical insights into the health, diet, mobility, and lived experiences of past populations—enriching and humanising our interpretations of the island's complex past. This presentation will explore the development of bioarchaeological and physical anthropological research in Sicily, from 19th-century craniometric studies focused on racial typologies to the mid-20th-century decline in skeletal analysis due to methodological limitations. In the 21st century, advances in excavation, palaeopathology, and biomolecular analysis have renewed bioarchaeological research, providing a more nuanced understanding of Sicily's demographic history. Key studies from both earlier and recent periods will be discussed, illustrating the shift from typological approaches to more integrative and technologically sophisticated methods. In particular, this presentation will highlight recent investigations of human remains from Sant'Agata (Piana degli Albanesi), demonstrating how bioarchaeology can shed light on patterns of migration, health, and population structure from antiquity through to the medieval period. Ultimately, this research emphasises bioarchaeology's crucial role in future Sicilian archaeological investigations, contributing to our understanding of burial practices, dietary habits, migration, health, and social structures within the broader context of the island's historical transformation.

Keywords: Bioarchaeology; Sicily; History; Paleopathology; Demography

PODIUM 16 Bonds of doing: Dental modifications and activity markers in early churchyard burials from Gotland, Sweden

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This presentation will discuss initial results from osteological and biomolecular analyses of human skeletal remains from the Baltic island of Gotland, showing unexpected links between individuals who shared more than Christian mortuary practices. Unusually, the first churchyard burials on Gotland were furnished with artefacts, and previous work has focused on these as a key source for the chronology and process of Christianisation during the late Viking Age and early medieval period. The human remains, however, have largely been neglected and left dormant in storage facilities. Our study examined 26 individuals dating from the 11th to the 13th CE from Garda churchyard. Osteological assessment focused on biological characterisation, traces of activity during life, and evidence of funerary costume. Diet and geographic location over life courses were investigated through carbon, nitrogen, and strontium stable isotopes. Genetic connections were addressed through aDNA extraction. The results paint an unexpected picture of this community, which is not linked by kinship but by activity. The aDNA confirmed that the sex of all individuals was female, which was expected given the gender segregation of the first Gotlandic churchyards. The stable isotopes indicate that most or all the women grew up on Gotland. Yet genetic relationships between them are minimal: no first or second degrees of kinship were found. However, osteological assessment showed that 78% of the skeletons have dental modifications showing shared activities in life. Although these women were not mothers, daughters or sisters, were they linked by activities that forged bonds stronger than blood?

Keywords: Viking Age; Bioarchaeology; Osteology; Dental modifications; Churchyard burials

PODIUM 17 Diet, health and social inequality in London: A mother-infant perspective (1789-1853 CE)

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***CONSIDERATION FOR THE STUDENT PRIZE**

The influence of socioeconomic status on health, morbidity and mortality is well documented for the Industrial Revolution, but its effect on the maternal-infant nexus of diet and health is less clear. Bioarchaeological analysis offers the only means to directly observe this sensitive relationship. Utilising palaeopathological and chemical methods, this study provides a comprehensive understanding of the interplay between socioeconomic status, infant feeding practices, and the nutritional health of both mother and child. Non-survivors (20 weeks gestation to 3.5 years postpartum), early-life survivors (7-12 years) and adult females (18-45 years) from St. James's Gardens Burial Ground in London (n=419) were assessed. The short use of St. James's cemetery (1789-1853 CE) and defined social stratification, allows for the consideration of broad patterns of diet and health, and individual life histories. Non-specific indicators of stress, vitamin C and D deficiency, and caries provide evidence for nutritional health in early life. A sub-sample of individuals was selected for nitrogen and carbon stable isotope analysis of bone (n=95) and incremental dentine collagen (n=40). This analysis provided direct evidence of breastfeeding duration, weaning age, and nutritional stress. The results indicate a complex picture of early life diet and health in London, with individuals suffering from physiological stress regardless of social status. The peak of scurvy in infants (n=12/53, 22.6%), and high frequency of central incisor deciduous caries (n=8/139, 5.8%) suggests early weaning by some mothers. Stable isotope analysis also revealed variation in breastfeeding duration, highlighting diverse patterns of diet and health within and between social groups.

Keywords: Diet; Breastfeeding; Weaning; Scurvy; Maternal-infant health

PODIUM 18 From mummies to museum specimens: Potential and preservation of ancient pathogen DNA

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Ancient pathogen DNA, enclosed in human or animal remains, has great potential for illuminating the rise and evolution of infectious agents and their interactions with the hosts. Some diseases cause distinguishable marks on bones, many of which are well-documented in historical and pathological museum collections, whereas others can be found with metagenomic screening. Informed selection of samples is essential for successful investigations and helps minimise the need for invasive sampling and wasteful use of the unique bioarchaeological materials. Here, we provide insights on studying infectious diseases in samples from pathological collections and unusual archaeological contexts. We present new results of late-wave European plague from the Narrenturm pathological-anatomical collection in Vienna, Austria, and a potential case of tuberculosis in mummified tissues from the Seili Iisland in Finland, found due to the preliminary palaeopathological examinations or during metagenomic screening procedures. We also discuss DNA preservation in museum samples in general, and present naturally mummified remains from Church burials in Finland, where climatic conditions may have aided the preservation of organic materials. Finally, some considerations are given to the best practices in sampling these unique materials in regard to recovering pathogen DNA.

Keywords: Ancient pathogen DNA; Archaeogenetics; Museomics

PODIUM 19 Exploring proteomic analysis as a method for identifying brucellosis in archaeological human skeletons

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***CONSIDERATION FOR THE STUDENT PRIZE**

Brucellosis is a pervasive zoonotic disease which poses a significant global health problem today. Confirmed palaeopathological cases are limited, as aDNA is presently the only definitive method for identifying brucellosis infection in the past. This research aimed to explore a proof of concept for the detection of brucellosis pathogen protein sequences from human bone using the potentially more accessible biochemical method of immunoblotting coupled with proteomic analysis. A total of 20 individuals from the post-medieval Netherlands with archival documentation were analysed. Fifteen individuals were selected due to relevant pathological lesions, and occupational exposure to livestock. Five individuals with no occupational exposure or lesions were included for control. Extracted ancient proteins from lumbar vertebrae bone samples were analysed via immunoblotting using commercially available anti-brucella antibodies, directing further proteomic (LC-MS/MS) analysis. Anti-brucella antibodies revealed strong immunoreactivity on western blot against proteins extracted from one of the twenty analysed individuals. This individual had vertebral lesions, and was a livestock farmer. LC-MS/MS analysis identified multiple peptide matches to several Brucella species (spp.) protein sequences from the immunoreactive sample; however, none were unique to Brucella spp.. Interestingly, a single peptide, unique to the amiC protein of Brucella spp., was recovered from a different analysed individual who had vertebral lesions and occupational exposure to livestock. This research indicates that immunoblotting combined with proteomic analysis has potential for identifying archaeological brucellosis. However, further investigation and validation studies are required before it is considered definitive.

Keywords: Zoonoses; Brucellosis; Biochemical; Proteomics; Immunoreactivity

PODIUM 20 Skeletal lesions associated with leprosy in S. vulgaris (red squirrel)

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***CONSIDERATION FOR THE STUDENT PRIZE**

This paper presents the initial findings and analysis of lesions found in three skeletons of *Sciurus vulgaris* that were positive for *M. lepromatosis*. The specimens were part of a 2016 study by Avanzi et al. that tested 114 squirrels with and without soft tissue lesions, and were three of the six specimens from Scotland to test positive for *M. lepromatosis*. The carcasses were macerated in Category 3 Biohazard facilities at the National Museums Scotland, and the skeletons sent to the University of Leicester for macro- and microscopic analysis. Macroscopic analysis included age and sex analysis and identification of pathological lesions. Microscopic analysis included imaging using a Xradia Stereo microscope, micro-CT scanning and 3D imaging, the latter undertaken at the University of Nottingham. Erosive lesions, remodelling and porosity were found in multiple parts of the skeleton, including the podials, tarsals, distal tibiae, distal forelimbs, and in the nasal bones. Additionally, porous lesions were found in the caudal vertebrae. Together, this evidence furthers our knowledge of how this disease manifests in non-human animals. Overall, this means that, despite the squirrel's significantly shorter lifespan and different metabolism, the same skeletal lesion patterns seen in human cases of leprosy are found in red squirrels with the same disease. Further research needs to be done on other specimens with soft-tissue lesions associated with *M. leprae* and *M. lepromatosis* to investigate the extent of skeletal involvement in *S. vulgaris*, as well as the infection pathways previously considered to be exclusive to human cases of the disease.

Keywords: Zooarchaeology; Palaeopathology; Zoonosis

PODIUM 21 Diving into the accuracy and reliability of four 3D imaging techniques when assessing palaeopathological cases

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***CONSIDERATION FOR THE STUDENT PRIZE**

This preliminary study explores the accuracy and reliability of using 3D imaging techniques to assess palaeopathological cases. Four techniques are compared, namely computed tomography (CT), structured light 3D scanning (SLS), photogrammetry and videogrammetry. The aim is to determine which technique/s provide a better fit for real bone assessment and to explore videogrammetry's potential in palaeopathology, which has never been done before. Eight cases associated with the mortuary context of the 3rd Order of Our Lady of Carmo (Portugal) were selected. For each case, four 3D models were built, resulting in a total of 32 models overall. Metric measurements (e.g., maximum lengths) were taken on the dry tissues by 2 observers and repeated 4 times over separate sessions. The same measurements were collected on the 3D models by 3 observers. Data analysis was performed in Excel and IBM SPSS Statistics v30.0.0.0. Regarding accuracy, SLS performed best with an absolute error of 0.47±0.65 mms, followed by CT (0.73±0.53 mms), videogrammetry (1.01±0.78 mms) and photogrammetry (1.19±0.90 mms). Intra- and inter-observer reliability respectively identified no to excellent and no to moderate levels of agreement. However, caution is necessary as a limited number of measurements were collected. Moving forward, a greater number of data will be obtained. While SLS performed better than the other techniques overall, CT, photogrammetry and videogrammetry have application in specific cases, such as videogrammetry for large bones. Despite challenges, 3D techniques open new possibilities for palaeopathological assessment and research, including complementing diagnoses, teaching and collaboration, while minimising risk to fragile remains.

Keywords: Computed tomography; Structured light 3D scanning; Photogrammetry; Videogrammetry; Accuracy and reliability

PODIUM 22 The osteological paradox in medieval leprosy: Who is affected? An osteobiographical analysis of medieval people with leprosy

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Nowadays, we know that the chance and severity of infection depend upon immune system proficiency, leading to a disease expression ranging from skin lesions and loss of sensation to major complications, such as blindness, anosmia, deafness, motor nerve damage, and loss of the bony structure of feet, hands and nasal area. Clinical research has identified a number of risk factors for contracting and developing leprosy, which include genetics, diet, lack of clean water, and gender and sex. It is hard, however, to identify which of these risk factors play a role in disease severity, as stigma aggravates disability rates. Many of these precursors can, however, be assessed in medieval osteoarchaeological remains, when people experienced less stigma and more support. In this paper, osteobiographical data of over 300 skeletons are compared to identify common factors in leprosy risk. Diagnosis certainty/disease is recorded in four stages: no, possible, probable and pathognomonic leprosy, allowing precursors to be ordered alongside lesion severity. Each leprosy-related lesion is also scored and compared individually. Included in the analysis are enamel hypoplasias (EH), dental health, cribra orbitalia, stature and dentine carbon and nitrogen values of second (pre)molars. This research shows that, although all leprosy categories suffer more stress in childhood, 'possible cases' are most severely affected by short stature, high EH counts and severity, and lower δ13C and δ15N values, suggesting those with more difficult childhoods succumb to leprosy at earlier stages, while those with the fewest signs of early life stress are less at risk.

Keywords: Leprosy; Bioarchaeology; Life-course; Osteological paradox; Disease risk

PODIUM 23 The Winchester Cathedral mortuary chests: Curating the bones of kings?

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[1]University of Winchester; [2]University College Dublin

In September 2012, six mortuary chests were removed from the presbytery walls of Winchester Cathedral for conservation work. The names painted on these chests suggest that they contain several kings, bishops and one queen from the early medieval period. Dates of the kings thought to be contained within the chests range from Cyngils (died 641/3) to William (Rufus) II (died 1100). This allowed the opportunity for an examination of the human remains contained within. We present some historical background to the curation of these human remains at the Cathedral across the centuries, alongside interventions made by several antiquarians who were allowed access to the remains in the eighteenth and nineteenth centuries. These records, held in the archives of the Hampshire Cultural Trust, will be compared to an inventory of the contents undertaken by the authors. One of our aims was to try and re-associate bone elements from this discrete commingled collection, to enable individual identities to be once more attributed to those contained within the chests. The results indicate that at least one woman, twenty men and four children are represented. Initial radiocarbon dates from 23 femur bones and 12 skulls give a range of dates for the material, from the mid seventh century to the late twelfth century CE, closely matching the date range for those named on the chests. This paper aims to provide an insight into the curation practices that have occurred throughout the last 1000 years since the remains were translated or interred within the cathedral.

Keywords: Curation; Antiquarian; Commingled; Re-association; Identities

PODIUM 24 ‘Refitting in dry dock’: Considering archaeological naval cemetery populations through the commingled and fragmented human remains

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***CONSIDERATION FOR THE STUDENT PRIZE**

During the mid-2000s and 2010s, archaeological excavations were carried out at the sites of three British naval hospitals, Plymouth, Haslar and Greenwich, dating back to the 18th and 19th centuries. These excavations uncovered hundreds of undisturbed burials, along with substantial amounts of fragmented and commingled human remains. This study aimed to examine the commingled remains from the Plymouth Naval Hospital (1764 – 1825) and compare them to the articulated remains, to discover what has been missed. The commingled assemblage included a minimum of 128 heavily fragmented individuals. Biological analysis indicates a young population with a mixed sex distribution, approximately half of whom died before reaching skeletal maturity. The remains provide diverse evidence for disease, injuries, healthcare and the presence of post-mortem anatomisation. The results will be compared with the historical knowledge of those who served in the Georgian Royal Navy and published osteological studies to consider how this population would be interpreted through the commingled remains. The overall profile of these commingled remains is coherent with a Naval cemetery and aligns with the profile of the articulated remains, as well as providing insights into the individuals this assemblage once was. This study demonstrates the value of analysing commingled remains and highlights their potential to provide representative data about their original population and the taphonomic factors that have influenced preservation.

Keywords: Maritime; Georgian; Commingled

PODIUM 25 Caring for the dead: Results of archaeothanatological analysis of burials from the early Neolithic of central Europe

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The burial record of the early European Neolithic Linearbandkeramik (LBK) culture (c. 5500–4900 cal BC) is extensive, comprising thousands of individuals and diverse mortuary rites. However, one form of practice is typically cited as 'normative'. This comprises of the deposition of a fresh, whole body in a grave at a cemetery, resting on its side with limbs lightly flexed. This relatively narrow definition may lead to other forms of practice, such as alternative body positions and depositional contexts, being understudied or even explicitly dismissed as deviant. This paper presents the results of a retrospective archaeothanatological analysis of over 200 LBK burials from central Europe. By employing a body-centred taphonomic approach, it becomes possible to move beyond the traditional binary of normative and deviant. The findings reveal subtle, novel evidence for diversity in the treatment of the dead, including acts of intimacy and care. These insights provide new material for understanding attitudes toward death and the dead within LBK communities.

Keywords: Archaeothanatology; Funerary archaeology; Neolithic

PODIUM 26 Mortuary treatments in Early Bronze Age Britain: A micro-CT evaluation of bacterial diagenesis in bone to investigate burial practices

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[1]The University of Birmingham

***CONSIDERATION FOR THE STUDENT PRIZE**

This paper examines the mortuary practices of the Early Bronze Age British 'Beaker' population (c.2450-1850 BCE) using micro-computed tomography (MCT) to comparatively evaluate for bacterial diagenesis in bone. Previous studies indicate postmortem manipulations of Beaker burials often took place, including disarticulation, secondary burial, and possible 'mummification', though their extent and complexity remain undetermined. The objective of this study is to gain a fuller understanding of these practices by analysing, for the first time, a large sample of Beaker individuals using MCT. Study aims include: (1) determine if postmortem treatment is observable in bone-tissue microstructure; (2) identify variation in corpse management practices relating to age/sex, grave types and mortuary environments; (3) assess the effectiveness of non-destructive MCT for the investigation of bacterial diagenesis in skeletal samples. MCT scans of humeri and femora from 52 individuals from 19 sites were analysed, using an enhanced Oxford Histological Index (OHI) quantification method, adapted for MCT assessment. Results indicate: (1) variable levels of diagenesis both in the overall sample and among individuals interred at the same site, demonstrating variation in corpse management practices and possible applications of preservation techniques that arrested decomposition; (2) variation between upper and lower limbs of the same individual and throughout single bone elements, which has significant implications for understanding decomposition, and for evaluating the results of previous histological analyses of archaeological skeletal remains based on single thin sections; (3) significant differences in preservation between the young adult and middle age categories, which may indicate differential mortuary treatment based on age.

Keywords: Human bone histology; Microbioerosion; Bacterial diagenesis; Micro-computed tomography; Early Bronze Age

PODIUM 27 Testing the waters: The effect of deposition environment on dental diagenesis

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***CONSIDERATION FOR THE STUDENT PRIZE**

While dental remains in archaeology are widely studied, less research has been conducted on the initiation of diagenetic changes across the early postmortem years or how these modifications are impacted by deposition environment. To investigate this, we analysed 60 in-situ pig teeth deposited in aquatic and terrestrial environments, 10 at each 15-week time point, as well as 15 extracted, unburied controls. Initially an increase in transparency in the outer dentine of terrestrial samples was noted, but after 10 months, aquatic samples experienced a similar effect in their root dentine. This transparency corresponds to a loss of dentine fibres in histological cross-sections. However, no changes in dentine mineral structure or composition could be observed via backscattered electron microscopy (BSE). We also used BSE to observe wear patterns to the enamel, noting a difference in physical structure of antemortem vs postmortem enamel wear. Additionally, cells in the cementum appear to lose their canaliculi. This contrasts with previous observations of wider canaliculi in taphonomic osteocytes of long bones. Extracted teeth did not experience a loss of dentine fibres at the same scale as the in-situ teeth but acquired more inclusions to the pulp. These findings underline the issues with using extracted teeth as a substitute for in situ remains. In summary, distinct differences were observed at advancing postmortem intervals and varying depositional environments. We hope these findings will lead to further explorations into the processes leading to these changes and potential applicability in human remains in a forensic setting.

Keywords: Tooth; Postmortem; Taphonomy; Histology

PODIUM 28 Assessing bias in cremated remains deposits: The role of fragmentation and deposit size in skeletal element identification

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The analysis of cremated human remains presents persistent challenges due to the high degree of fragmentation and variability in preservation. This study aims to assess how fragmentation level and deposit size influence the identification of skeletal elements in cremated remains deposits. Building on previous work that documented the frequencies of identifiable elements, the present research shifts focus toward evaluating factors that affect element representation, with the goal of identifying patterns of preservation bias. The dataset comprises over 11,000 identified fragments (totalling more than 100 kg) derived from nearly 5,000 cremated remains deposits recovered from 20 archaeological sites, spanning from the Early Bronze Age to the Early Medieval period. The analysis applies a statistical framework to examine the relationship between deposit characteristics—namely weight and recorded fragmentation—and the presence and diversity of identified skeletal elements. Preliminary results indicate variability in element representation correlated with deposit size and fragmentation, particularly affecting anatomical regions typically used in demographic assessment. These patterns suggest a need to contextualise identification outcomes within the structural constraints of assemblages, rather than treating them as uniform datasets. This study contributes to the refinement of bioarchaeological methodologies by highlighting how assemblage characteristics shape osteological visibility. The findings underscore the importance of critically evaluating analytical assumptions in cremation studies and provide a foundation for improving comparative frameworks across archaeological contexts.

Keywords: Cremated remains; Fragmentation analysis; Deposit size; Skeletal element identification; Preservation bias

PODIUM 29 Population dynamics and cultural transitions: Using biodistance to investigate social networks and mobility from the Iron Age to Early Medieval period in Wessex, England

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[1]Cardiff University

This study investigates social networks and mobility across the longue durée of the Iron Age, Roman, and Early Medieval periods in Wessex, England. Although bioarchaeological research has improved understanding of how these cultural transitions affected lived experiences, their impact on population dynamics is little understood, still dominated by much-critiqued models of mass migration or acculturation despite calls for nuanced, regionally specific models. The present study addresses these needs using dental morphology to measure biological distance in Wessex throughout these periods. Dental morphological traits were recorded for 765 individuals across 22 sites following the Arizona State University Dental Anthropology System. Population affinity was analysed with the Mean Measure of Divergence (MMD), using 25 uncorrelated traits with good intra-observer agreement. MMD values among the Iron Age samples indicate significant ($p<0.05$) differences between geographically proximate sites thought to be part of the same tribal networks, while geographically distant 'central place' sites (Maiden Castle and Danebury) were phenetically more similar. Social organisation changed in the Roman period, with greater correlation between MMD and geographic distance than in other periods, consistent with wider, more accessible networks (though this relationship was non-significant, $p=0.18$), and this trend continues into the Early Medieval period. Strong affinity was detected among the western sites across the Roman and Early Medieval periods, but little correlation with geographic distance was identified among the eastern sites. These findings demonstrate a complicated picture of population affinities with changing patterns of social interactions and contextualise the evidence for migration across Wessex during these periods.

Keywords: Dental anthropology; Migration; Dental nonmetrics; Biodistance; Bioarchaeology

PODIUM 30 Towards an integrated bioarchaeological perspective on York in the Roman Empire

Elisha Meadows[1], Michelle Alexander[1], Malin Holst[1,2], Christine McDonnell[3], Jane Evans[4], Angela Lamb[4], Doris Wagner[4]

[1]University of York; [2]York Osteoarchaeology Ltd.; [3]York Archaeology; [4]British Geological Survey

York was a significant provincial capital strategically placed on the northernmost fringe of the Roman Empire between the 1st to 5th centuries AD. Excavations across York have revealed a substantial and complex Roman-period funerary landscape of over 1,000 known burials, including contemporaneous cremation and inhumation practices and extraordinary funerary behaviour (e.g., decapitation and gypsum burials). Research in the last 15 years on York's Roman-period population has successfully employed isotopic, osteological and aDNA analysis from 4 cemetery areas. This dataset provides an emerging image of a dynamic and diverse society which remained deeply connected to the rest of the Roman Empire, despite its location on the fringes. This research project analyses a further 193 burials from 14 cemeteries, to explore a representative view of life in Roman-period York. Through a multi-isotopic approach (C, N, O, Sr, Pb and BABAO funded S analysis) across the known funerary landscape, an objective picture of population diversity is sought to explore how diet (n=193) and mobility (n=60) varied at an intra- and inter-individual and population scale. Preliminary results have already indicated potential for greater variability in female diet in the city. The incorporation of interdisciplinary evidence from funerary contexts with the osteological and biomolecular data provides the necessary contextual dimension to explore all social groups, answering questions relating to personhood, mobility and social behaviours and highlighting new insights into the lived experiences of the people of Roman-period York.

Keywords: Stable isotopes; Personhood; Diet; Mobility

PODIUM 31 Collaboration is key: Analysis of a 5th-7th century cemetery in Northamptonshire

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The discovery of burials at Nether Heyford led to rescue excavations between 2005 and 2022. The first eight burials excavated, including a significant sword burial, were reburied. Following the discovery of a further 22 burials, it became clear that the assemblage held great research value and warranted further analysis. Initial aims were to ensure the assemblage was subjected to full osteological and palaeopathological analysis and that opportunities were explored to identify other partners for biomolecular support prior to any further reburial. With the support of a commercial grant from BABAO this was achieved. Results of the analysis suggest that the cemetery reflects a small rural population, the core of which comprised people raised locally with a few outliers. The range of burials include those of infants, children, and adults, with males and females represented equally. Palaeopathological evidence includes possible growth plate injuries and associated coxa valga in one young female. The cemetery at Nether Heyford can perhaps be viewed as one typical of the rural population at the time. Given the paucity of good data for the period in the region, this addition to the literature will prove a useful comparison for future research. By working with all stakeholders and the local archive, we have secured a long-term curatorial solution for the assemblage, which will see this important assemblage retained for future generations. This presentation explores the results of osteological and biomolecular analyses and how the collaborative nature of the project was critical in achieving long-term positive outcomes.

Keywords: Collaboration; Stakeholders; Curation

PODIUM 32

Bioarchaeological insights into a catastrophic population from medieval Leicester

Mackenzie Masters[1]* and Jordi Ruiz Ventura[1,2], Elīna Pētersone-Gordina[2], Stephen Baker[3], Mathew Morris[3], Malin Holst[1,2], Michelle Alexander[1]

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***CONSIDERATION FOR THE STUDENT PRIZE**

This study investigates the Waterside cemetery in Leicester, UK, adding to the growing evidence that Leicester may have been struck by a series of catastrophic events in the 11th-13th centuries. Waterside comprises multiple burials (n=39), alongside single (n=164) and double (n=24) inhumations, representing 445 individuals. This study explores burial treatment, diet and health status of this population, aiming to better understand the apparent catastrophic mortality. A multi-method approach integrating osteology and stable isotope analysis of carbon (δ13C) and nitrogen (δ15N) for dietary reconstruction was employed. A total of 173 individuals, representing adults of both sexes (M=34, F=35), non-adults (n=104), as well as 40 local animals serving as an isotopic baseline, were assessed. Results from dietary reconstruction reveal a homogenous diet across the population, irrespective of burial treatment, sex, age and childhood health status, representative of a terrestrial-based C3 diet with small contributions of aquatic resources. The palaeodemographic composition of the multiple burials compared to the wider cemetery is characteristic of a catastrophic mortality profile. However, females and non-adults are better represented in the multiple burials. There is a higher than typical prevalence of childhood stress indicators across the cemetery, suggesting generally poor health status and perhaps lower social status of this population. In conclusion, the mortality profile, mass burial treatment, and lack of peri-mortem trauma suggest probable episodic catastrophic event/s; however, attempts to identify the cause of mortality remain inconclusive.

Keywords: Medieval England; Multiple burials; Dietary reconstruction; Osteology

PODIUM 33

The price of progress: Childhood frailty in England across the medieval (11th-15th centuries) to post-medieval (16th-19th centuries) transition

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***CONSIDERATION FOR THE STUDENT PRIZE**

Transition from the medieval to post-medieval periods in England is associated with profound social, economic, and environmental change; the most extreme driven by industrialisation. Increases in overcrowding, pollution and poor sanitation would have had direct impacts on those growing up at this time. To explore shifts in childhood health and development across these periods, 370 child, adolescent and young adult skeletons from 3 medieval (11th-15th centuries) and 2 post-medieval sites (16th-19th centuries) in England were assessed using the Developmental Frailty Index (DFI). This novel method assesses frailty in young peoples' remains by scoring multiple biomarkers of stress to create comprehensive yet comparable frailty scores. This allows the examination of the cumulative impacts of societal and environmental change. Preliminary results using a 12 biomarker DFI and accounting for age-at-death shows that post-medieval individuals present higher frailty scores than their medieval counterparts. However, this difference does not reach statistical significance. Post-medieval individuals did show higher proportions of several biomarkers, including dental enamel hypoplasia, periosteal new bone formation, rickets, and scurvy; a wider variety of biomarkers were represented in the younger age groups. This paper will explore these findings, which may indicate a more complex narrative than expected through the lens of frailty and resilience. Additionally, accounting for inter-site variability will be explored as understanding local environments and societal composition is important for interpretation of broad temporal trends when utilising multiple sites. Overall, this research hopes to contribute to a more nuanced understanding of early life health in the face of extreme change.

Keywords: Palaeopathology; Frailty; Childhood; Medieval; Post-medieval

PODIUM 34

"… many would rather die": Skeletal evidence for deprivation in post-medieval Hull

Lauren McIntyre[1] Louise Loe[1], Mark Gibson[1], Stephen Rowland[1], Annsofie Witkin[1], Noel Hincha[2], Ellen Kendall[2], Janet Montgomery[2], Joanna Moore[2], Bryony Rogers[2], Sangyu Shen[2], El Stefani[2], Aimee Wilkin[2], Kyriaki Anastasiadou[3], Tom Booth[3], Jesse McCabe[3], Pontus Skoglund[3], Marina Soares de Silva[3], Pooja Swali[3]

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Excavations at Trinity Burial Ground, Castle Street, Hull from 2020-2021 recovered 7,208 discrete articulated skeletons dating from AD 1783-1861. As a major trading port, many of Hull's population were employed in occupations related to seafaring, with an emphasis on ship building and associated outdoor work. Although the socio-economic status of the cemetery's parent population was mixed, the excavated sample was predominantly working class. This presentation explores the health and well-being of the juvenile population, employing osteological, historical and biochemical data. Growth profiles were created plotting the measurements of tibial diaphyseal lengths from 214 juveniles against their estimated dental ages (Gowland and Newman 2018). Results show that newborns and young children experienced stunted growth, potentially because of early weaning and inadequate weaning diet. Poor growth was more marked in Hull than other contemporary assemblages. Results suggest that individuals from Hull never experienced "catch up" growth in later childhood and adolescence. Sex determination of a sample of 51 juveniles (determined using enamel peptides and aDNA) indicated that mortality rates were higher among girls than boys, and patterns in adult stature, health indicators and dietary isotopes suggested males were better nourished than females. In addition, one infant and three older children had fracture patterns which may have been caused by violence, possibly child abuse. These findings suggest greater investment in the nutrition and maternal care of boys over girls, and, emphasise how nutritionally deprived the Hull population was compared with the rest of the country.

Keywords: Post-medieval; Isotopes; Palaeopathology; Deprivation; Juveniles

PODIUM 35 Evidence of anatomisation from the 19th century Bristol Union Workhouse cemetery

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Amongst the graves, at what is now called Blackberry Hill in Bristol, of the men, women, children and babies who had lived and died in Bristol Union Workhouse (c1832-c1896), Stapleton, were coffins of the dissected or anatomised parts of the individuals (and animals) who had been returned for burial after dissection. In addition, there was evidence of autopsy from the many craniotomies (and thoracotomy) identified. They all post-date the 1832 Anatomy Act, which had legalised the use of paupers' bodies for dissection. These coffins have previously been recorded at hospital burial grounds and some other cemeteries, but with nearly 100 examples at Blackberry workhouse and excellent preservation, they are fine examples of the physical evidence of 19th century medical training, surgical practices and experimentation. Examination of the contents of the coffins, the location of the saw cuts and knife marks, as well as the age and sex of the individuals, has enabled some patterns to be identified. The paper records for the workhouse are not available as they were housed in a building destroyed during the Bristol Blitz in WW2. Evidence from medical containers and implements also included in the coffins infers that the Bristol medical school was the recipient of the dead paupers. Dissected animals were included with the human skeletal remains, and they offer a fascinating insight into the interests of the medical professionals of the 19th century. These include a complete skeleton of a crab-eating macaque, cats, dogs, birds, and a guinea pig, plus many others.

Keywords: Anatomy; 19th century; Workhouse

POSTER ABSTRACTS:

POSTER 1

The Holocene brown bear (Ursus arctos L.) in Morocco: A study of its diet by ZooMS and isotopic analysis

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***CONSIDERATION FOR THE STUDENT PRIZE**

The North African brown bear, also called the Atlas brown bear, is a species now extirpated in Africa. It lived until the nineteenth century, at least in northern Morocco, as reported by some historical sources. The classic description presents it as a bear of small size, according to its small phalanges compared to the brown bear from the Iberian Peninsula, with a diet based on fruits and roots. The historical citations may be doubtful, but its presence in sites is confirmed. Its skeletal remains, although scarce, are preserved in some cave sites, along with a variety of mammalian fauna of Holocene age. In this work, we have applied isotopic analysis of the skeletal remains of Atlas bears and other species in order to characterize their diet. The analysed skeletal remains are from the cave sites of el Hammar and Hattab II, located in northern Morocco. In both sites, the bone remains were usually fragmented and, therefore, taxonomic identification based on morphology was only possible in a low percentage. However, the application of peptide fingerprint analysis of bone collagen, known as ZooMS (Zooarchaeology by Mass Spectrometry), allowed us to broaden the faunal spectrum and the number of remains identified, which included bears, mustelids, felines and several ungulates. The result of the isotopic analysis of the Atlas bear, compared to contemporary carnivores and ungulates, shows that the historical sources were correct, and that the diet of the African brown bear was mainly herbivorous.

Keywords: Hammar cave; Hattab II cave; Bone collagen; Peptide fingerprinting; Stable isotopes

Poster Session 3

POSTER 2

Craniofacial asymmetry: Identifying developmental stress in adult skeletons

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This research aims to enhance the field of bioarchaeology by investigating whether craniofacial fluctuating asymmetry (FA) can effectively identify developmental stress from childhood in adult skeletons. Developmental stress refers to factors that disrupt an organism's balance, while fluctuating asymmetry serves as an indicator of physiological stress experienced during early life. This study analyzed 29 skulls from the Black Gate (n = 18) and York Barbican (n = 11) collections housed at the University of Sheffield. Eight bilateral craniofacial measurements were recorded, along with buccolingual and mesiodistal dental diameters, and linear enamel hypoplasia (LEH) was used as a control variable. FA scores were computed using three indices (FA8a, FA17, and FA11) to explore potential relationships between craniofacial and dental asymmetry and LEH. FA8a scaled out size variation by taking the ratio of the right side divided by the left. FA17 was equated with the sum of multiple individual FA8a scores to create an overall FA rating for each variable per adult skeleton. Lastly, FA11 was calculated based on numerous traits per individual to provide an overall FA score per adult skeleton. Although no significant correlations were identified between asymmetry measures and LEH, a positive relationship emerged between craniofacial and dental stress indicators and FA scores, reinforcing the viability of FA as a marker of developmental instability. Regression analyses further corroborated this relationship, emphasising the complementary role of craniofacial and dental asymmetry in reflecting physiological stress. Nonetheless, methodological limitations highlight the necessity for further research to enhance the precision of FA calculations.

Keywords: Craniofacial asymmetry; Fluctuating asymmetry; Developmental stress; Dental asymmetry; Linear enamel hypoplasia

Poster Session 2

POSTER 3

The origins of animal traction in Britain

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***CONSIDERATION FOR THE STUDENT PRIZE**

Animal traction is one of the key technological innovations that drove socioeconomic transformations in prehistoric societies. However, its emergence in Britain has remained poorly understood, mainly due to the limited preservation of physical evidence and the absence of iconographic representations associated with animal traction. Given the fragmented artefactual evidence, an osteological approach is the most promising method for advancing understanding of the development of this technology. This study applies two osteological methods (biometry and the Pathological Index) to over 2,500 cattle metapodials and phalanges from 22 sites across Britain. The convergent results indicate that the earliest substantial evidence for cattle traction in Britain emerged during the Middle to Late Bronze Age (1600-700 cal. BC). The beginning of this period is characterised by profound social transformations, such as agricultural intensification and the emergence of complex hierarchical social structures, to which the technological innovation likely contributed. Animal traction was revolutionary, not only in enhancing cultivation capabilities but also fostering a new relationship between humans and animals. Cattle became active participants in community life, working alongside humans in labour-intensive tasks that transformed agricultural practices and broader economic structures.

Keywords: Animal traction; Later prehistory; Biometry; Palaeopathology; Zooarchaeology

Poster Session 4

POSTER 4

Investigating Beta-Thalassaemia in micro-CT scans of deciduous teeth

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***CONSIDERATION FOR THE STUDENT PRIZE**

Beta-thalassaemia is a genetically inherited anaemia prevalent among Mediterranean, African and Asian populations. Its presence in Britain in the Roman period suggests long-distance migration. It has been proposed that beta-thalassaemia may result in changes in the deciduous incisors, creating an 'iris-like' appearance to tooth cross sections on micro-CT. To explore this hypothesis, three incisors, two canines and two first molars from a child diagnosed with the disease from Romano-British Poundbury Camp cemetery in Dorset were subjected to micro-CT scanning to detect alterations in the dentine. Additionally, seven incisors from two other children with possible thalassaemia, and three incisors from a child with possible scurvy, were scanned for comparison. Interglobular dentine (IGD), a mineralisation defect that is a sign of disruption to vitamin D, calcium or phosphate pathways, was identified in all scanned teeth from the child with probable thalassaemia, but a definitive thalassaemia sign was not detected. Furthermore, two teeth from the comparative cases exhibited taphonomic changes throughout the dentine, which were not visible during macroscopic analysis. These findings underscore that scanning a single tooth may not accurately represent all teeth from an individual. Research has suggested that due to the age at which symptoms begin (c.6 months), beta-thalassaemia is unlikely to affect incisors due to the age that they develop. However, later developing teeth could present with IGD as the disease can result in iron-overload causing disruption to vitamin D, calcium or phosphate pathways. Future research should prioritise scanning the teeth of individuals suspected of having beta-thalassaemia.

Keywords: Non-adult; Dental defects; Romano-Britain

Poster Session 1

POSTER 5

Harris lines and their impact on trabecular bone microarchitecture: A microcomputed tomography investigation

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[1]University of Dundee

Harris lines (HL) are proposed skeletal markers of non-specific stress, forming during brief growth arrest, and are frequently used in past population health studies. However, some research suggests HL occur as part of normal bone development. Despite debate on their aetiology, limited research exists on their 3D micro-architecture. This project aimed to qualitatively and quantitatively investigate the trabecular microarchitecture of HL in juvenile distal tibiae using microcomputed tomography (micro-CT). Radiographs of 97 subadult tibiae from the Scheuer collection were assessed with regard to HL presence, number, and position. Subsequently, micro-CT scans were used to quantify trabecular bone parameters in HL and non-HL regions. Intra-observer agreement for HL identification, number, and 3D micro-architecture parameters was assessed. HL identification and counting showed very good agreement. However, statistically significant differences were found in 4 of 7 trabecular parameters in HL cross-sections across three observations, potentially due to HL morphology increasing volume of interest placement subjectivity. Comparing HL to non-HL bone, connectivity density and trabecular thickness showed no significant differences, indicating that, despite HL being described within the literature as possessing thickened and highly interconnected trabeculae, this was not supported by the results. HL bone displayed increased trabecular number with decreased trabecular separation, lower bone volume fraction, and was more isotropic. HL at different tibial positions showed no significant differences in trabecular parameters. Results suggest HL trabecular microarchitecture might be less affected by biomechanical changes than typical trabecular bone, highlighting the need to revise the understanding of HL formation and their interpretation.

Keywords: Harris lines; Trabecular microarchitecture; Juvenile osteology; Microcomputed tomography

Poster Session 1

POSTER 6

Osteological evidence of 'sea legs': An interpretation of bilateral sub-cortical cavitation of the tibial M. Popliteal of a Georgian sailor

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***CONSIDERATION FOR THE STUDENT PRIZE**

This project presents an uncommon example of possible enthesopathic changes within the lower limbs of an individual, an estimated male between 17 and 24 years of age, recovered from the associated burial grounds to the Royal Naval Hospital in Plymouth, England. This individual was analysed for a separate PhD project, when an additional fossa was noted on the posterio-lateral surface of the right proximal tibia. Initially, this feature was considered to be taphonomic damage. However, due to the absence of trabecular bone exposure, contrast in colour or irregular borders, this was dismissed. When re-examined, it was noted that the left tibia also displayed a similar feature in the same location and whilst the fossae differed in shape, it was irrefutable that this was a bilateral feature. The cavitations, measuring 4.56 mm (left) and 10.16mm (right) in diameter, respectively, appear at the attachment site of the popliteal muscle, suggesting an entheseal change. The popliteal muscle typically corresponds to balance in the lower limb and self-regulation in stance. When it is considered that entheseal changes typically form in later life, with the exception of extreme muscular strain, it is possible to postulate that this individual spent many of their early years at sea, creating these cavitations due to the constant muscular response to the instability of the ship. This study will, therefore, apply and subsequently interpret macroscopic features and digital scans to consider the possible aetiology for this manifestation and interpret the potential lived experiences which resulted in this skeletal development.

Keywords: Enthesopathies; M. Popliteal cavitation; Tibia; 19th century; Musculo-skeletal stress

Poster Session 4

POSTER 7

Deciphering disability narratives in 3rd-4th century Roman Irchester

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Impairment is as much a part of life today as it was in the past, but understandings of disability are culturally and historically contingent. This osteoarchaeological analysis builds a context-specific definition of disability to examine the experiences and perceptions of disabled and chronically ill individuals and their access to healthcare in Roman Britain. The parameters of an "average" local life course were delineated through macroscopic osteological analyses of a 3rd–4th century CE mortuary population (N=60) from Irchester (Northamptonshire, U.K.), in the Middle Nene Valley, a region with an abundant archaeological record of Roman occupation. The most commonly observed lesions were identified and treated as an expected component of the life course. Once the local average was established, it was possible to identify outliers, which were then analysed for evidence of physical or social impairment. Not all outliers were considered impaired, but by narrowing down the pool of potential cases it was possible to formulate a more focused definition of ancient disability. The established baseline included high rates of upper body fractures and osteoarthritis, as well as lower limb infections. Using this baseline, potentially disabled individuals were identified using the Index of Care strategy, including cases of chronic infection and congenital malformation. The results of palaeopathological analyses were integrated with individuals' demographic profiles. In future, isotopic analyses will be employed to create a holistic understanding of disabled lives in the past. This work will contribute to our understanding of disability as an identity in Roman Britain as a whole.

Keywords: Paleopathology; Disability; Care; Roman Britain

Poster Session 2

POSTER 8

Skeletons in the closet: The legacy of anatomised remains

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***CONSIDERATION FOR THE STUDENT PRIZE**

Many modern anatomised teaching and research collections were acquired through ethically questionable means involving a lack of consent, colonial exploitation, and extremes such as body snatching. This has created an ethical quandary and cyclical dilemma for many institutions acknowledging the harm these collections have caused but falling short of proposing potential solutions. This study explores complexities stemming from skeletal acquisition and how the subsequent use of human skeletal remains continues to be a debated topic in the teaching of osteology-related subjects within UK universities. This study further explores the colonial roots of anatomical collections in tandem with current legal frameworks and their impact on ethical efforts, including ongoing discussions surrounding retention and repatriation, and decolonisation efforts in current bioarchaeological spaces. Research methods consist of a systematic literature review supplemented by a quantitative analysis of UK universities, evaluating the transparency of UK universities and their anatomical teaching collections on their public profiles and whether these are in accord with the BABAO Code of Practice (2019). Furthermore, the educational value in these collections is critically assessed considering the impact of alternate teaching tools such as 3D printed models and virtual teaching tools. This research concludes with recommendations to improve ethical practices and transparency in teaching and research, advocating for culturally sensitive and morally sound stewardship of human remains. Ultimately, the objective of this research aims to create a more decolonised, inclusive approach to forensic anthropology, to treat the dead with dignity and respect whilst continuing to enrich the education of the living.

Keywords: Anatomical collections; Ethics; Recommendations; Decolonisation; Human remains

Poster Session 4

POSTER 9

Human remains from a newly discovered cave church in Addis Ababa, Ethiopia: Results of the investigation of an extensively disturbed but rare cemetery site

Katie White-Iribhogbe[1], Harvey Doolan[2], Mesfin Getie Wondim[3], Chalachew Simeneh Tilahun[3], Selina Han[4], Tania Tribe[1]

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The rediscovery in 2019 of an ancient cave church on the outskirts of Addis Ababa, Ethiopia, now known as Bezawit Maryam, resulted in extensive disturbance to the rock-cut graves and other features within the church. A large quantity of human remains was recovered by the community during the construction, with excavations in 2024 and 2025 by the authors recovering more human remains from within the rock-cut graves, although no longer in situ. Radiocarbon dating of the human remains is in progress, although contextual information suggests the church and burials may be medieval in date. The project aimed to reassign the remains to individuals, estimate age and sex, and record any evidence for disease and trauma, so the data could be used by the local community in their museum display of remains and objects from the church. The research identified 17 adults and 19 non-adults from skeletal remains and 24 adults and 23 non-adults from loose dentition. The generally poor preservation and incomplete nature of the remains meant that only 5 adult males and 7 females could be identified. It also restricted the amount of pathological and traumatic data that could be recorded, although dental disease, DJD, periosteal lesions, cribra orbitalia, and ante-mortem fractures, were recorded. Rarer lesions were recorded in two young children, in the form of bifid ribs and hereditary multiple osteochondromas (HMO). The project highlights the importance of the analysis of commingled remains, especially in a geographic area where human remains are rarely encountered and often poorly preserved.

Keywords: Commingled; Excavation; Palaeopathology; Africa

Poster Session 4

POSTER 10

The trouble with 'tooth worm': Evidence of rare Anglo-Saxon dentistry of dental caries manipulation

Charlie Robertson[1]

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Numerous dental instruments and medical treaties exist pertaining to the Romano-British and medieval periods; however, evidence is limited for the Anglo-Saxon period. Dental treatment is thus, within the latter period, considered to have been largely non-invasive, with remedies involving herbal concoctions, and tooth manipulations and extractions as a last resort. Rare examples of surgical intervention do exist from Wiltshire, Kent and Sussex, and the graves of potential dentists themselves have been discovered in Bedfordshire. Recent analysis of individuals from the Bulford Anglo-Saxon cemetery in Wiltshire has identified a potentially rare example of dental intervention. The cemetery comprised of 140 graves containing 136 *in situ* inhumation burials; radiocarbon dating and diagnostic grave goods show an early–late Anglo-Saxon date. A mature male (8251), dated to late 7th–late 10th century, has a neat 'square' cavity with reasonably clean edges, extending downwards to expose the root canals, on his left second mandibular molar. The exact mechanisms utilised as part of the decayed tooth structure removal is uncertain; however, macro photography suggests a small tool was used to hollow out the molar. It is then possible that herbs or another substance were packed into the cavity to create a 'filling'. This poster, alongside the upcoming publication, aims to contribute to our understanding of oral health and dental manipulation, adding to the small number of published examples of probable dentistry interventions.

Keywords: Anglo-Saxon; Dental treatment; Oral health

Poster Session 1

POSTER 11

Tracing respiratory health and sociopolitical change at Tombos, Third Cataract (1400-1600 BCE)

Maia Casna[1], Michele R. Buzon[2], Sarah A. Schrader[1]

[1]Leiden University; [2]Purdue University

Located at the Third Cataract of the Nile in present-day Sudan, the site of Tombos contains burials spanning from the New Kingdom (ca. 1400–1069 BCE) to the Napatan period (ca. 1069–650 BCE). The cemetery features diverse mortuary practices, including Egyptian-style (primarily from the New Kingdom) pyramids and chapels in the west, chambers in the north and traditional Nubian tumuli in the east, primarily associated with the post-colonial pre-Napatan period. Variations in burial architecture, grave goods, and skeletal markers of physical activity suggest a socially diverse community, with evidence pointing to increased labour demands in the post-colonial period. In this study, we examine whether changes in labour conditions impacted respiratory health by conducting a macroscopic analysis of 156 individuals for two markers of respiratory disease: chronic maxillary sinusitis and pleural inflammation. Sinusitis was identified in 42.2% of the total sample, while pleural inflammation was present in 17.6%. Statistical analysis revealed no significant differences in prevalence between New Kingdom and Napatan-period burials (sinusitis: p=0.650; pleural inflammation: p=0.122). These findings provide limited support for the hypothesis that labour intensification in the post-colonial era led to deteriorating respiratory health. However, they reinforce the view that, after the end of Egyptian colonial rule, Tombos remained a socially heterogenous community. Individuals continued to face varying levels of exposure to respiratory disease risk factors, possibly linked to differences in occupation and social roles. This study offers valuable insights into the interplay between health, labour, and social structure in ancient Nubia and contributes a comparative framework for exploring the bioarchaeology of post-colonial transitions.

Keywords: Sudan; Post-colonial archaeology; Sinusitis; Rib lesion; Pleural inflammation

Poster Session 2

POSTER 12

Winter is coming: Climate change and maxillary sinusitis in the Late Antiquity Little Ice Age

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***CONSIDERATION FOR THE STUDENT PRIZE**

Clinical studies have found that climate change can majorly affect population health. During the late Roman and early medieval periods, Europe transitioned from the Roman Warm Period (RWP) (300BCE-400CE) to the Late Antiquity Little Ice Age (LALIA) (500CE-900CE) and became much colder. This poster aims to use maxillary sinusitis (MS) as a proxy for climatic shifts in Britain and to determine whether palaeopathology can be used as a climate proxy. This was a literature review using data on MS from published and grey literature from the 1960s to 2024. A total of 229 sites containing 12,829 human remains, 9,042 of which were adults were found across both periods. This totality had a relatively even divide between epochs (RWP n=6049, LALIA n=6780). Overall, there were significantly higher rates in the LALIA (3.64%, 247/6780) compared to the RWP (2.34%, 143/6049), with even higher rates when only adults are considered (RWP=3.29%,132/4338; LALIA=5.1%, 128/4704). RWP urban (67/143) and rural (71/143) populations show a relatively even split, while LALIA shows higher rates in urban populations (189/247) than in rural (55/247). In both periods, males show higher infection rates than females (RWP:M=77, F=55, LALIA:M=136, F=101). Chronologically and geographically, the 4th-5th centuries CE in the northeast displayed higher rates, suggesting this was a colder time and area. The long-time period of the data gathered should be considered as changes in methodology may affect the results, as well the use of crude rates rather than true rates. This study has used novel methods of displaying palaeopathological data to demonstrate that MS can be used to measure the biocultural effects of climate change. Though anthropogenic factors should also be considered to avoid being climatically determinist.

Keywords: Climate change; Roman; Early medieval; Maxillary sinusitis

Poster Session 2

POSTER 13

Are we there yet? Comparing osteological sex to chromosomal sex in non-adults

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***CONSIDERATION FOR THE STUDENT PRIZE**

Sex estimation of non-adults is a crucial aspect of identification in forensic contexts. However, non-destructive osteological methods are argued to be unreliable due to the lack of sexual dimorphic characteristics gained later in puberty. Further, constraints on budgets and lab availability can impede investment in this essential part of identification. Despite these challenges, previous research has attempted to establish osteological methods with the hopes of morphologically determining the sex of non-adults. This study aims to review the accuracy of non-adult sex estimation using the morphological traits of the ilium and mandible originally proposed by Schutkowski (1993). Methods were refined to focus on four of Schutkowski's proposed morphological traits as these mimicked the hormonally induced morphological changes post-puberty. These included the greater sciatic notch angle of the ilium, the protrusion of the mental eminence, the dental arcade shape, and the eversion of the gonion. Forty non-adult remains from Derby (18th-19th centuries AD) and Winchester (3rd – 5th century AD) were blindly assessed and then compared with prior amelogenin peptide analysis from tooth enamel. Results indicate an 86% accuracy rate when all four traits were available. The angle of the greater sciatic notch showed the highest accuracy (90%), followed by the eversion of the gonion region (82%). This study can help forensic anthropologists establish if non-adult sex estimation can be further validated using Schutkowski's proposed traits. In future, expanding this method on larger sample sizes of known-sex skeletons from different time periods and regions may help reveal a different accuracy rate.

Keywords: Sex estimation; Non-adults; Morphological; Mandible; Ilium

Poster Session 4

POSTER 14

Osteological presentations of sinusitis in sailors from the British Royal Navy

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Maxillary sinusitis is an inflammation of the inner lining of the paranasal sinuses. Previous research has identified variation in the osteological presentation of this condition, with links to specific concomitant conditions (e.g., dental disease, infections) and exposure to polluted, urban environments. This study aims to establish the presence of sinusitis, lesion type, and presence of co-morbidity in the maxillae of sailors buried at the British Royal Naval Hospital in Plymouth (18th-19th centuries AD) with the objective of understanding relationships or trends within the compared data. Twenty-four individuals were analysed for sinusitis presence and type using methods established by Boocock and Roberts (1995), with further refinements suggested by Davies-Barrett and colleagues (2024) and Lee and colleagues (2024), and dental pathologies of the buccal teeth and lesions indicating lower respiratory infections (rib lesions, vertebral lesions). Data was compared using chi-square tests for sinusitis types and concomitant pathology presence (i.e., dental disease or lower respiratory infection). Results indicate there are currently no significant correlations between sinusitis presentation and dental disease or lower respiratory disease. This indicates that at present, the body's response to inflammation includes variation beyond environment and disease presence. In future, larger sample sizes and further research into other sinusitis-inducing variables may reveal more, helping to expand the baseline of knowledge and standardisations of sinusitis and its presentation.

Keywords: Maxillary sinusitis; Dental pathology; Osteological lesions

Poster Session 2

POSTER 15

Pursuing equity of open access publishing in bioarchaeology

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Open Access (OA) allows anyone with a reliable internet connection to read scientific articles. While this democratises access to knowledge, there remains a disparity in production of knowledge, as the different paths to OA have widely different costs and impact. In most cases, the cost falls on university libraries as part of read-and-publish deals with scientific publishers. In other cases, the cost may fall on authors in the form of Article Processing Charges. In this study, I use bibliographic data from OpenAlex on Bioarchaeology articles published between 1990 and 2024 (inclusive) to explore the impact of OA articles compared to closed articles using the calculated Field-weighted Citation Impact (FWCI). Overall, OA articles have had a higher impact, with an estimated 30.1% increase in FWCI (90% CI[26.0%, 34.3%]) compared to closed articles. Green OA had the highest increase with 136% (90% CI[127%, 145%]) followed by Bronze (28%, 90% CI[21%, 36%]), Gold (19%, 90% CI[13%, 26%]), and Hybrid (15%, 90% CI[7%, 24%]). Diamond OA articles are associated with a decrease in FWCI (-51%, 90% CI[-61%, -42%]). While Diamond OA is the most equitable model, it currently comes with a decrease in potential impact for authors. Those who have the luxury of choice can select the journal that will give their article the greatest potential impact, while others risk losing impact in order to make their articles accessible. Until this changes, scholarly publishing in bioarchaeology is not truly equitable.

Keywords: Open access; Bioarchaeology; Bibliometrics; OpenAlex

Poster Session 4

POSTER 16

Palaeoimaging as digital conservation: A case study of a partially mummified individual from Ancient Sudan

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Preserved mummified human tissue in partially or fully mummified human remains is susceptible to decay and degradation due to various factors including storage environment, pests, and handling. The use of different palaeoimaging techniques can be useful in digital curation and conservation of damage-prone human remains. This pilot study employs 3D scanning and photogrammetry on partially mummified human remains to test and compare their efficacy in digitising mummified soft tissue and bones. The methods are applied to a partially naturally mummified skull of a young (20-34 years) adult male from a grave believed to date to c. 300BCE - 350CE, located on Arduan Island, in the Mahas region of Sudan. The skull presents with mummified tissue and visible preservation of hair on the face and the cranial vault. Part of the mummified tissue secures the mandible and atlas (C1) in anatomical position. The skull was initially scanned with an Artec Spider structured-light scanner and reconstructed using Artec Studio 19 software. For photogrammetry, the skull was photographed in different anatomical positions with a Nikon D3500 DSLR and reconstructed using Agisoft Metashape Professional. Both modalities accurately captured the geometry of the skull and neck. Compared to the Artec Spider reconstruction, photogrammetry produced a more faithful-to-the-original texture, particularly regarding the mummified skin colour and hair reconstruction. The attached mandible and atlas challenged the reconstruction, which was more detailed and distinct in the photogrammetry model. The results highlight the significance of affordable digitising methodologies in the preservation and visualisation of sensitive archaeological material.

Keywords: Palaeoimaging; Skull; Photogrammetry; 3D scanning; Mummified tissue

Poster Session 4

POSTER 17

Where are we with artificial intelligence in forensic anthropology?

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Artificial intelligence (AI) has become an increasingly prominent tool in many scientific disciplines, particularly those involving image analysis. In forensic anthropology, AI remains in an exploratory phase, with applications situated within academic research rather than routine practice. This presentation will highlight how AI is currently being researched across five key areas of forensic anthropology, namely sex estimation, age assessment, stature calculation, human identification, and trauma analysis. Within each domain, AI-driven models, based on machine learning and deep learning, are being developed to improve the objectivity, reproducibility, and scalability of traditional methods within forensic anthropology. However, despite encouraging results, several barriers prevent the integration of AI into forensic anthropology case work. These include limited access to high-quality, diverse training datasets; lack of external validation; concerns around model transparency and interpretability; and the need for results to meet evidentiary standards in legal contexts. By reviewing existing research and outlining the key technical and ethical challenges, the gap between AI's theoretical promise and its practical readiness in forensic anthropology are highlighted in this poster.

Keywords: AI; Deep learning; Machine learning

Poster Session 4

POSTER 18

Where did it go? Taphonomic staining, the environment and timelines

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***CONSIDERATION FOR THE STUDENT PRIZE**

Taphonomic bone staining is often seen as a hindrance in excavations. However, it can provide environmental, and potentially timeline, data. Many types of staining are temporally dependent after excavation and, if not recorded, could be lost. Given staining is closely tied to burial conditions, losing it after exposure means vital burial information is gone. However, this change in staining over time could indicate how long the bone had been exposed post-burial, aiding forensic investigations in taphonomic timelines. 36 porcine trotters in an outdoor environment and 336 porcine bone cubes, trabecular and cortical, in an indoor environment are being sequentially excavated over 2,4, 6 and 12 month periods. Specific variables, iron content, tissue type and soil, were altered in the indoor experimental conditions. In both the outdoor and indoor burials, a black stain was noted that seemed to disappear over time. In addition to timelapse work on staining, pXRF data has been collected to assess what is causing this - with previous assumptions from similar wet environments being manganese. However, the 'disappearing' black staining seems to have a different cause as opposed to the long-term black staining associated with manganese oxides/dioxides. This is only part of the staining being evaluated in this study and early results show numerous alterations to bone based on early diagenetic variables. This further highlights trackable changes in burials based on seemingly minor environmental differences. If this disappearance is repeatable then a timeline after exposure can be developed for use in investigations.

Keywords: Taphonomy; Bone staining; pXRF

Poster Session 4

POSTER 19

A biocultural exploration of Anglo-Saxon nonadults at Church Walk Cemetery, Hartlepool: A case study

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***CONSIDERATION FOR THE STUDENT PRIZE**

This paper showcases the impact biocultural approaches to archaeological evidence can have on our understanding of nonadult (0-18 years) lived experiences through a case study analysis of the Middle Anglo-Saxon period (7th-9th century CE) cemetery at Church Walk, Hartlepool. This aims to inform us of the daily activities nonadults may have been partaking in, the foods they ate, the animals they would have encountered, and the health challenges they faced. First, it analyses all available evidence from the Church Walk cemetery and its surroundings; second, it compares this with literary evidence for Anglo-Saxon childhoods, such as Bede's *Historia Ecclesiastica*; and, finally, it contextualises the evidence within the nonadult life course to understand community and individual experiences of childhood. The goal of this approach is to reconstruct childhood at the Church Walk cemetery using biocultural methods to better understand both the individual and communal lived experiences at the monastic site of Hartlepool. This is achieved through assessing and contextualising all available evidence, including osteological analysis of 44 nonadult individuals, material culture (including both grave goods and items associated with the settlement), zooarchaeological and archaeobotanical evidence to piece together aspects of lived experience at the Hartlepool site. The findings reveal a diversity of lived experiences at the Church Walk cemetery across a period of c. 200 years of use, and speaks to the value of deploying similar biocultural approaches to reconstruct life courses at other cemeteries in northern England during the Middle Anglo-Saxon period.

Keywords: Biocultural; Anglo-Saxon; Nonadults; Lifecourse; Childhood

Poster Session 4

POSTER 20

Pilgrims or Islanders? An isotopic analysis of Early Medieval individuals buried on Lindisfarne

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[1]Durham University; [2]DigVentures

***CONSIDERATION FOR THE STUDENT PRIZE**

Lindisfarne is a tidal island off the coast of Northumberland. Lindisfarne Monastery, founded AD 635, became the cult centre for St Cuthbert, whose healing miracles in life and posthumously drew pilgrims to the island for centuries afterwards. Since 2016, Durham University and DigVentures have been excavating next to the ruins of Lindisfarne Priory to investigate the early medieval administrative centre of the island. This excavation has uncovered a cemetery, radiocarbon dated to the late 8th to early 10th centuries, from which circa 65 individuals have been excavated so far. The initial osteological assessment shows the presence of male, female and nonadult skeletons, suggesting that the cemetery included lay individuals, rather than being reserved for the monastic community. However, whether non-local individuals, potentially pilgrims, were buried at the cemetery cannot be answered from the funerary evidence. This project sampled the enamel and crown dentine of second molars from seven individuals excavated from the cemetery. A multi-isotope analysis (δ13C, δ15N, δ34S, 87Sr/86Sr, δ18O) was undertaken to examine childhood diets and potential places of origin. The results of this analysis are presented here to explore the possibility that religious pilgrims and those in search of healing miracles may also have been interred in this cemetery.

Keywords: Isotope analysis; Early medieval; Pilgrimage

Poster Session 3

POSTER 21

Modernising facial reconstruction: Method development for remains with leprosy

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***CONSIDERATION FOR THE STUDENT PRIZE**

Facial reconstruction is a practice involving several disciplines, including osteology, anthropology, and archaeology. One less explored area is the reconstruction of remains with leprosy, particularly within three-dimensional (3D) facial reconstruction. This project aimed to determine the effectiveness of combining traditional reconstruction methods with modern technology. Additionally, this aimed to evaluate the final model's ability to depict leprosy, as this disease's increasing prevalence in modern populations makes its appearance in forensic/bioarchaeological casework more likely as time progresses. A single cranium, on loan from Moreton Hall in Oswestry, was scanned using a structured light 3D-scanner; mandible reconstruction was conducted using MeshLab; and printing was conducted using a Prusa printer. Facial reconstruction was carried out following traditional physical methods. The combination of these methods was unexpectedly successful. Challenges that did arise were categorised into two different brackets: simple fixes, such as stability issues, and challenging fixes such as leprotic lesion manifestations. Simple fixes were almost exclusively resolved in software, whereas challenging fixes required acknowledgement of current limitations within the literature. The findings and challenges of this project show that a combination of traditional forensic facial reconstruction methods with modern technology is a viable methodology to depict an individual's likeness, even when pathological lesions are present and the mandible is missing. Moreover, the developed method was able to visibly display leprosy on the final facial reconstruction. While clearly useful to both forensic and bioarchaeological investigations, it also highlights that disease-specific research is needed to better represent the severity of the disease and its manifestation.

Keywords: Facial reconstruction; Leprosy; Forensic anthropology

Poster Session 1

POSTER 22

Optimising the preparation of small flat bone samples for micro-CT

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***CONSIDERATION FOR THE STUDENT PRIZE**

Micro computed tomography (micro-CT) is a high-resolution, non-destructive imaging modality traditionally used for industrial purposes. Recent decades have seen micro-CT now frequently applied to objects of geological, archaeological, heritage, and forensic interest. As such, micro-CT scanners are increasingly available at academic institutions, often used for the archaeological investigation of microstructure within smaller flat samples such as textiles, wood, ceramic, and bone. The parameters and quality of a scan are dependent on a sample's size and its preparation, including mounting and orientation inside the scanner. To support micro-CT practitioners from a non-industrial background, this research aimed to identify the best low-budget sample preparation method to optimise small flat sample scans. Cortical bone squares (20×20 mm) were dissected from the mid-diaphysis of animal femurs, and mounted in floral foam, sticky tack, and glue from a hot gun. Samples were scanned first standing flat in a horizontal position, and then rotated and remounted at an angled diamond position. All samples were scanned at 4.5-10 µm. Samples mounted at an angle, rather than flat, generated clearer scans, with fewer streak artefacts, enhancing feature definition. The best mounting material was hot glue, followed by floral foam, as both had a different density to bone allowing them to be easily digitally removed; but hot glue provided additional stability to reduce movement and blurring. This research provides guidance on how micro-CT practitioners can optimise the quality of their scans, improving visualisation and microstructural analysis of small flat samples, such as bone sections.

Keywords: Micro-CT; Micro-structure; Bone samples; Scanning

Poster Session 1

POSTER 23

Identifying and tracking scavengers of remains in a forensic context

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***CONSIDERATION FOR THE STUDENT PRIZE**

Scavenger interactions with human remains complicate forensic investigations. Animals may destroy remains, disrupt decomposition, and alter post mortem interval estimates. Some animals may even relocate, cache, and hoard remains, extending searches and causing incomplete recoveries. Understanding scavenger activity is therefore essential to refining forensic strategies for surface-exposed remains. This research examines how animal activity alters forensic evidence through tissue destruction, bone damage, and remains dispersal. It compares scavenging behaviour of captive and wild animals in Northwest Europe, focusing on Felidae, Canidae, and Accipitridae families. It explores their impact on interactions with remains, bone surface modifications (BSMs), and spatial distribution to develop predictive, family-specific models of scavenging dynamics. Research conducted at wildlife sanctuaries and TRACES taphonomy facility (UK) involved surface-deposited small animal and entire deer carcasses. Camera traps monitored scavenger activity across seasons and habitats. GIS analysis mapped dispersal patterns. 3D Keyence microscopy characterized BSMs. At TRACES, scavenger visitation increased over time due to environmental factors. At sanctuaries, species-specific behaviours were observed: wildcats moved remains to elevated areas, foxes and eagles displayed distinct competitive behaviours. Behaviours like caching, fighting, and scattering correlated with captivity, carcass mass, feeding history, and social structure. To conclude, scavenging behaviour, particularly carcass scattering, is influenced by scavenger species and carcass mass. This research advances forensic understanding of scavenging dynamics by (1) evaluating captive-to-wild applicability and (2) developing models linking BSMs and dispersal patterns to scavenger families. The insights support improved recovery strategies in forensic casework, benefiting families, justice, and humanitarian efforts.

Keywords: Scavenging animals; Captive vs wild scavengers; Spatial dispersal patterns; Bone surface modification patterns; GIS analysis

Poster Session 4

POSTER 24

Metabolic bone health differences in Industrial Period Manchester, North Shields, and Derby, England

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***CONSIDERATION FOR THE STUDENT PRIZE**

Metabolic health is an important indicator of systemic diseases in past and present populations. Though biological factors affect susceptibility to metabolic disease, socioeconomic status and environment are known extrinsic variables that compound disease prevalence. This study examines the distribution of metabolic bone disease in human remains from three industrial centres within England (18th to 19th centuries AD), exploring varying biocultural factors that affect onset and persistence. This study assessed skeletal indicators (new bone formation, porosity, bowing, cribra orbitalia, and dental enamel hypoplasia) to explore the prevalence of metabolic conditions (vitamin C deficiency, vitamin D deficiency and anaemia). Adults and non-adults from working class Hanging Ditch, Manchester (n=86) and mixed socioeconomic class Agard Street, Derby non-adults (n=37) were assessed, with comparative data for middle class adults and non-adults compiled from individuals from Coach Lane, North Shields (n=213). In Hanging Ditch, 46%, in Coach Lane, 75%, and in Agard Street, 79% of individuals presented with metabolic disease. The results show regional differences, with dietary deficiencies in the North East, adverse working and living conditions in the North West, and environmental pollution in the Midlands being detrimental factors. Results are indicative that the negative health effects of industrialisation likely differed by region due to confounding factors of poor working and housing conditions, dietary deficiencies, and environmental pollution in Industrial-Period England. Subsequently, the importance of exploring causality using a contextualised approach is highlighted and demonstrates that such evidence can serve as a benchmark for identifying social determinants influencing these conditions today.

Keywords: Metabolic bone disease; Industrial England; Environmental pollution

Poster Session 2

POSTER 25

Lend me your ears: Comparing the accuracy of 3D modelling vs. microscopic measurements of ear ossicles

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[1]University College London

Ear ossicles (incus, malleus, stapes) generally survive well in archaeological skeletons and are ideal bones for ancient DNA and isotope analysis. However, they are not always recovered during excavation or recording, and when they are, they can be extremely fragile and susceptible to damage. Increasingly used in biomolecular studies, their potential beyond such destructive analyses have yet to be fully explored, including their contribution to understanding the impact of pathological and congenital conditions on hearing and hearing loss in past populations. Having an accurate 3D representation of a skeleton's ear ossicles could permit further research once they have been destroyed, damaged, or lost. This study evaluates the accuracy of ossicular dimensions taken from 3D digital models when compared to measurements taken under a microscope. A sample of five incii and mallei recovered from an 8th - 11th century AD cemetery population excavated from southwest Wales were scanned using an Artec Micro 3D scanner and photographed using a Leica S9i light microscope to take high-resolution digital images. Three standard dimensions on the malleus and two on the incus were measured using the open source programmes Meshlab and ImageJ. Malleus measurements showed a high degree of accuracy, with differences ranging from 19 µm to 87 µm. Measurements of the incus were less accurate, with differences ranging from 14 µm to 355 µm. Our preliminary findings suggest that 3D models provide an accurate representation, albeit variable between ossicles, and produce data that are useable for a range of future studies (e.g., geometric morphometrics).

Keywords: Digital osteology; Bioarchaeology; Morphometrics

Poster Session 1

POSTER 26

A multi-method approach investigating incudo-malleolar joint fusion arising from a possible traumatic injury

Jennifer K. Wilburn[1], Carolyn Rando[1], Garrard Cole[1], Katie A. Hemer[1]

[1]University College London

Fusion of the ear ossicles is a rare occurrence with either a congenital or an acquired aetiology. The exact cause of acquired ossicular joint fusion is less well understood but may occur in cases of chronic ear infection or trauma. A traumatic injury to the temporal bone (with or without associated fracturing) can result in ossicular chain dislocation. Such an injury and any subsequent ossicular fusion can have a significant impact on the individuals' hearing. This study presents a case of traumatic dislocation and fusion of the left incus and malleus in a middle-aged adult from early medieval Wales. Microscopic, x-ray and scanning electron microscope images show evidence of a forceful collision of the ossicles at the incudo-malleolar joint and subsequent fusion. The left temporal bone also displayed indications of a previous traumatic injury, including a well-healed fracture of the mastoid process running supero-inferiorly and a pronounced digastric groove. The left styloid process was also fractured in line with the vaginal process and showed evidence of healing over time. A comparison with the right external acoustic meatus shows a narrowing of the left ear canal supero-inferiorly, and pathological changes along the tympanic part. These findings indicate that the fusion of the incudo-malleolar joint was due to a traumatic injury (rather than chronic infection) that occurred at least 10-15 years before death. This injury likely resulted in partial or complete hearing loss on the left side, which may have had significant consequences for this individual during the latter part of life.

Keywords: Palaeopathology; Bioarchaeology; Trauma analysis

Poster Session 1

POSTER 27

Dying to meet you: Investigating the paleodemographic profile of the people of Roman Colchester – a pilot study

Morwen Siân Thomas[1], Mary Lewis[1], Hella Eckardt[1], Glynn Davis[2], Thomas Delbey[3]

[1]University of Reading; [2]Colchester Museum; [3]Cranfield University

***CONSIDERATION FOR THE STUDENT PRIZE**

Colchester was the first major town in Roman Britain. It offers a unique opportunity to explore how incoming and local people interacted during and after the Roman conquest. Research is hindered by the fact that the main burial rite at this time was cremation – a largely understudied area of bioarchaeology. Multiple Roman cremation burials excavated from Colchester in the 19th to 20th centuries were retained in private collections. As focus was on the elaborate urns and grave goods, the people within the pots were largely overlooked and even separated from their urns – often without any accurate records being taken. This project will remedy this situation through the detailed analysis of these individuals, reuniting them with their urns to reveal new aspects of their identity. Fourier-Transform Infrared Spectroscopy- Attenuated Total Reflection (FTIR-ATR) will be used to explore potential pyre conditions and enhance our understanding of Romano-British cremation technology and funerary practices. Through the combined use of osteological data and contextual information from their funerary archaeology, the personal histories of the people of Camulodunum can be reconstructed. This poster presents the initial results of the analysis of c.40 cremation burials. The sample was selected from northern, western, and southern cemeteries to best represent the inhabitants of Camulodunum. Evidence from this historic collection, and the use of comparative data from modern excavations, will identify trends and changes throughout Colchester's 400 years of Roman occupation.

Keywords: Cremated remains; Romano-British; Funerary archaeology

Poster Session 1

POSTER 28

Exploring diet across the life course: An isotopic study of individuals at the archaeological site of Bulla Regia, Tunisia

Stephanie Demetriou[1], Alice Di Muro[1], Efthymia Nikita[2], Maite I. García-Collado[1], Samantha Cox[3], Moheddine Chaouali[4], Corisande Fenwick[5], Michelle Alexander[1]

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This research investigates dietary practices across the life course at Bulla Regia, a prominent Roman and Late Antique town, dating from the 2nd to 5th centuries CE, in Tunisia's fertile Medjerda Valley. The study aims to explore the relationship between culture, social status, and individual dietary habits during Late Antiquity in North Africa. Stable isotope analysis of carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) was performed on human bone collagen (n=5) and dentine (n=20) to compare childhood and adult diets across eight burial locations, representing a diverse sample of the cemetery population. Faunal remains (n=3) were also analysed to establish a local isotopic baseline. Results indicate a predominantly terrestrial diet relying on C_3 plants, consistent with the historical prominence of cereal cultivation in the region. Protein intake was primarily derived from terrestrial sources, with minimal variation observed between age groups and sexes. However, isotopic differences between burial sectors suggest possible dietary distinctions linked to social stratification. The faunal isotope data reveal a similar reliance on C_3 plants among local herbivores. Comparison with other contemporary sites demonstrates regional variability in diet, with Bulla Regia's dietary patterns closely resembling those of Carthage. These findings highlight the stability of dietary practices at Bulla Regia despite changing cultural landscapes and underscore the complex interplay between social, economic, and cultural factors in shaping diet during Late Antiquity.

Keywords: Biomolecular archaeology; Diet; Northern Africa; Late Antiquity

Poster Session 3

POSTER 29

From the vaults: Two uncommon paleopathological cases from PCA's archives

James Langthorne[1], Ariadne Schulz[1]

[1]Pre-Construct Archaeology

Pre-Construct Archaeology (PCA) has engaged with a wide variety of burial contexts during the company's 32 years. Osteological analysis of the human remains has produced individuals with uncommon pathologies. Given restrictions of time and budget, it is not always possible to highlight these cases. This poster's purpose is to highlight two unusual case studies. The former church of St Mary Newington in Southwark produced a population dating from 1834 to 1854. Amongst the assemblage was the partial skeleton of a young adult male exhibiting systemic morphological alterations with an underlying metabolic or congenital cause. These changes included extensive dysplastic modifications to the long bones, feet, pelvis, sacrum, vertebrae, and ribs. Differential diagnosis has been hampered by the incomplete nature of the skeleton, particularly the lack of a skull. The individual's condition has similarities with achondroplasia, rickets, a mild form of osteogenesis imperfecta, or hypophosphatasia. Another young adult male was recovered from a Saxon burial ground found on land near Sun Lane in Hampshire (500-1066CE). The individual presented fusion of cervical and thoracic vertebrae, as well as bifid ribs and possible spina bifida. This individual is currently considered to have a genetic congenital condition known as Klippel-Feil syndrome, which can result in segmentation failures in the vertebrae. The presence of these two individuals within the cemeteries and not in "deviant burials" points to the integration if not full acceptance of individuals with visible genetic variations in their respective populations and contextualises "disability" in the past.

Keywords: Case study; Palaeopathology; Rare conditions; Achondroplasia; Klippel-Feil

Poster Session 2

POSTER 30

Recommended practices for destructive sampling of human remains in collections: An at-a-glance infographic

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[1]University of Cambridge; [2]National Museums Scotland; [3]Museum of Archaeology and Anthropology, Cambridge

As is by now well-recognised, there has been a substantial increase in the destructive analysis of archaeological human remains collections, especially over the past two decades. Analytical methods requiring destructive analyses continue to be implemented apace. Ethical guidelines are only just catching up, and in general have focussed on critical aspects of the research such as permissions, community engagement, publication, and availability of resulting data. The recently-updated 'Science and the Dead' (2023) provides the latest guidance on sample sizes and sampling methodologies for a range of both well-known and novel techniques. There has been much less discussion surrounding the curatorial aspects and best practices for the selection, removal and record-keeping of samples within collections. From November 2023 to June 2024, we opened a survey through BABAO for practitioners to record their experiences with encountering historic sampling, as well as applying for and carrying out destructive sampling. Drawing on feedback from this survey, as well as our own experiences as curators and researchers working with global archaeological human remains collections, we present some recommended practices for destructive sampling as an infographic to be circulated through BABAO.

Keywords: Curation; Ethical guidelines; Destructive sampling

Poster Session 3

POSTER 31

Comparing childhood and adulthood diet in a Viking Age population from Latvia: A pilot study

Elīna Pētersone-Gordina[1], Guntis Gerhards[1], Antonija Vilcāne[1], Andrew Millard[2], Joanna Moore[2], Janet Montgomery[2]

[1]University of Latvia; [2]Durham University

This research focuses on childhood and adulthood diet in the Lejasbitēni cemetery population from Latvia (7th – 10th centuries CE). The aim was to compare dietary isotope data from dentine and bone samples from selected individuals to understand if and how their diet changed during lifetime. The results of previous research showed that male gender (based on grave orientation and grave goods) non-adults had significantly higher dentine $\delta^{15}N$ values than female gender non-adults from Lejasbitēni. For this study, dietary isotope analysis was carried out in bone samples from 11 adult individuals, including five with available $\delta^{13}C$ and $\delta^{15}N$ values from dentine. The bone $\delta^{15}N$ values were significantly lower and $\delta^{13}C$ values were significantly higher in both males and females, compared to those previously acquired from dentine. There were no significant differences in $\delta^{15}N$ and $\delta^{13}C$ values between adult males and females. Each of the five individuals for whom childhood and adulthood dietary data was available showed a shift from higher to lower $\delta^{15}N$ values and from lower to higher $\delta^{13}C$ values, respectively. Comparison revealed a shift towards lower proportion and/or different sources of protein in adult compared to non-adult diet in the Lejasbitēni population. The similar adult male and female bone $\delta^{15}N$ values indicated a more homogenous diet in adulthood than childhood. Because of the highly uneven ratio of adult male and female gender individuals in this cemetery (2.2:1, respectively), it is possible that only adult females with particular social status were buried here, with implications for the distribution of resources.

Key Words: Archaeology, burial customs, gender, dietary isotopes, social status

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Poster Session 3

POSTER 32

A life cut short: Using an osteobiographical approach to interpret complex and multifactorial pathology in ancient Egyptian mummified children using CT scan technology

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[1]University of Reading; [2]The British Museum

***CONSIDERATION FOR THE STUDENT PRIZE**

This study presents a detailed osteobiography of a mummified ancient Egyptian child, to illustrate how advanced imaging and improved recording strategies can enhance palaeopathological diagnosis and life-history reconstruction. The child, identified through coffin inscriptions as Thoth, was male and died aged 8.5–9.5 years. Although the burial context is unknown, the embalming techniques employed are typical of the Ptolemaic Period (332–30 BCE). In 2024, the mummy of Thoth was scanned using a dual-energy CT scanner. These scanners facilitate superior tissue differentiation compared to single-energy scanners and allow more subtle pathology to be detected. Standard osteoprofiling methods were applied to the CT data, and novel approaches to documenting mummification practices and pathology through imaging were developed. A thorough differential diagnosis was conducted, accounting for the ways in which embalming materials and tissue shrinkage may mimic or obscure pathology. Analysis revealed a probable benign lytic tumour with sclerotic margins in the right femur, chronic bilateral osteomyelitis of the tibiae, non-contiguous heterotopic bone formation (myositis ossificans) in the left thigh muscles, bilateral splaying of the lesser toes, and peri-mortem blunt-force trauma to the occipital bone. The postcranial lesions likely caused severe pain and mobility issues, potentially contributing to a fatal fall, resulting in the cranial trauma. To our knowledge, this is the first reported case of probable myositis ossificans in an ancient Egyptian child, but beyond this, it demonstrates the capacity of high-resolution CT imaging and enhanced palaeopathological methods to reconstruct nuanced life-histories and refine our interpretations of past health and disease.

Keywords: Ancient Egypt; Computer tomography; Osteobiography; Palaeopathology; Case study

Poster Session 1

POSTER 33

Preliminary insights into the lived experience of an adolescent with a rare congenital hip anomaly in Romano-British Irchester

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[1]University of Alberta; [2]University College Dublin

***CONSIDERATION FOR THE STUDENT PRIZE**

Roman society was one fascinated by "otherness" and the "exotic," meaning that individuals with physical deformities or visible impairments were often treated as curiosities or subjects of derision. Despite this, there is ample evidence for disabled individuals being an important and active member of their communities, reaching high social and political ranks. This study presents a preliminary analysis of the life of a late Romano-British (250-410 AD) adolescent (dental age of 13.5 years) buried at the Orchard Cemetery in Irchester, Northamptonshire, who lived with a rare congenital deformity of the hip. While the daily lives of Romano-British adolescents are not well understood, it is possible that this individual may have been involved in the craft production or agricultural activities occurring in the surrounding area. This research proposes a differential diagnosis for this individual, and examines the functional implications of the changes to the hip joint, as well as the potential skeletal, soft tissue, and sensory differences that may have been associated with the hip deformity. Utilising osteological methods and Tilley and Cameron's Index of Care strategy, this case study explores how this individual's life experience may have been shaped by their condition. This research will contribute to the growing field of the bioarchaeology of disability by highlighting one of many disabled lives in the human past, and by exploring caretaking practices in late Roman Britain.

Keywords: Bioarchaeology of disability; Bioarchaeology of childhood; Palaeopathology

Poster Session 2

POSTER 34

Blackberry Hill, Bristol Union Workhouse cemetery c. 1832-1896

Frankie Wildmun[1], Sharon Clough[1]

[1]Cotswold Archaeology

Nearly 4500 graves were excavated from the cemetery associated with the former workhouse at Blackberry Hill, Bristol. A sample of these was analysed and recorded osteologically. The documentary records of the workhouse were destroyed in the Second World War during the Bristol Blitz, leaving tantalising few documentary sources available, and elevating the importance of the physical evidence from the graves and human remains. The cemetery developed in three clear stages, allowing examination of the graves in c20-year periods, revealing changes over time. The exceptional preservation of the remains meant that even foetal remains were preserved, as well as clothing and brains. However, the majority of the population were elderly, in line with the change over time in the use of workhouses as care places for older and infirm people. The range of pathological lesions are those expected for the 19th century: tertiary syphilis, rickets, fractures, congenital disease and joint disease. Poor dental health was ubiquitous with many clay pipe facets on the teeth, including in children. Changes to the ribs and spine from corset wearing were noted. This talk will cover some of the key findings from the project.

Keywords: Workhouse; Cemetery; 19th century

Poster Session 4

POSTER 35

The effects of corsetry on the female skeleton from observations of a 19th century workhouse cemetery population

Frankie Wildmun[1]

[1]Cotswold Archaeology

The workhouse cemetery at Blackberry Hill produced nearly 4500 graves. There were 42 (out of 97) females with evidence of bone changes associated with wearing a corset. The changes affected the spinous process of the vertebrae and the ribs. Previous research into these changes has identified the straightening of the rib shafts and a 90° angle as an indicator of corsetry wearing. However, the current study noted that most rib cages were barrel-shaped and had been moved anteriorly. This analysis indicated that changes to the angle of the spinous process of the thoracic vertebrae was a clearer indicator of the effects of corsetry than the angle of the ribs. The cemetery was used from c.1830-1890s; the females buried there would have been wearing the fashion of the time dating from the late 18th-19th century. Those buried in the earlier period of the cemetery and aged over 40 years at death had fewer changes to the spine/ribs, corresponding with the fashion of the Regency period (when they were young and first wore a corset) for a waistless corset. The results from Blackberry Hill were compared to St Bride's cemetery, London, and the key finding was how the corset of the late 19th century affected the circumference of the rib cage. The steel boning of the later period, in comparison to the stays (fully or partially boned undergarment of the 18th century) that used whalebone, had a significant effect on the skeleton.

Keywords: Corsetry; Workhouse; 19th century

Poster Session 2

POSTER 36

Investigation of the relationship between diet and physiological stress in two conflict-affected populations from medieval Croatia

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Carbon and nitrogen stable isotope (SI) analysis was used to investigate diet in two contemporaneous populations of different status from Medieval (CE 1200-1600) Croatia during a prolonged period of conflict. Rib collagen SI measurements were taken from 69 individuals from Udbina (high-status) and 59 from Dugopolje (low-status) to assess adult diet and incrementally sampled dentine from 17 and 15 individuals, respectively, for childhood diet. Dugopolje diets were relatively homogenous while Udbina diets were more variable. Both populations subsisted on a predominately C3-diet, but those from Udbina likely consumed more animal products (including some fish) than Dugopolje individuals. A larger range of weaning ages was found for Udbina (2.0-4.0 years) compared to Dugopolje (2.5-3.0 years). Childhood diet for both groups generally showed increasing animal products throughout childhood towards adolescence and adulthood. There was variation in C3:C4 proportions during childhood, but this was much more extreme in Dugopolje individuals. Linear enamel hypoplasia was also assessed using the 'field method' and, while the populations had similar frequencies (49.6% at Dugopolje and 47.6% at Udbina), the spread in formation ages was larger at Udbina (c. 0-6 years) compared to Dugopolje (c. 2-6 years). This may suggest better access to food and medicine allowed high-status individuals to survive stress at more vulnerable ages, whereas the low-status individuals could not. While there is not a clear impact attributable to the conflict environment, the data may suggest that the high-status group were, to an extent, buffered against the poor conditions in ways that the low-status were not.

Keywords: Stable isotopes; Diet; Stress; Medieval Croatia

Poster Session 3

POSTER 37

The Greek Necropolis of Santa Panagia in Syracuse (6th-5th centuries BC): Preliminary archaeological and anthropological results from the 2019 excavation

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Founded in 734/733 BC by Corinthian settlers led by Archias, the city of Syracuse (Sicily) evolved into a complex urban centre comprising multiple districts—reflected in its plural Greek name, Συράκουσαι. In 2019, preventive archaeological excavations conducted by the Superintendence of Cultural Heritage of Syracuse in the area of Santa Panagia (named after the Byzantine epithet for the Virgin Mary, Παναγία, "All-Holy") led to the discovery of a previously unknown Greek necropolis. This study presents the preliminary bioarchaeological analysis of 134 excavated tombs (out of 166 total), dating to the late 6th to early 5th centuries BC. The objective of this research is to document the demographic and pathological profiles of the individuals interred, and to contribute to a broader reassessment of funerary practices in ancient Syracuse. A total of 136 individuals were recovered, all in poor preservation due to soil acidity. Most graves were single inhumations, except for two containing two individuals each. Sex determination identified 56 males (55 adults and 1 adolescent) and 12 adult females. The remaining 68 individuals (64 adults, 4 non-adults aged 7–16 years) could not be sexed. No foetal, perinatal, or infant remains were found. A striking male-to-female ratio of nearly 4.67:1 was observed. Pathologies were rare but included a perimortem cranial lesion with early infection and one case of temporomandibular ankylosis. These preliminary findings raise important questions about burial practices, population structure, health in archaic Syracuse, and provide new data for understanding the broader mortuary landscape of this ancient important Mediterranean city.

Keywords: Greek necropolis; Bioarchaeology; Syracuse; Funerary archaeology; Excavation

Poster Session 4

POSTER 38

Into the trash heap: False alarms and concealed bones in a Sicilian forensic case

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A total of 93 bone fragments were recovered on the side of a country road inside a heap of rubbish during a forensic survey with Italian "Carabinieri" (military police) in Sicily, of which only 4 were identified as human remains. These included a cranial fragment and three femora, corresponding to a minimum number of individuals (MNI) of 3, all of whom were determined to be male, with two classified as adults and one as an adolescent. Anthropological and radiological analysis enabled stature estimation, ranging from 155.4 cm to 172.8 cm. Macroscopic and radiological examination of the cranial fragment revealed a penetrating perimortem lesion, indicative of violent trauma at or near the time of death. Radiocarbon dating placed all human bone specimens prior to 1945, thereby excluding any forensic relevance. Postmortem taphonomic alterations were consistent with terrestrial exposure to sunlight (bleaching), high temperatures, fire, soil, and decomposing waste, suggesting a complex taphonomic picture. Additionally, the presence of non-contextual modifications, adhesives, cord or plastic bindings, and wood with embedded malacofauna further indicated previous anthropic modifications. Of the total assemblage, the remaining 89 bone specimens were of animal origin and were subjected to archaeozoological analysis and taxonomic classification. Based on macroscopic, anthropological, radiological, taphonomic, and radiocarbon findings, the human remains were assessed to be of no forensic interest. This highlights the importance of comparative osteological methods not only in bioarchaeology but also in forensic cases and legal proceedings.

Keywords: Forensic anthropology; Comparative anatomy; Archaeozoology; Taphonomy; Justice

Poster Session 4

POSTER 39

From the mouths of Manx mothers: An introduction to maternal health during the medieval period of the Isle of Man (AD 500-1500)

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The first 1000 days of life are fundamental in shaping an individual's health and can have significant consequences later in life. There is a wealth of clinical literature that highlights the role vitamin D plays in all-cause mortality in modern populations. Using a multi-method approach, this study aims to identify evidence of vitamin D deficiency in early life in past populations on the Isle of Man. Four Manx medieval (AD500–1500) populations are currently being assessed for evidence of transmission of vitamin D deficiency across the maternal-infant dyad using a combination of macroscopic (n = 4) and dental histological (n = 11) samples. Three neonatal skeletons all show signs of vitamin D deficiency at the time of death, and histological analysis of lower first permanent molars is underway. Micro-CT scanning has been conducted on all the teeth to look for evidence of interglobular spaces throughout the whole dentine structure. The histological slides are going to be used to identify the neonatal line in the enamel and assess if episodes of deficiency were incurred while in utero. This poster presents micro-CT scans revealing episodic deficiency in individuals without skeletal indicators of rickets. The findings evidence that microscopic tooth analysis provides more detailed deficiency data than macroscopic methods alone and highlights the importance of combining these methods within research methodology. This is the first study of its kind being conducted on Manx human remains and will add vital information to our rich archaeological record.

Keywords: Vitamin D deficiency; Isle of Man; Maternal health; Medieval period

This work has been funded by Culture Vannin, and access to the Manx National Collections has been facilitated by Manx National Heritage.

Poster Session 1

POSTER 40

The echoes of a tooth's time: Incremental dentine analysis of carbon and nitrogen isotopes from leprosy-affected individuals to investigate disease-related metabolic disruption

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***CONSIDERATION FOR THE STUDENT PRIZE**

Isotopic ratios of carbon and nitrogen (δ13C, δ15N) are recognised chemical signatures for providing insight on the dietary habits and lived experiences of past populations. Such ratios are also useful in understanding periods of possible dietary restrictions. However, what remains unclear is the body's metabolic response to patterns associated with specific infectious diseases. This study aims to establish whether there are any variations in incremental carbon and nitrogen isotopic ratios that may reflect the disease-related catabolic states involved in wasting due to leprosy. A total of 12 second or third molars from adolescent individuals with leprosy from the medieval sites of St. John the Baptist Timberhill (Norwich; 9th-11th centuries AD; n=6) and St. Mary Magdalen (Winchester; 9th – 12th centuries AD; n=6) were selected for analyses based on their age and developmental state of tooth. Individuals with teeth still in development were targeted to provide data up to the point of death. Results reveal specific patterns that help distinguish both dietary changes and fluctuations that may be associated with the onset of leprosy in individuals. However, it is also important to consider that teasing out these variables may not be mutually exclusive. For example, coping with leprosy may have knock-on effects on eating habits or the ability to eat. This study hopes to inform future research about the lived experiences of people with leprosy in the past and provide a deeper understanding of disease metabolism in current individuals.

Keywords: Incremental; Tooth dentine analysis; Investigating leprosy

Poster Session 3

POSTER 41

Viking Age (750-1050 CE) diet on the Island of Gotland

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Osteological studies of the Viking Age have predominantly focused on Viking interactions within the British Isles despite the archaeological evidence for Vikings' life and livelihood across Europe. At the edge of the Viking world and a gateway to the East, the Island of Gotland's well-established Viking communities have received scant attention. This study examines diet at Kopparsvik, a large cemetery located on Gotland's coast, to explore diet and lifeways of individuals in Scandinavia during the Viking Age. Carbon and nitrogen isotope data were obtained from the rib bones of 77 individuals and these data were interpreted in the context of a faunal baseline. The isotopic signatures for individuals at Kopparsvik indicated a diet low in marine or freshwater resources, but high in animal products, despite being an island community. Results from correlation tests and cluster analysis indicate that diet did not differ according to the social identifiers we traditionally assume to be hierarchical in the Viking world (age and sex). Nor does diet differ in male individuals with horizontally filed teeth, a Gotlandic marker often attributed to social identity. Despite being relatively homogenous, personal preference may have played a role in Viking diets, as cluster analysis suggested two outliers, and there is variation in δ15N values within the main cluster equivalent to one or two trophic levels. This study reveals new and potentially surprising information about diet and lifeways in Gotland's Viking community, and adds to the larger conversation about hierarchy in the Viking Age.

Keywords: Isotopes; Status; Viking; Diet

Poster Session 3

POSTER 42

Mapping out biological distance in the Memphite region, Egypt: Preliminary results from Saqqara West

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The Ancient Egyptian cemetery at Saqqara West is part of a larger Memphite Necropolis. The cemetery, located immediately to the west of the Step Pyramid complex, contains late Old Kingdom and First Intermediate Period (2494–2055 BCE) burials of the high officials and social élite, and much later Late Period to Graeco-Roman (664BCE – AD 395) inhumations of the commoners. To date, a total of nearly 800 burials have been excavated, with c. 250 skeletons and mummified remains retained for further research. As part of the spring season of Saqqara West 2025, the skeletal remains were recorded for cranial and dental non-metric traits using modified BABAO guidelines and the Arizona State University Dental Anthropology System (ASUDAS), respectively. The collected data was used to explore population affinities and temporal changes. Due to preservation and age, the cranial (n=168) and dental (n=181) datasets are not identical; while the crania and mandibles were generally in excellent condition, dental attrition among adults ranged from moderate to extreme, occasionally further compounded by the evident use of teeth as tools. Preliminary results suggest wormian bones are prevalent in the Saqqara sample, particularly along the lambdoid sutures. From dental traits, particularly notable was the absence of the third molar, while enamel pearls, supernumerary teeth and palatine tori were noted only on a handful of individuals.

Keywords: Ancient Egypt; Saqqara; Non-metric traits; Population affinities

Poster Session 4

POSTER 43

Strontium isotope analyses of cremated bone reveal inter-variation in Early Medieval Transylvania

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For many years, analyses of cremations were limited to descriptive analyses. However, recent progress in biomolecular sciences continue to reveal the potential for understanding aspects of diet and mobility from strontium ratios measured on cremated bone. Here we present strontium isotopes from six cremation burials (c. 8th century AD) from the Jucu de Sus necropolis, a multi-phased bi-ritual (human inhumations and cremations) cemetery located in the Transylvania region of Romania. The site is associated with diachronic settlements from the Roman period through the early Medieval Period (4th - 12th centuries CE). Ethical and sampling permissions were obtained from the Romanian Institute of Archaeology and Art History, and samples were transferred to the Brussels Bioarchaeology Lab (BB-LAB) at Vrije Universiteit Brussels (Belgium) for strontium measurement by multicollector inductively coupled mass spectrometry (MC-ICP-MS). When compared with predicted Sr baseline values, results indicate that individuals plot consistently with the local area, but with some variation. This could be due to intra-catchment mobility or differential acquisition of food sources between individuals. The strontium concentrations between individuals also varies, which could be due to geological differences in Ca availability in the soil, or potentially an elevation due to the incorporation of salt into diet. The Transylvanian plain is an important region, serving as a primary route for East-West migration. Because historical data from this time and region is non-existent, bioarchaeological and biomolecular data such as these help to reveal gaps in the understandings of the lived experiences of people and mobility in this key region.

Keywords: Biomolecular analyses; Romania; Mobility; Diet

Poster Session 3

POSTER 44

Demography and health at the 7th-9th century cemetery of the Lincoln Eastern Bypass, Lincoln, UK

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The skeletons from the 7th-9th century cemetery at the Lincoln Eastern Bypass (LEB) were analysed by York Osteoarchaeology. Osteological and palaeopathological data indicated that 76.6% of the 734 individuals were adults, with non-adults representing 23.4% of the total population. Males outnumbered females in most age categories. Pathologically, the congenital anomalies observed were not severe; examples included cleft spinous processes and transitional vertebrae, as would be expected. Trauma was prevalent, especially accidental rib and limb fractures. Stress fractures, such as spondylolysis and os acromiale, were more common than the period average. Five individuals showed evidence of peri-mortem trauma. Most children died before reaching the age of seven, and childhood stress was prevalent; some were affected by scurvy or rickets. Maxillary sinusitis and periosteal reactions affected more individuals than in comparative cemeteries, while the prevalence of osteitis and osteomyelitis corresponded with the period norm. Brucellosis, tuberculosis, and leprosy were seen in one or two skeletons. Most adults lived to mature adulthood (45+ yrs); therefore, age-related conditions, such as degenerative joint changes, were common, and affected males more than females. However, osteoarthritis and spondyloarthropathies were rarely recorded. Button osteomata were commonly observed, while other benign neoplastic conditions affected few individuals. Dental health was very poor, with a higher-than-average prevalence of dental calculus, periodontitis, cavities, abscesses, and ante-mortem tooth loss. The evidence suggests that those who successfully survived childhood often lived to mature adulthood and accumulated trauma, non-specific inflammation, joint disease, and increasingly poor oral health throughout their lives.

Keywords: Medieval; Palaeopathology; Demography; Health; Lincoln

Poster Session 2

POSTER 45

Bone mineral density in human auditory ossicles: An assessment of ossicle mineralisation

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Stressors experienced during the first 1000 days of life influence the health of individuals throughout their entire lives. Evaluating maternal, foetal, and infant health is, therefore, crucial for understanding life and health in the past, but it is often difficult to research in archaeological populations, particularly for individuals who survived into adulthood. A novel method for studying early life in both adult and infant remains is the isotopic analysis of human auditory ossicles. Human auditory ossicles begin ossifying around week 16 in utero and are considered fully ossified by weeks 24-26 in utero—even earlier than teeth. Unlike the majority of bones, auditory ossicles do not continuously remodel once formed. After the initial ossification period, however, there is a secondary mineralisation period that occurs following birth. To date, the time frame for this phase of mineralisation has not been precisely determined, though modern clinical studies estimate that the secondary mineralization phase is completed approximately 1–2 years post-birth. This study uses archaeological ossicle samples from multiple archaeological sites from the northeast of England, dating from the Roman to Post-Medieval periods, to identify the exact time frame for the secondary mineralization of auditory ossicles. To narrow down when the secondary mineralization phase occurs, auditory ossicles from non-adults with age-at-deaths ranging from perinate to approximately five years of age were micro-CT scanned and their bone mineral density (BMD) calculated. Here, we present the preliminary BMD results from 15 individuals and an initial estimate of ossicle mineralization completion based on age-at-death and BMD.

Keywords: Auditory ossicles; Bone density; Palaeopathology

Poster Session 1

POSTER 46

Echoes of Empire: An anthropological study of Ottoman-Era burials from Constanta

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An archaeological investigation was conducted in Constanța-Boreal between 2019-2020 with the objective of identifying potential burial sites. The research led to the discovery of 314 graves within a Muslim cemetery near the former settlement of Palazu Mare, now part of Constanța (Dobrogea), southeastern Romania. The cemetery, used during the Ottoman period, was situated on a hillock of local significance and has been radiocarbon dated to the 18th-19th centuries. An analysis of the graves indicated that they exhibited either a rectangular or oval shape, with a lateral niche to the southeast, characteristic of Islamic burial traditions. This poster presents the first anthropological examination of 290 burials from the 314 graves aiming to reconstruct the demographic profile, health status and lifestyle of the Ottoman population in Dobruja. The sample comprised 124 adults (51 males; 59 females) and 166 non-adults Results indicate a consistently demanding lifestyle, with robust upper-body development in males suggesting intensive activities such as lifting and carrying, while females display markers consistent with endurance-based activities. Habitual kneeling facets were observed in both sexes, more frequently in males, along with high rates of degenerative joint disease in young and mature adults. High frequencies of caries and calculus suggest a carbohydrate-rich diet and enamel hypoplasia suggests episodic childhood stress. The findings of this research make a valuable contribution to our understanding of the social and biological characteristics of Ottoman-era populations in southeastern Romania. The integration of archaeological and bioanthropological data has been instrumental in enhancing our understanding of historical demographic structures, health conditions, cultural practices, offering a comprehensive perspective on the lived experiences of past communities in the region.

Keywords: Bioarchaeology; Ottoman Empire; Dobruja; Cemetery; 18th-19th centuries

Poster Session 4

POSTER 47 An exploration of two cases of unhealed proximal ulna fractures in skeletons excavated from an early medieval cemetery in Lincoln, UK

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***CONSIDERATION FOR THE STUDENT PRIZE**

The skeletal assemblage excavated by Network Archaeology from the site of the Lincoln Eastern Bypass in Lincolnshire, UK, contained two cases of unfused oblique olecranon fractures. Despite being unhealed at the time of death, remodelling of the bone fragments around the fracture line was consistent with attempted union, suggesting that the trauma was ante-mortem. Due to the rarity of such fractures in the archaeological record, the research aim was to interpret the aetiology of these fractures. Through a palaeopathological examination, firstly, the age and sex of these individuals was established: both were male, an old middle adult and a mature adult. Secondly, in comparison to the clinical literature on proximal ulna fractures, an aetiology was established; it is the conclusion of this research that the fracture patterns observed in these individuals are indicative of an overextension of the elbow which occurred during a low-energy fall from standing height onto an outstretched hand. In the time succeeding trauma, the fractures of both individuals failed to heal, thus establishing non-union. Radiography distinguished radiodense areas of sclerosis, indicating a prolonged period of non-union. Osteometric analysis was used to calculate the robusticity indices of both humeri, which revealed that both individuals were likely right-handed and that, succeeding the fractures, both continued to use the fractured elbow. The collation of archaeological examples of unfused olecranon fractures revealed that most examples present as isolated cases at a site, highlighting the rarity of these examples from Lincoln.

Keywords: Olecranon; Non-union; Palaeopathological; Aetiology; Fracture

Poster Session 2

POSTER 48 Reconstructing mobility patterns in Middle Neolithic France: A multi-proxy approach using strontium isotopes, osteological and funerary evidence

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***CONSIDERATION FOR THE STUDENT PRIZE**

Life and death in Middle Neolithic Central Europe (4700 – 4300 BC) after the dissolution of the Linearbandkeramic culture has been subject to longstanding debates. A recent bioarchaeological study by the Counter Culture Project undertook strontium isotope ($^{87}Sr/^{86}Sr$) analyses on 53 individuals from five cemeteries in Alsace, France, to examine social diversity and continuity across the 6th and 5th millenniums BC. $^{87}Sr/^{86}Sr$ values were sampled via LA-MC-ICP-MS to collect measurements on the growth axis of the M2 and M3 to reconstruct mobility patterns and assign locality status. This study focused on comparing the $^{87}Sr/^{86}Sr$ results with funerary archaeology data and demographic patterns to discern if locals and non-locals were buried differently. At the sites of Rosheim Rosenmeer and Entzheim-Geispolsheim, locals were buried with a more diverse variety of grave goods. This is reversed at Obernai and Lingolsheim, where only non-locals were interred with items of personal ornamentation, and more grave goods than locals. Erstein Krebsrott was the only site to have a standardized mortuary practice that did not deviate for locality status, instead burying all individuals with a common set of grave goods, and a single unique object. Finally, a third type of mobility pattern was identified: individuals who had moved to the Alsace region during their childhood and seemed to receive a funerary rite that positioned them somewhere between local and non. Thus, the highlighted differing treatments of locals and non indicates movement away from LBK way of life and diversified social inequality and complexity in the Middle Neolithic world.

Keywords: Mobility; Strontium; Neolithic; Mortuary; France

Poster Session 3

POSTER 49 Bioarchaeological indicators of stress and adaptive strategies at Bronze Age Huoshaogou cemetery, Gansu, China

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This study examines the survival stresses, subsistence strategies, and dietary patterns of inhabitants interred at the Bronze Age Huoshaogou cemetery (Qijia Culture) in Gansu Province, China, through a bioarchaeological lens. Forty-seven crania from Huoshaogou (Bronze Age, Qijia Culture)—stored at the Chinese Academy of Social Sciences Osteoarchaeology Laboratory—were examined for linear enamel hypoplasia, porotic hyperostosis, pathology, diet (dental wear, caries frequency, and carbon-nitrogen isotope ratios), and trauma patterns. Results reveal high childhood stress markers among Huoshaogou individuals and a 25.5% incidence of cranial trauma, indicating interpersonal violence. While porous lesions on the sphenoid wing, together with periodontitis and cribra orbitalia, point to possible scurvy linked to vitamin C deficiency. Evidence of lesion healing for porotic hyperostosis and cribra orbitalia implies progressive adaptation to environmental and nutritional stressors. Dental caries, wear patterns, and $\delta^{13}C/\delta^{15}N$ values reveal a balanced intake of C_3 and C_4 plants supplemented by animal protein, consistent with a mixed agrarian–pastoral economy. Despite facing chronic malnutrition and disease-related challenges, Huoshaogou residents employed diversified subsistence strategies to mitigate stress and maintain health, demonstrating notable resilience. These findings enhance our understanding of prehistoric health, livelihood, and social dynamics in northwest China and provide a valuable reference for future bioarchaeological investigations in the region.

Keywords: Bioarchaeology; Bronze Age; Chinese archaeology; Health conditions

Poster Session 2

POSTER 50 A child from medieval York with multiple congenital skeletal anomalies: A cases study and differential diagnoses

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This study focuses on the skeletal remains of a younger juvenile individual from Haymarket, York, a multi-period burial site spanning from the Roman to Civil War periods, but mainly comprising burials from the high medieval (11th – 13th centuries) cemetery of All Saints church on Peasholme Green. The remains were excavated in 2012 by York Archaeology and analysed by osteoarchaeologists at York Osteoarchaeology. The aim was to examine in detail the skeletal remains of this child to understand the possible pathological conditions which could have caused the observed bone lesions. Osteological analysis suggested that the child was aged between five and six years, according to dental development. Palaeopathological analysis revealed multiple congenital anomalies, particularly in the axial skeleton. These included several fused and malformed cervical and upper thoracic vertebrae, rib and sternal anomalies, as well as severe dental enamel hypoplasia. The most severe skeletal changes were observed in the cervical spine, which suggests that this child might have been born with Klippel-Feil syndrome. The condition typically causes the fusion and/or malformation of cervical and sometimes other types of vertebrae and is often associated with various other osseous and non-osseous anomalies. Only a handful of individuals with this condition have so far been reported from archaeological contexts worldwide. The burial of this individual in the cemetery among other members of the community suggests that they were not treated differently after death.

Keywords: Palaeopathology; Klippel-Feil syndrome; Dental enamel hypoplasia; Fusion of cervical spine

Poster Session 2

POSTER 51 Biological distance analysis in early medieval Wales: Exploring kinship and post-marital residence

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This paper presents the results of biodistance analysis of skeletal assemblages from early medieval Wales, a formative period in Welsh history and one of great socio-political change. Archaeological research has revealed significant regional and chronological complexity in power structures, settlement patterns, and mortuary practice between 400-1100 AD. Bioarchaeology has historically had a limited contribution to these debates, due partly to the poor survival of bone. In recent decades, the corpus of human remains from Wales has grown substantially, enabling osteological evidence to inform on wider themes within early medieval research, most notably in the areas of mobility and migration using isotope analysis. Through biological distance analysis, this paper adds a new dimension to the growing field of bioarchaeology in Wales – that of affinities within cemetery populations. Analysis of dental metric data was performed to reveal whether communities practised matrilocal or patrilocal residence patterns, and to investigate the influence of biological affinity on cemetery organisation. Four intra-cemetery case-studies will be discussed: Five Mile Lane (*n*=65), Llandough (*n*=95), Llangefni (*n*=31), and Tywyn y Capel (*n*=24). The results highlight the intricacy of kinship systems and the ways in which kinship identities were translated into the mortuary arena in early medieval Wales. Post-marital residence analysis of these sites also revealed regional and chronological variation in patterns of sex-based mobility, suggesting residence practices and gender relations in early medieval Wales are more complex than previously understood. These results contribute greatly to our understanding of these communities in a period of upheaval and social change.

Keywords: Biodistance; Kinship; Early medieval; Wales

Poster Session 4

POSTER 52 Spinal pathologies from the site of Wad Ben Naga

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VIRTUAL ONLY

The village of Wad Ben Naga (WBN), located in present-day Sudan, lies near the remains of one of the most significant Meroitic royal cities. The city was attacked in the 4th century CE, and evidence of squatting, settlement and burial activities has been found from later periods. The Archaeological Expedition to Wad Ben Naga by the National Museum – Náprstek Museum in Prague, has so far excavated 36 human skeletons in the western part of Central WBN, dating to the Post-Meroitic (4th–6th century CE) and Christian (6th–15th century CE) periods. The burials contained both adults and non-adults in various states of preservation. A variety of congenital and acquired pathologies of the spinal column were recorded. The majority of these were cases of spondylosis, but individual cases of cervical ribs, spondylolysis, spina bifida occulta, lumbarisation, sacralisation and a collapsed vertebral body were also observed. Both males and females were affected. The findings were mostly associated with adults; only one case of lumbarisation was associated with a teenager. While most congenital conditions probably had no effect, fractures and degenerative changes must have negatively impacted quality of life. These findings also indicate the range of activities undertaken by the ancient inhabitants of WBN: spondylolysis and, at least to a certain extent, spondylosis are associated with repetitive toil that puts pressure on the spine, such as agricultural and building activities, and carrying heavy loads. A compression fracture of a cervical vertebra was most likely caused by a fall.

Keywords: Palaeopathology; Spinal column; Sudan; ancient Nubia

Poster Session 2

POSTER 53 Walking their way up the social ladder: Social and gender differences in early Egypt and Nubia through the study of daily mobility

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In the past, the amount of walking individuals engaged in reflected labour demands and interactions with the landscape. As a repetitive activity, habitual walking exerted cumulative biomechanical strain on the body, resulting in musculoskeletal stress markers such as elevated entheseal changes. While in antiquity walking was integral to subsistence and labour practices, its patterns and variation were likely contingent upon factors such as age, status, and gender. This study adopts a biosocial perspective to investigate habitual walking and its relationship to social identity during the emergence of complex society in 5th–3rd millennium BCE Egypt and Nubia. Drawing on a sample of 200 skeletal remains from sites across the region, we apply a multi-proxy biomechanical approach to assess lower limb loading patterns. Key indicators considered include joint degeneration, platycnemia, femoral diaphyseal robusticity, and entheseal changes. Data from anatomical stress indicators, combined with demographic information (age and sex), are statistically assessed to reconstruct the biomechanical load and social distribution of mobility at both intra- and inter-site levels. In doing so, this study investigates whether mobility was equally shared across the population or increasingly concentrated among specific social groups, thereby revealing aspects of labour organisation during this transitional period. We also explore whether certain communities exhibited higher mobility rates and whether these patterns changed over time, potentially reflecting shifts in site function or sociopolitical status. This study highlights how variations in daily mobility may have reflected broader dynamics of labour, identity, and social stratification during the rise of the centralised state in the Nile Valley.

Keywords: Entheseal changes; Identity; Mobility

Poster Session 2

POSTER 54 The curious case of the Candia Skull: Unravelling the identity of a fossilised legacy-collection human skull using minimally destructive methods

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In 1627, a fossilised human skull was discovered in the outskirts of Candia (modern-day Herakleion) on the island of Crete. Shortly thereafter, the skull was taken to Sidney Sussex College, Cambridge, where it was kept as a “curio” and even shown to King Charles I. Yet despite the curiosity the Candia skull has garnered over the last 398 years, very little was known about the identity of the person to whom it belonged. To rectify this mystery, we applied a suite of non-destructive and minimally destructive methods to detect the biography of this individual, including proteomic amelogenin analysis, micro-CT scanning, osteological analysis and archival research, to identify the individual's age at death, biological sex, and learn more about their burial and modern rediscovery. The results reveal that the skull belonged to a boy aged 5-7 years, who was probably buried in a Minoan rock-hewn chamber near Knossos, Crete. Flooding of the chamber likely dislodged the skull and eventually resulted in its fossilisation inside the limestone-rich cavern. This study demonstrates the utility of non-destructive and minimally destructive methods as powerful tools for establishing biographies for ancient human skulls, even when they are encased in thick calcified deposits and originate from legacy collections.

Keywords: Minimally destructive; Legacy collections; Palaeoproteomics; Micro-CT; Osteobiography

Poster Session 1

POSTER 55 Kaasjongens en melkmeisjes: A paleopathological approach to gendered child labour practices in post-medieval Dutch dairy farming

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***CONSIDERATION FOR THE STUDENT PRIZE**

The post-medieval (AD 1650-1850) period in the Netherlands is a well-documented time of economic prosperity, with dairy farming playing a great role in domestic and international Dutch industry. Due to the overall demand for dairy products such as butter and cheese, as well as the family-oriented business model of most farms during this period, children often played a major role in the agricultural workforce. Contemporary sources provide insight into the gendered division of child labour within the Dutch dairy industry during this time, with boys aiding with farmwork while girls focused on domestic tasks. The physiological impact of these activities has yet to be assessed in-depth from a palaeopathological perspective, as the inability to estimate sex for non-adults complicates these analyses. Therefore, this study focuses on the distribution of activity-related pathological lesions in the spines of 20 non-adult individuals (2 – 19 years at death) from Middenbeemster, a post-medieval dairy farming community in North Holland with archival data detailing sex. Statistical analysis found that male individuals were significantly more likely to have vertebral body pathologies such as Schmorl's nodes and intervertebral disc disease (IDD) ($\chi 2 = 35.255$, $p < .001$) than females. While this aligns with the historical accounts of gendered divisions in labour from this community, the distribution of both body and facet pathologies throughout the spine in male and female individuals provides further insight into the biomechanical disruptions to the spine brought about by these gendered labour practices.

Keywords: Child labour; Spinal joint disease; Paleopathology

Poster Session 2

POSTER 56 The invisible smoker: Interdisciplinary approaches for better understanding tobacco-use in seventeenth to nineteenth century England and Netherlands

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The adoption of tobacco, after its introduction to Europe in the sixteenth century, spread quickly and thoroughly across the continent. Historical-social commentary declares that tobacco smoking was a masculine habit, insisting that only the lowest classes of women smoked; yet knowledge of which social groups indulged in the intoxicant is limited by a dearth of accurate historical demographic data. Without such information, it is difficult to assess the longue durée of the health impacts that tobacco has had on different sections of European society. The Tobacco, Health and History Project sought to test this theory and produce a more accurate demography of smoking practices in the past by combining osteoarchaeological and archaeometabolomic evidence for tobacco consumption from three Dutch (n=267) and two English (n=340) post-medieval (AD1500-1870) archaeological populations. Our results present a number of new findings that both support and contradict historical perceptions of smoking. While an association with men is present, between 22% and 72% of women may have also been consuming, including middling-to-high status women. We observed that women in the Netherlands began to smoke at an earlier age than women in England, perhaps reflecting differences in societal acceptance. The osteoarchaeological evidence also suggests that the mode of tobacco consumption used was likely linked with class, occupation and gender. Here, we demonstrate how an interdisciplinary approach, combining historical, osteoarchaeological, and biomolecular techniques, can not only fine-tune our understanding of the past, but can also challenge preconceived historical notions about the experiences, lifestyles and habits of overlooked social groups.

Keywords: Tobacco consumption; Post-medieval; Metabolomics; Osteoarchaeology; Historical sources

Poster Session 3

POSTER 57 Incidence and prevalence of Wormian bones in the human skull

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***CONSIDERATION FOR THE STUDENT PRIZE**

Wormian bones (or sutural bones) are accessory bones that form within the sutures of the human skull (mostly within the lambdoid, coronal, sagittal, and squamous sutures). These sutural bones have anthropological value as they provide insights about population history, genetic diversity, and skull morphology. It is unclear how or why these accessory bones are developed; understanding their relationship with congenital and acquired diseases, and skeletal trauma, may contribute to a crucial understanding in the presence and formation of Wormian bones. Therefore, this study aims to evaluate the incidence and prevalence of Wormian bones in the human skull by using post-mortem CT (PMCT) scans collected from the New Mexico Decedent Image Database (NMDID). A stratified random sampling method will be used to select 252 PMCT scans from individuals aged 8-97; these will be subcategorised to be balanced by age and sex. As Wormian bone formation can often be associated with age, sex, skeletal trauma, biogeographical affinity and congenital disorders, statistical analysis will establish a correlation between these variables and the detection of Wormian bones to be explored. These distinct variables will support in recognising the presence of Wormian bones in the human skull and will facilitate the support of further research to maximize the application of Wormian bones in a broad series of medical and anthropological studies. Furthermore, these findings could have significant implications for public health efforts to address underlying hereditary disorders, congenital diseases and genetic conditions predisposing an individual to the development of Wormian bones.

Keywords: Wormian bones; Skull morphology; Congenital disorders; Post-mortem CT imaging; Anthropological analysis

Poster Session 1

POSTER 58 Isotopic provenancing of 7 individuals from the Battle of Stoke Field

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[1]University of Cambridge; [2]Anglia Ruskin University

VIRTUAL ONLY

As the War of the Roses came to an end and Henry VII established the legitimacy of the Tudor dynasty, the Yorkist rebels struggled to maintain English support for their cause. Only able to assemble about 1,000 English soldiers for their final attempt to put their own king on the throne, the Yorkists recruited about 7,000 Irish and German mercenaries in order to make their last stand in 1487. About 500 years after their defeat at the Battle of Stoke Field, the remains of some of the Yorkists soldiers were excavated in the 1980s from a discourteous burial pit at the historic battlefield and stored at the nearby Resource Centre of the Newark and Sherwood Museum Service. Without any identifying material context found in the burial, one is left to wonder if the individuals were among those thousands of mercenaries from Ireland and Germany who left their homeland to fight for the Yorkist cause. This research uses isotopic analysis to investigate the geographic origin of those soldiers who were excavated from Stoke Field near Newark-on-Trent. Bone collagen and tooth enamel were collected by the authors and processed at the University of Cambridge in order to obtain stable isotope values of carbon, nitrogen and oxygen. By cross-referencing the individuals' isotopic signatures with contemporary dietary and geographic information, this research aims to restore at least some form of national cultural identity to these soldiers who seemingly received no dignified recognition upon their deaths.

Keywords: Isotopes; Geographic origin; War of the Roses

Poster Session 3

POSTER 59 Reconstructing diet in Early Anglo-Saxon Bishopstone: A carbon and nitrogen isotope analysis

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[1]University of York; [2]University of Reading

***CONSIDERATION FOR THE STUDENT PRIZE**

This study investigates the paleodiet of individuals interred at the 5th–6th century Anglo-Saxon cemetery of Bishopstone, East Sussex, UK. Contributing to the growing corpus of stable isotope studies on early Anglo-Saxon populations, this research provides opportunity for insights into the diet and access to marine resources of a coastal population from the early Anglo-Saxon period, through stable carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotope analysis of human bone collagen. Analysis of 40 individuals, representing all age groups and both sexes, revealed a predominantly terrestrial diet, with no isotopic evidence for significant marine food consumption, even in this coastal setting. Males and females were found to share broadly similar isotope signals, though isotopic methods cannot differentiate between protein sources. Bishopstone's subsistence strategies were therefore embedded within a predominantly terrestrial system shared with other inland communities, rather than being shaped by coastal resource exploitation, reinforcing emerging evidence that early Anglo-Saxon diets were largely terrestrial regardless of coastal proximity.

Keywords: Bioarchaeology; Isotopes; Diet; Anglo-Saxon

Poster Session 3

POSTER 60 A palaeopathological and biomolecular case study on disease, diet and conditions in Roman Britain: Bioarchaeological Insights from Driffield Terrace, York

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VIRTUAL ONLY

This case study integrates data from various reports for an exploration of health and disease in Roman Britain provincial populations, alongside supporting biomolecular analysis conducted on the human remains located in Driffield Terrace, Eboracum, Roman Britain. The site is a 2nd to 4th Century C.E. cemetery, renowned for its high proportion of decapitated burials, particularly ~80% male and aged between 20-40 years. The Driffield Terrace decapitations were postmortem removals or while the subject was alive due to the perimortem trauma to the neck, suggesting an execution/ritual. The high rates of decapitation are a rare phenomenon in Roman Britain; a unique opportunity to investigate the biology of these remains, particularly life in the northwestern frontier of the Roman Empire. The remains examined showed skeletal indicators of physiological stress, trauma, and potential infectious disease. Further investigation, through radiographic imaging and macroscopic analysis, yielded high frequencies of enamel hypoplasia, periosteal reactions, and vertebral degeneration. Several specimens showed perimortem trauma and healing, consistent with occupational labour and/or execution. Interpretation of $\delta^{13}C/\delta^{15}N$ stable isotope analysis on the bone collagen was conducted to assess dietary variability, whilst the aDNA screening focused on Mycobacterium tuberculosis using the IS6110 marker. The results from the bone collagen analysis show a primarily protein-rich diet with inter-individual variations, alluding to possible food sources being tied to status, origin, or occupation. The bacterial aDNA screening of M. tuberculosis identified positive PCR signals. Though the conclusive results remain ambiguous, if validated in the future, it would be a rare biomolecular confirmation.

Keywords: Palaeopathology, Isotope Analysis, Decapitation Burials, Biomolecular Archaeology, Roman Britain

Poster Session 3

POSTER 61 Do you see what I see? Introducing a refined surface preservation recording method for cortical bone

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[1]The University of Edinburgh

Osteologists have long recognized that well-preserved cortical surfaces are crucial for basic demographic profiling and identification of pathological changes, as most methods rely upon macroscopic observation of external features. Currently, there is a need for a standardised, user-friendly, and detailed methodology for recording and quantifying an individual's state of cortical preservation across the skeleton. An updated method for assessing the surface preservation of human skeletal remains is proposed, building on the key structural components of the McKinley (2004) method widely used in osteoarchaeological analysis. The Refined Surface Preservation Recording Method (RSP method) consists of four new descriptive categories with detailed, full-colour images for reference. The practical application of this method was assessed via interobserver error analysis (N=11 participants), revealing a higher degree of consistency (κ = .765, p = < .001 [95% CI, .699 to .831]) between observers when scoring cortical surface preservation using the RSP method aided by a Dino-Lite handheld digital microscope compared to the McKinley (2004) method (κ = .622, p = < .001 [95% CI, .566 to .678]). Finally, the combination of the RSP method with a zonation approach (as per Knüsel and Outram, 2004) was investigated, which yielded the highest consistency between observers (κ = .901, p = < .001 [95% CI, .827 to .975]). Overall, the results demonstrate that the RSP method provides a quick, easy, and accurate method for assessing cortical bone surface preservation that can be adapted based on equipment availability and the scale/focus of the osteological analysis to be undertaken.

Keywords: Cortical bone; Surface preservation; Archaeological methods

Poster Session 4

POSTER 62 Queering forensics: Transgender representation in forensic anthropology

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***CONSIDERATION FOR THE STUDENT PRIZE**

There is a rising threat to trans rights and safety, as witnessed by trans-exclusionary radical feminism justifying their transphobic rhetoric with policy changes. Coupled with limitations in bioarchaeology/anthropology regarding the gender/sex discussion, gender identities beyond the 'biological sex binary' need to be considered in anthropological examinations. This project offers insights into current methods for assessing medical transitions, suggestions for the development of these methodologies, and guidance on how these methods should be implemented in practice. A literature review and survey consisting of 22 questions was shared with forensic professionals, including anthropologists and archaeologist, to assess the current knowledge in their respective fields on the possibility and need to identify trans skeletons, the knowledge of visible alterations of hormonal and surgical transitions, and the best method for including these alterations in a report. A total of 23 responses were collected as well as 7 supplementary interviews. 72% of respondents felt that including gender identity would be more helpful to police investigations than not, while only 39% reported a firm ‘yes’ in support of attempting to estimate gender. Participants were also more in favour of surgical indicators assisting with gender estimation than hormonal alterations (69% between 7 and 10 vs. 13%). This study highlights the complexity of incorporating gender into anthropological examination due to the lack of research and multitude of different gender identities. Based on the data collected, three main areas of guidance have been developed: inclusive reporting, considerations for developing methods, and collaboration.

Keywords: Transgender; Gender estimation; Sex estimation; Human identification

Poster Session 4

POSTER 63 Assessment of the disarticulated human skeletal remains from the Kent Street Operations Notice, York

Alex Andrews[1,2]

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Between the 9th of August and 14th of November 2023, as part of an operations notice, York Archaeology undertook archaeological monitoring and recording during drainage installation works along Kent Street, York, on behalf of the City of York Council. The works overlay the site of the former Medieval cemetery of All Saints Church, Fishergate. Excavation revealed a substantial assemblage of disarticulated human skeletal remains, comprising over 12,000 fragments, likely the result of repeated disturbance from later burials, mass graves and modern services. The disarticulated assemblage is likely the result of disturbance to earlier formal burials caused by successive repeated episodes of grave excavation and redeposition. This poster presents the results of osteological assessment undertaken on the assemblage, focusing on demographic reconstruction through age and sex distribution, pathological prevalence, and the estimation of a Minimum Number of Individuals. The analysis provides insight into the complexity of medieval urban burial environments and the challenges posed by heavily commingled and fragmentary assemblages.

Keywords: Disarticulated; Commingled; Commercial archaeology; Urban archaeology

As part of - Allenby, K., Badger, J., Čepauskas, P., McComish, J.M. and Vatylioti, M., 2024. Drainage Installation, Kent Street, York: Archaeological Monitoring, Recording and Excavation*. Report No. YA/2024/074. York Archaeology. Unpublished client report.*

Poster Session 4

POSTER 64 Bones, Bioarchaeological data and integrated methods: Revisiting burial practices in post-Roman Central Italy

Ileana Micarelli [1], Giulia Casagrande[1], Giulia Formichella[1], Sara Bernardini[2], Elisa Bella[3], Eugenia D'Atanasio[3], Beniamino Trombetta[1], Giorgio Manzi[1]

[1]Sapienza, University of Rome; [2]University of Bologna; [3]Consiglio Nazionale delle Ricerche

The political and military instability that affected the Western Roman Empire culminated in its collapse in 476 CE, creating a vacuum that reshaped the sociopolitical and cultural landscape of Italy. The subsequent centuries witnessed complex demographic and cultural transitions, which are reflected in the mortuary record. This poster presents results from an ongoing interdisciplinary project focused on Late Antique and Early Medieval cemeteries in central Italy, including Lucus Feroniae, Ostia Antica, Selvicciola, and Castel Trosino. The project aims to reassess previous research and integrate new bioarchaeological, isotopic, genetic, and radiocarbon data. Among these sites, Castel Trosino stands out as the only cemetery in the region to have been studied in such a comprehensive and integrated manner. The skeletal collection from Castel Trosino comprises 19 crania recovered in the early 20th century from a cemetery of approximately 300 graves, renowned for its rich grave goods that reflect the entanglement of Lombard and Byzantine traditions. For ten individuals, radiocarbon dating revealed surprisingly broad temporal spans, ranging from 427 to 1020 CE. Dietary isotopes indicate consistency with other contemporary populations. At the same time, strontium analyses suggest that at least one non-local male, genetically marked by Northern European ancestry and likely having blue eyes, was also the most recent burial. This multi-proxy approach, exemplified by the analysis of Castel Trosino, not only refines the chronology and biological profile of that site, but also establishes a methodological foundation for ongoing comparative work across other Late Antique and Early Medieval cemeteries in central Italy.

Keywords: Isotopes; aDNA; C14; contextualization

Poster Session 3

POSTER 65 Diagnosing DISH-order: When ossification won't sit right

Emma Scott[1,*]

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***CONSIDERATION FOR THE STUDENT PRIZE**

Diffuse Idiopathic Skeletal Hyperostosis (DISH) is a condition affecting the spine, characterised by ossification of the anterior longitudinal ligament, often likened to "melted candle wax". Uniquely, these changes are found on the right anterolateral aspect of the thoracic vertebrae, a pattern resulting from the descending aorta's position on the left, inhibiting ossification. This poster presents a rare and intriguing case of possible early-stage DISH (eDISH) in a 26-45 year-old male, discovered in a burial ground (dated 14th - 17th Century) from the medieval rural settlement of Poulton, Cheshire but with a twist. Ossification was observed on the left anterolateral aspect of thoracic vertebrae T9 and T10, with a possible onset at T8, raising the fascinating possibility of situs inversus, a rare congenital condition where the internal organs are mirrored from the normal position. This study aimed to document the pathological changes, explore alternative diagnoses and consider the implications of this unusual pattern. Macroscopic analysis followed established osteological criteria for DISH, focusing on key features, such as disc space preservation and number of affected vertebrae. Findings revealed advanced cervical osteoarthritis, extensive osteophytosis, porosity and marginal lipping of thoracic and lumbar vertebral bodies, with ossified ligamentous formations consistent with DISH limited to the left of thoracic vertebrae. As fewer than four vertebrae were affected, this suggested eDISH. No trauma or taphonomic interference was observed. This case highlights the need to consider anatomical variants in palaeopathology, showing how the unexpected can emerge from the archaeological record, reminding us that sometimes, even bones can play tricks!

Keywords: Archaeological; Osteology; Vertebrae; Palaeopathology; DISH

Poster Session 2

POSTER 66 From excavation to interpretation: Multidisciplinary approaches to the late medieval cemetery of Cencelle (VT)

Giulia Casagrande[1]*, Daniele Ricchiuti [1], Ileana Micarelli [1], Giorgio Manzi [1], Giorgia Maria Annoscia [1]

[1]Sapienza, University of Rome

***CONSIDERATION FOR THE STUDENT PRIZE**

The site of Leopoli Cencelle (9th–17th century CE) is located in the Tolfa Mountains, a few kilometres from the Province of Rome. The late medieval cemetery, in use from the 12th to the 15th century CE, has yielded more than 1,000 burials, studied through both archaeological and anthropological analyses. However, despite the quantity of data collected, it is still not possible to reconstruct the lived experience of the community nor to establish a clear chronological framework for the individuals buried there. To address these gaps, the current project aims to integrate archaeological and anthropological data within a unified and queryable digital environment. The first step has been the creation of the Cencellae Database Project, a multidisciplinary repository designed to store excavation data alongside anthropological results. These datasets are being incorporated into a spatial database (GIS) structured in chronological layers. This infrastructure allows for more precise reconstructions of funerary practices and population dynamics, including the spatial distribution of individuals by biological and palaeopathological profiles. Finally, this integrated approach between the fields of archaeology and anthropology will be applied to conduct radiocarbon (C14) analyses on the osteological material from Cencelle, with the aim of reconstructing the phases of use of the funerary area. It will also serve to guide the selection of samples for the investigation of paleodiet, mobility, and the spread of infectious pathogens.

Keywords: Bioarchaeology; Digital archaeology; Late medieval

Poster Session 1

POSTER 67 A disabled combat soldier: Multiple skeletal anomalies with Klippel-Feil syndrome

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The Ministry of National Defence Agency KIA Recovery & Identification (MAKRI) has conducted systematic excavations throughout South Korea, with the aim of restoring unaccounted service members from the Korean War (1950-53). The human remains of a soldier recovered in 2020 revealed pathological signs diagnostic of Klippel-Feil syndrome (KFS). In this study, the condition was clearly assessed through both macroscopic observation and computed tomography (CT) imaging. The vertebral bodies from C1 to C3 were fused into a block, with the odontoid process of C2 fully fused to the right superior articular facet of C1 - an exceptionally rare finding. In addition, several skeletal anomalies commonly associated with KFS, such as hemivertebrae and oligodontia were identified. Fusion of C1 and C2 typically restrict neck movement and often result in lateral cervical tilt. Given the scarcity of reported cases of KFS in skeletal remains, we considered this case to be of significant value. Moreover, the presence of such a rare condition in a combatant, for whom highly physical performance would have been essential, allowed us to infer potential functional limitations experienced during life.

Keywords: Congenital defects; Cervical column fusion; Klippel-Feil syndrome

Poster Session 4

POSTER 68 Ploughs, pews & patterns: Identifying sex-based variations in upper limb activity markers and Entheseal changes in the later medieval population of St. Saviours Friary Haverfordwest, Pembrokeshire

Neve Rust[1], Katie Faillace[1], Ciara O'Brien Butler[1]

[1]Cardiff University

This research explores sex-based divisions of activity within the later Medieval site of St Saviours Friary in Haverfordwest, Pembrokeshire, investigating individual lifeways using entheseal changes. By exploring a previously understudied area of Welsh history, this research will improve understanding of a transitionary period (late Medieval to early post-Medieval, c. 1220 – 1670 CE) and highlight the benefits of using osteoarchaeological methods. Fifty individuals were scored for entheseal changes using established methods by Hawkey and Merbs, and Smith. Robusticity, stress and enthesophyte growth were analysed for twenty-three muscle attachment sites across the shoulder girdle and upper limb, and robusticity was scored for the first and second metacarpals. Preliminary results demonstrate that both sexes show hyper-development of the costoclavicular ligament and biceps brachii – which implies no sex-based division of the 'push-pull' motions. However, there is evidence of males having more pronounced deltoideus muscles (humerus), associated with the abduction of the arm away from the body, and women having more stressed brachialis (ulna), implying a continuous extension of the elbow joint. Ultimately, the study builds upon previous research and applies these methods to a later Medieval Welsh population – a region and period that have not yet been subject to this approach. By doing so, this project contributes to the study of sex-based activity, the changes in gendered social positions during a transitionary period of history, and the wider knowledge of Welsh history, demonstrating a gap that osteological analysis can bridge when historical literature cannot.

Keywords: Activity markers; Wales; Later Medieval

Poster Session 2

POSTER 69 Cranial morphology as an indicator of kinship in an Egyption population from the age of pyramid builders

Tereza Meinerová[1], Jan Cvrček[2], Veronika Dulíková[1], Petra Brukner Havelková[1,2], Ján Dupej[1], Miroslav Bárta[1], Šárka Bejdová[1]

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This study investigates the potential of virtual anthropology to assess biological kinship through cranial morphology. A reference dataset of 44 genealogically documented adult individuals from 19th–20th century Czech Republic was analysed using 3D models derived from CT scans. This approach was then applied to 41 adult individuals from the Old Kingdom (2700–2180 BC), whose skulls were scanned in situ at the Egyptian site of Abusir using 3D scanning. All 3D models were processed in Morphome3cs software using geometric morphometrics. Root mean square (RMS) distances and ANOVA were used to test the influence of biological relationships and sex. Principal component analysis (PCA) assessed shape variability. In the Czech dataset, ANOVA confirmed that both sex and biological relationships significantly influence cranial morphology. RMS analysis showed that biologically related individuals exhibit greater morphological similarity than unrelated ones. This pattern was especially evident among females, where related females showed more shape similarity than unrelated pairs; in males, the effect was present but less pronounced. PCA visualizations displayed a spatial distribution closely matching known genealogical relationships. In the Abusir sample, PCA was applied to explore morphological variability. The resulting distribution in shape space suggested a possible correlation between cranial morphology and biological relatedness. Individuals identified as potentially related, based on archaeological and Egyptological evidence, tended to cluster more closely in PCA plots. These findings highlight the value of combining virtual anthropology with archaeological and genealogical data, especially in populations where DNA sampling is not possible, to explore biological relatedness.

Keywords: Virtual anthropology; Cranial morphology; Biological kinship; Geometric morphometrics; Old Kingdom Egypt

Poster Session 1

POSTER 70 Not one way to file: Microscopic variation in Viking-Age tooth filing

Fin Taylor[1]*, Alison Klevnas[2,3], Cecilia Ljung[3], Astrid Noterman[2], Taylor Peacock[1], Emma Pomeroy[1]

[1]University of Cambridge; [2]Stockholm University; [3]Uppsala University

***CONSIDERATION FOR THE STUDENT PRIZE**

Assumed to be part of Viking (750–1050 CE) social identity, horizontal teeth filing in skeletal remains has been recorded across several countries in the Viking world. With no obvious craft or tool use mechanism, studies of filed teeth have traditionally considered them a marker of social identity, such as a warrior or mercantile class, and only occurring in male individuals. However, analysis has been predominantly macroscopic, with microscopic studies limited to one community on mainland Sweden. This study explores filed teeth at the microscopic level from sites across the Viking world. Eighteen teeth were analysed under 3D Keyence from Gotland, Sweden, and Dorset, United Kingdom. Individuals were chosen for differences in filing depth and presentation, the presence of linear enamel hypoplasia, and unmarked enamel. Of these, seven individuals had clear evidence of filing. Vertical micro-striations and labial facets were identified as diagnostic indicators, showing distinct patterns inconsistent with pathological or masticatory processes. Filing was classified into three types: superficial (Type 1), moderate (Type 2), and deep furrows (Type 3). Type 1 and 2 filings commonly exhibited facets and micro-striations, suggesting habitual or occupational wear, while deeper Type 3 filings potentially represented symbolic or decorative practices. Outliers, including KV133—the only identified female with filings—and KV65, which showed deep filing without microscopic features, raised important questions about gender roles, identity, and social practices in Viking society. Microscopy reveals that Viking dental filing reflects overlapping symbolic and practical functions, with facets, micro-striations, and filing depth forming key indicators of this complex tradition.

Keywords: Bioarchaeology; Tooth filing; 3D microscopy; Viking identity; Skeletal analysis

Poster Session 1

POSTER 71 Forensic investigation and the discovery of two early-medieval burials

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We present a case of medico-legal and archaeological interest involving the discovery of two skeletons buried on top of a hill close by to a medieval castle. In the summer of 2024, the inclement weather unrooted some trees on a hill adjacent to a castle near Udine. Some months later, a passer-by discovered a human cranium among the exposed roots and promptly alerted the authorities. A medicolegal inspection of the remains at the scene recognized the complete skeleton and recommended the involvement of an archaeological expert for proper recovery and documentation. Further investigations established that the unrooted tree was originally planted in the 1960s and revealed, through a historical inquiry, that the area, previously the site of a medieval settlement, had been also used in 1944 for the execution of partisans. With access restricted and appropriate safety measures in place, the hill was surveyed using metal detection and geophysical techniques to locate additional findings. The human remains were excavated and documented using an archaeological stratigraphical methodology. Although there was an absence of data supporting a precise dating, the contextual evidence provided significant insights into the depositional processes. A later survey discovered another skeleton intermingled with the roots of a nearby tree, suggesting a complex burial history of that area. This multidisciplinary investigation, with the integration of archaeology, physical anthropology, and biochemistry approaches, enabled the complete recovery and detailed forensic examination of two skeletons, highlighting chronological details of these burials, and demonstrating the effectiveness of teamwork in forensic research.

Keywords: Forensic archaeology; Forensic anthropology; Funeral archaeology

Poster Session 4

POSTER 72 Dietary insights into the early life Neolithic subsistence practices from the Cotswold-Severn chambered tomb at Thornwell Farm

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[1]University of Oxford

***CONSIDERATION FOR THE STUDENT PRIZE**

This research aimed to conduct a highly resolved study of the early life histories of individuals from the Neolithic chambered tomb at Thornwell Farm, Wales, UK. Eight mandibular bones from the collection were studied. Sequential δ13C and δ15N stable isotope sampling was conducted on dentine from eleven molar teeth, providing an age constrained image of early life subsistence for each individual. Radiocarbon dating analysis on the mandibular bone collagen revealed three separate periods of the monuments' use, representing a total time span between ca. 3645 - 2141 cal BC. Five Early Neolithic, two Middle Neolithic and one Early Bronze Age/Beaker culture individual were identified. Dietary analysis reaffirmed earlier assumptions of a predominantly terrestrial diet across all individuals. New insights into the diet arose due to a slight but significant shift in δ13C values between Early and Middle Neolithic without the corresponding shift in nitrogen values. This pattern could be explained by a number of variables, for example canopy effect affecting the carbon values of the consumed domesticates, or a slight increase in dairy consumption in the Middle Neolithic. Additionally, some of the individual dietary fluctuations across the early life history are explored in greater detail. To conclude, Thornwell Farm data allows for a more nuanced look into subsistence practices of Early and Middle Neolithic with an additional comparison with an Early Bronze Age individual.

Keywords: Neolithic; Microsampling; Diet; Radiocarbon

Poster Session 3

POSTER 73 Institutionalised lives: Exploring origin and diet of individuals from Blackberry Hill (Bristol), an 18th-/19th-century prisoner of war camp and workhouse, through a multi-isotope analysis

Antonia Price-Hood[1], Katie Faillace[1], Emily Holt[1], Richard Madgwick[1]

[1]University of Cardiff

This study investigates the origins and childhood diets of individuals excavated from Blackberry Hill in Stapleton, Bristol, originally home to Stapleton Prison, a prisoner of war (POW) camp during the American War of Independence (1779-1783) and later the French Revolutionary and Napoleonic Wars (1792-1815). The prison became a workhouse in 1833. Multi-isotope analysis ($\delta^{13}C$, $\delta^{15}N$, $\delta^{18}O$, $\delta^{34}S$ and $^{87}Sr/^{86}Sr$) of dental tissues from 24 human individuals and one macaque - 19 of whom are believed to be from the POW context and the remainder, including the macaque, from the later workhouse context, were conducted to reconstruct childhood diet and origins, providing insight into life histories of those who came to be institutionalised at Stapleton. The inclusion of the macaque provides a unique opportunity to investigate human-animal relationships in 19th century Britain. This is the first biomolecular study of Stapleton Prison or of any 18th/19th century POW camp in Britain and contributes valuable isotope data for comparison in future work. This study hopes to shed light on the identities of institutionalised individuals across a period of conflict, rapid change and development in Britain. Preliminary results suggest local British origin for four of the five workhouse individuals. The remaining individual exhibits enriched values suggesting origin in a warmer climate, such as North Africa. The macaque data suggests likely origin in Britain or France, whilst data for the POW individuals suggest non-local origins across Western Europe and the USA, with the exception of one individual with potential origin in the Canaries or West Indies.

Keywords: Isotope analysis; Biomolecular archaeology; Prisoner of war; Workhouse

Poster Session 3

POSTER 74 A Viking life: Osteobiography of a 9th-11th century individual from Gotland (Sweden, Baltic Sea)

Celtia Ansemil Mariño[1], Edgard Camarós[1], Irene García Losquiño[1], Taylor Peacock[2]

[1]Universidade de Santiago de Compostela; [2]University of Cambridge

This investigation focuses on the study of the individual KV8164, exhumed from the Kopparsvik cemetery (Gotland) and dated to the Viking Age (approximately 750–1050 AD). This individual is characterised by the presence of intentional dental modifications, similar to those documented in other Scandinavian contexts such as Birka. The main objective was to reconstruct his osteobiographical profile in order to understand the possible relationship between his bone alterations and dental modifications, applying a combined methodology of macroscopic analysis (to estimate sex, age, stature, pathologies and activity markers) and microscopic analysis (to examine the dental casts and post-depositional traces). This research was carried out within a public outreach framework, as the analysis took place during the temporary exhibition *Unha vida viquinga* at the Museum of the City of Culture in Santiago de Compostela, Spain, bringing the investigation closer to the general public. The results suggest that KV8164 was an adult male whose life involved intense physical activity, compatible with navigation, shipbuilding or servile labour. This activity was possibly related to the dental modifications as identity or guild markers, although a purely aesthetic function cannot be ruled out. Nevertheless, the main limitation lies in the study of a single individual, so future comparative research will be key to better understanding these practices.

Keywords: KV8164; Kopparsvik; Dental modifications; Entheseal markers; Bioarchaeology

Poster Session 2

POSTER 75 A multimethod approach in trauma investigation

Milena Grzybowska[1]

[1]Archaeological Research Services Ltd

Using a case study, this poster aims to present the value of using a multimethod approach in the characterisation and reconstruction of a sequence of events resulting in perimortem cranial traumata. The objectives included confirmation of type, timing, number and sequence of injuries, and establishing their impact on the recipient. The material comprises the isolated, articulated human remains of an adult male individual, radiocarbon dated to 685-869 cal. CE, and deposited within an enclosure ditch in Hardingstone, Northamptonshire. Macroscopic and microscopic methods of investigation were applied, alongside the manual reconstruction of the skull, and three-dimensional digital modelling. Characteristics of cranial discontinuations, including the position, shape, depth and length of cutmarks were recorded, as well as plane, depth of penetration, route of associated fractures, number of detached fragments, communication of the injuries, and flaking and delamination of bone adjacent to the cuts. High quality images of cutmarks, revealing striations, were obtained. Discontinuities of the cranium were confirmed as perimortem sharp force trauma with associated breakages, resulting from a minimum of six blows to the head. The injury sequence was established for most of the blows and the investigation of the impact of the injuries attested to an excessive number of mortal blows. The multimethod approach is advised for the successful generation of a nuanced picture of the sequence of perimortem events.

Keywords: Sharp force trauma; Perimortem; Cranium; Digital modelling

Poster Session 1

POSTER 76 Archaeothanatological and histotaphonomical analysis of an early medieval Welsh cemetery site

Georgia Goold-Jones[1]*, Ciara O'Brien Butler[1], Richard Madgwick[1]

[1]Cardiff University

***CONSIDERATION FOR THE STUDENT PRIZE**

Little bioarchaeological research has been undertaken concerning the early medieval period in South Wales, especially in comparison to the more well documented and contemporaneous Anglo-Saxon material of South England. This project aims to enhance understanding of the social and physical processes relating to death and burial in early medieval Wales through the integration of archaeothanatological and histotaphonomical analyses, contributing case studies and interpretation to these growing fields of study. The research reconstructs mortuary practices at the early medieval Welsh cemetery site of Llancadle South, where recent excavations have revealed diverse burial practices between the 5th and 7th centuries, including shrouded, non-shrouded, crouched, supine, flexed and potentially coffined inhumations, in addition to two individuals buried in the cemetery's boundary enclosure ditch. Histotaphonomical analysis has been undertaken on femoral diaphysis samples from a targeted sample group of 20 individuals encompassing different burial types, sexes and spatial areas within the cemetery, revealing the extent of bacterial bioerosion in the remains and elucidating conditions of the early post-mortem period. This is complemented by the application of an archaeothanatological framework, utilising both in-situ and digital visual analysis (photogrammetry and laser scanning) of the remains, element position, taphonomic conditions, the depositional environment, funerary evidence and spatial analysis to reconstruct the original characteristics of each inhumation. This project provides new insights on burial practice in an understudied region and makes significant contributions to early medieval archaeology in Wales with the application of bioarchaeological methodologies that until now have been under-utilised in this context.

Keywords: Histology; Archaeothanatology; Bioarchaeology; Early medieval; Wales

Poster Session 4

POSTER 77 Beyond the 2nd metacarpal: Evaluating radial geometry as an osteoporosis indicator in a documented 19th century population

Eleana Stathaki[1]*, Rebecca Gilmour[2], Sarah Schrader[1]

[1]Leiden University; [2]Mount Royal University

***CONSIDERATION FOR THE STUDENT PRIZE**

Cortical bone in the upper limb reflects both biology and behaviour, including hormonal changes, mechanical loading, and sociocultural roles. The cortical index (CI) of the second metacarpal (MC2) is frequently used in clinical and bioarchaeological studies of osteoporosis, while the distal radius is a common focus in clinical research. As bioarchaeological investigations are often hindered by taphonomic damage and missing elements, bone quantitative analyses would benefit from the ability to investigate a variety of comparable elements. Using CT and X-ray images from 40 individuals (21 females, 19 males) from Middenbeemster (Netherlands), a documented 19th-century rural skeletal collection, this study compares MC2 CI measures with cross-sectional geometry (CSG) of the distal radius (33% total length) to evaluate their potential as parallel indicators of bone loss. In males, second metacarpal CI were moderately and positively correlated with percent cortical area in radii ($r=0.532$, $p=.021$). In contrast, no significant association between CI and radial CSG was observed among females ($r=0.346$, $p=.124$). The findings of this preliminary study suggest element-specific differences in bone maintenance between male and female individuals in this post-medieval Dutch assemblage, emphasising the importance of sex-based approaches in bioarchaeological evaluations of skeletal aging. While male results support the use of distal radius CSG as an alternative to MC2 CI, the lack of association in females suggests differential sensitivity of these elements to age or activity related cortical changes. Due to these sex-based patterns, further investigation into bone maintenance and loss across different skeletal locations is needed.

Keywords: Cross-sectional geometry; Element comparison; Metacarpal radiogrammetry; Sex differences; Upper limb

Poster Session 1

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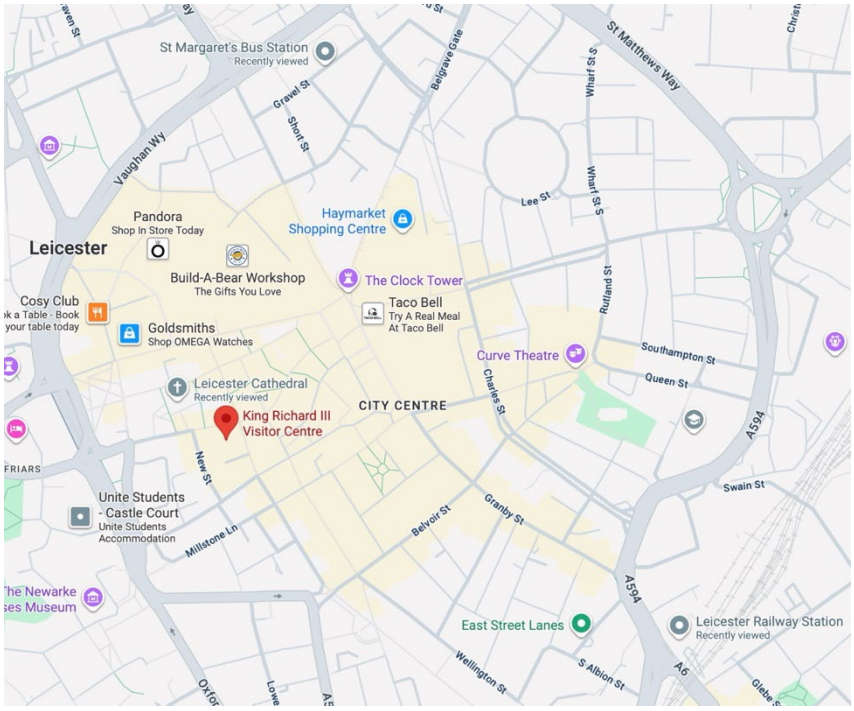

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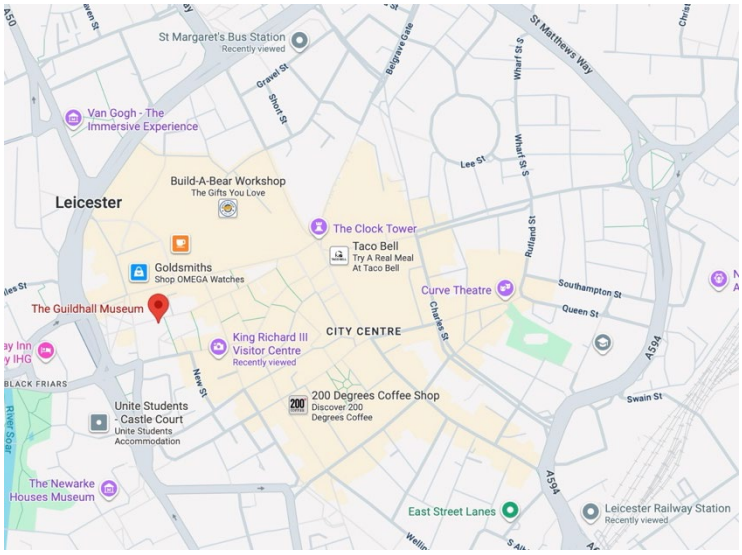

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St. Nicolas Circle

Leicester

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53 New Walk

Leicester

LE1 7EA

OPENING TIMES:

Monday to Friday

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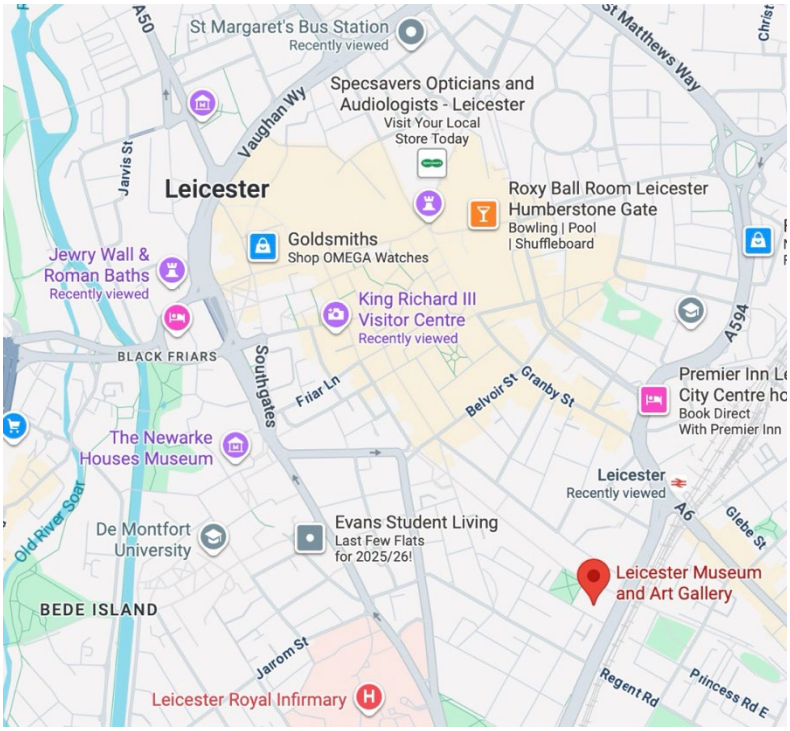
11am until 5pm



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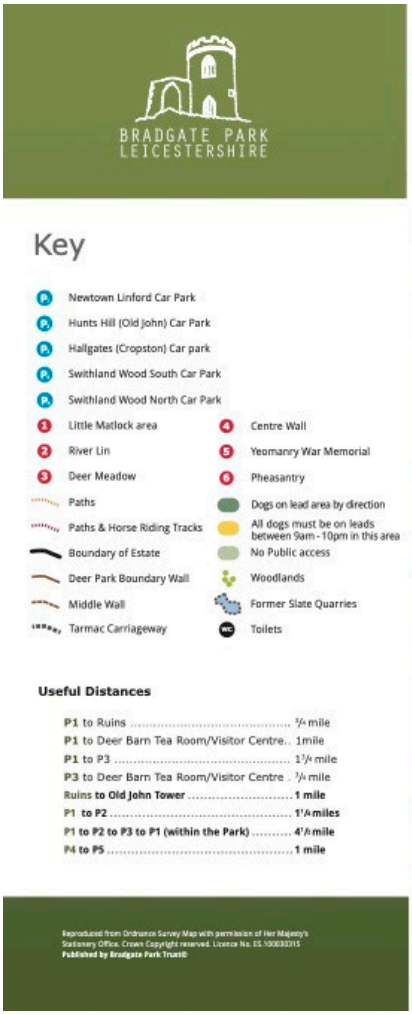

WHERE:

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Leicester

LE6 0HE

OPENING TIMES:

All Year

8am to sunset

(no later than 8:30pm)

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Try out any of these places for a nice brunch or an evening meal!

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London Road Area (close to University and Main Campus)		
Chettinad Restaurant	146C London Road LE2 1ED	South Indian
The Marquis Wellington	139 London Road LE2 1EF	Traditional Pub
Mitsuki	109 London Road LE2 0PF	Japanese Sushi
Burger Boi	77 London Road LE2 0PE	Burgers
Clarendon Park (between Brookfield and Main Campus)		
Martin Bros. Micropizzeria	117 Clarendon Park Road LE2 3AH	Neapolitan Pizzeria
Halcyon Kitchen	95 Queens Road LE2 1TT	Thai/Indo/Pizza
Bica Lisboa	93 Queens Road LE2 1TT	Portuguese Cafe
The Verandah Bar	71 Queens Road LE2 1TT	Anglo-Indian Fusion Bar and Cafe
The Cradock Arms	201 Knighton Road LE2 3TT	Traditional Pub

Note: All these restaurants have vegetarian and/or vegan options

PLACES TO GRAB A BITE:

		Cuisine
City Centre		
Merchant of Venice.	173-175 Granby Street LE1 6FE 19-20 Loseby Lane LE1 5DR	Italian
Herb	96 Granby Street LE1 1DJ	Indian
Bistro Pierre	8-10 Millstone Lane LE1 5JN	French
The Frame	9 St. Martins Square LE1 5EW	Mediterranean
Crafty St. Martin's	2-6 St. Martins Square LE1 5DG	Modern British Diner
KAI PAI	4 St. Martins Square LE1 5DF 7 St. Martins Square	Classic Brunch
Veeno Leicester	9 St. Martins Square LE1 5DE	Wine Bar
Middletons Leicester	2 St. Martins Square LE1 5DB	Steakhouse & Grill
The Good Earth	19 Free Lane LE1 1JX	Old School Vegetarian and Vegan Eatery
The Cosy Club	68 Highcross Street LE1 4NN	Brunch and Bar
Pho Leicester	87-91 High Street LE1 4JB	Vietnamese

Popular chain restaurants are located along Highcross Lane,
between Highcross Shopping Centre and John Lewis (eastern part of the city centre)

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We want our conference to be a friendly and welcoming place where everyone feels comfortable. By attending this conference and its associated workshops, either in-person or virtually, you agree to abide by the BABAO Code of Conduct. This Code of Conduct is given below in its entirety.

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This Code of Conduct applies to all meetings, workshops, events and activities organised by or for BABAO. This also applies to all forms of communication, in person or online, either privately, the BABAO JISC mail, or social media, which are in relation to BABAO meetings, workshops, events, activities or other BABAO business. This includes but is not limited to: our annual conference, online meetings, seminars and workshops, training events, social events, outreach activities and board meetings/the annual general meeting. In regard to our annual conference, this Code of Conduct also applies to events both at and away from the conference venue, including welcome events and the conference dinner, in addition to the scientific sessions and breaks. This Code of Conduct does not cover member's behaviour outside of the aforementioned BABAO events/spaces, although the values of professional ethic and conduct that BABAO upholds within its events/spaces are expected from members in all professional spaces.

BABAO events and the network created by the BABAO membership are important parts of our professional lives. They provide valuable opportunities to facilitate the exchange

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- Suggestive gestures, remarks, innuendo, unwelcome terms of endearment or sexual advances
- Displays of sexually suggestive or pornographic objects or images
- Unnecessary unwanted body contact
- Discussion of malicious rumours or unfounded allegations
- Threatening language or behaviour

Anyone who witnesses or experiences such behaviour is strongly encouraged to report their experiences to the event organisers or BABAO Trustees in person, via email, or via the BABAO website using BABAO's contact form (which can be used anonymously) as soon as possible. Any formal complaints will be dealt with in accordance with BABAO's reporting and complaints procedures (See BABAO Standard Operating Procedure 3).

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- Presentations should not be interrupted or disrupted by, e.g. repeated mobile telephone noise, audible conversation or comments.
- Questions to presenters should be respectful and not be presented in a belittling or demeaning manner.

[1] An individual's protected characteristics are protected by UK law under the Equalities Act 2010.

- Presenters should give content warnings if their presentation contains material likely to be deemed distressing (e.g. images containing substantial amounts of soft tissue, or discussion of specific events that may have impacted attendees. Given the nature of BABAO, it is assumed that many presentations will contain images of human skeletal remains, and attendees should recognise that content warnings will not be given for these).

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- Please do not share, or post photographs of presentation slides through social media unless the presenter has given specific permission to do so.
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This version was last updated in August 2025.


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