

Welcome to the 21st Congress of the *European Anthropological Association*.

Welcome to *University of Southern Denmark*.

Welcome to *ADBOU*.

And not the least welcome to *Odense, the city of fairytales*.

At ADBOU we take pride in being chosen to host the 21<sup>st</sup> congress of the EAA. We, ADBOU, are the Research Unit of Anthropology of the Dept. of Forensic Medicine at SDU here in Odense. ADBOU is one of two national institutions that curate human skeletons from archaeological excavations and perform forensic anthropological analyses. The ADBOU collection is large - around 17.000 skeletons primarily from the Danish medieval period - but there are many other collections like it. What makes the ADBOU collection unique are all our guests, who visit us to carry out research and utilize the excellent documentation brought about in close collaboration with the museums and archaeologists who excavated the skeletons. We maintain and develop the collection not to store bones but to provide material for research into once living populations, under our motto: "The living - not the dead". By facilitating this kind of research we want to contribute to bridge the gap between our understanding of human life and health in the past and in the present. We sincerely hope that this 21<sup>st</sup> congress of the EAA will contribute to the fruitful exchange of ideas among anthropologists of all kinds.

### **Scientific Committee**

Professor George R. Milner, PennState University  
Assoc. prof. Hans Christian Pedersen, IMADA, SDU  
Professor Jesper L. Boldsen, ADBOU, SDU

### **Organizing Committee**

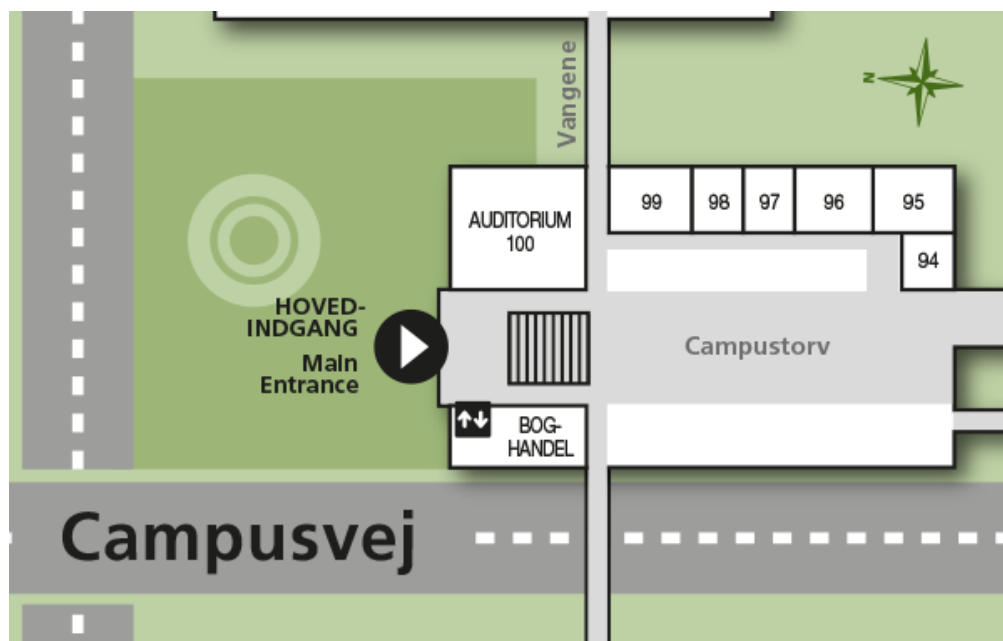
Jesper Boldsen, [jbaldsen@health.sdu.dk](mailto:jbaldsen@health.sdu.dk)  
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## Practical Information

The scientific program for the 21st Congress of the European Anthropological Association is outlined on page 4. The Congress takes place at the University of Southern Denmark Campus, Conference Department, Auditorium O100 and Room O97. Plenary sessions take place in Auditorium O100, scientific sessions and workshops in Auditorium O100 and Room O97, respectively.

**Coffee** and **Lunch** are served in the Panorama View, next to the conference auditorium, and above the main entrance.

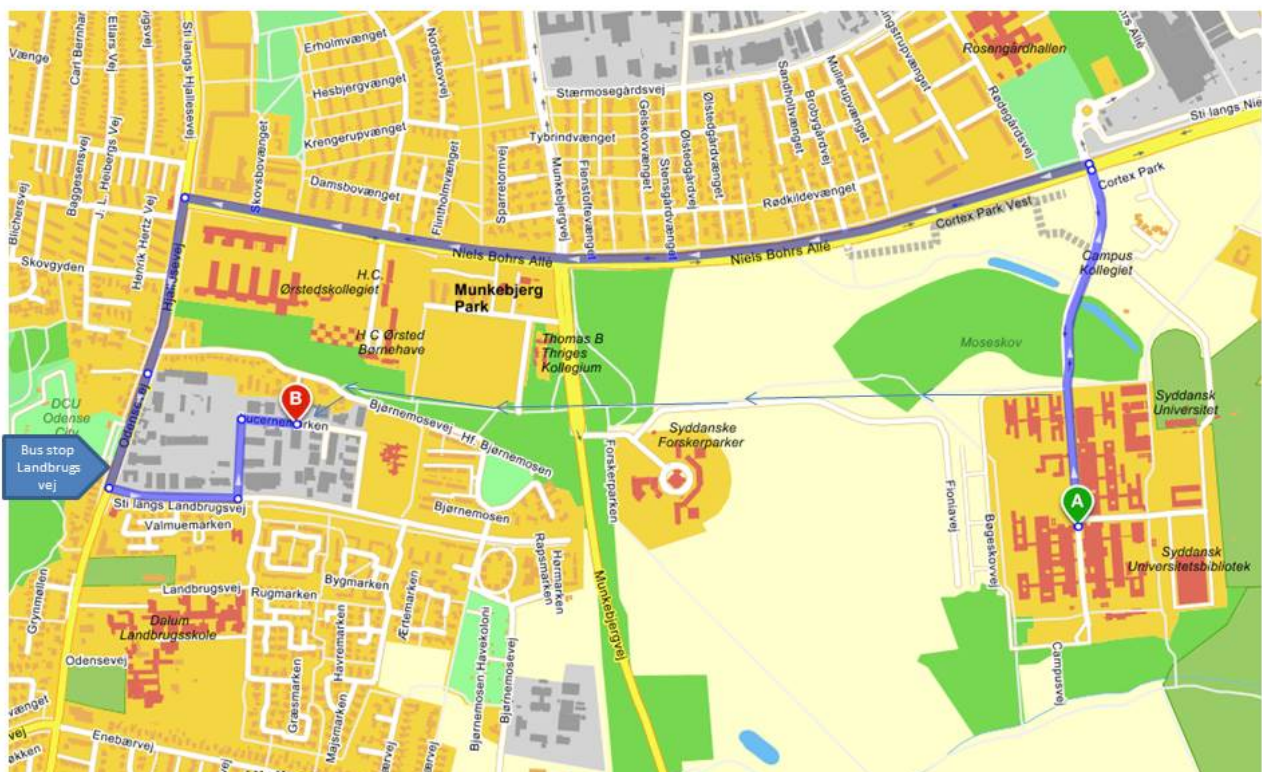
**Poster Sessions** take place at the Campus Square, and the posters should be mounted upon arrival before conference start, allowing them to be on display throughout the entire conference.



## Social program

**Wednesday** afternoon, shortly after the first scientific sessions, the welcome reception takes place at the Campus Square, allowing you to have a first glance at the posters and meeting your fellow participants.

**Thursday** the Casual Conference Dinner takes place in the ADBOU facilities. The Conference Dinner is a relaxed, casual evening. Typical Danish hot sausages, known as Polser, will be served from a typical Danish *POLSEVOGN* - literally "sausage truck". (Food preferences will be taken into consideration, when notified) together with draft beer from the small, but popular local Refsvindinge Brewery.. Some of the skeletons will be on display, and the unit's **Siemens CT-scanner** will be demonstrated.



➔ By car: 4,2 km / 5 min  
➔ Bike path/pedestian path: 2,5 km / 15 min walk.

**Saturday** shortly after closing of the conference, there will be a guided tour by bus to the unique Jelling Monuments – Unesco World Heritage - burial mounds and runic stones, approx 1 hour west of Odense. Expected return to campus and the city centre at 18.30.

## Scientific Program

### Wednesday August 22, 2018

- 10.00-13.00 Registration at Conference Venue: University of Southern Denmark, main entrance. Handing out of conference bags.
- 10.00-13.00 Mounting of posters
- 13.00-13.15 **Official welcome** by the Dean of Health Sciences, [Ole Skott](#)
- 13.15-14.45 **Invited speaker: Ben Krause-Kyora** (Auditorium O100)  
Origin and spread of infectious diseases – insights from ancient DNA
- 14.45-15.00 Coffee and tea
- 15.00-17.30 Parallel Sessions 1 and 2:

#### **Scientific session 1: Nutrition and body composition**

(Chair: Nick-Mascie-Taylor)

(Room O97)

The body composition differences among polish children aged 6-13 using the decision tree algorithms.

*P. Pruszkowska-Przybylska, I. Rosset, A. Sitek, D. Strapagiel & E. Żądzińska*

Association of BMI at the age of 8 years with selected markers of adolescent growth spurt in boys.

*Magdalena Durda-Masny, Anita Szwed, Tomasz Hanć, Zbigniew Czapla*

Sex-dependent pattern of changes in percentage of body fat in given BMI across developmental periods.

*Aleksandra Gomula, Agnieszka Suder, Sławomir Koziel*

Changes in body composition of Hungarian female students, during university years.

*Gábor Áron Vitályos, Gábor Dancs, Sarolta Darvay*

Level of body fatness before pregnancy compared with changes of anthropometric parameters and feet loading in women at the end of the 1st trimester of gestation.

*Agnieszka Suder, Agata Masłoń, Barbara Frączek, Marta Curyło, Marcin Salamara, Wanda Forczek.*

Vitamin D supply in Hungarian children.

*Annamaria ZSAKAI, Agota MUZSNAI, Piroska FEHER, Dorina ANNAR, Petra CSIZMADIA, Eva BODZSAR*

Does the quality of mother's milk depend on help she receives from significant others?

*Magdalena Babiszewska, Anna Ziomkiewicz, Magdalena Piosek, Anna Apanasewicz & Marek Szoltysik*

15.00-17.30 **Scientific session 2: Bioarchaeology I** (Auditorium O100)  
(Chair: George R. Milner)

Chasing the commoners – New finds from a Bronze Age excavation at Kalvehavegaard, Denmark.

*Svenja Weise, Malene Refshauge Beck*

Presentation of some artificially deformed crania (5th-6th century AD) from Northeastern Hungary.

*István János, László Szathmáry, László Szűcs, Mónika Molnár.*

Unrelated Coastal Burials in Denmark. Rituals and Traditions.

*Tim Slumstrup Aunkilde*

Interactions between biological sex and frailty: Insights from laser microscopy of enamel defects.

*Gamble J, Boldsen J; Hoppa R; Milne B*

Dental enamel hypoplasia and famines: physiological stress in 18th century Provence.

*Luana Batista-Goulart, Isabelle Séguy and Gérald Quatrehomme*

Osteoporotic bone fractures and bone loss in males from archaeological sites in Kujawy (Poland).

*J.Mietlińska, J.Karkus, M.Kurek, P.Borówka, M.Stuss, E.Sewerynek, W.Lorkiewicz, E.Żądzińska*

An anthropological overview of the Balkanian populations.

*Marios Dimopoulos*

18.00-19.00 **Welcome Reception** (Campus Square)

## Thursday August 23, 2018

09.00-10.30 Parallel Workshops:

**Workshop I: Cohort studies** (Room 97)

*Monitored by Nick Mascie-Taylor & Monika Krzyzanowska*

**Workshop II: Paleoepidemiology - the environmental importance of diseases in the past** (Auditorium O100)

*Monitored by George R. Milner & Jesper L. Boldsen*

10.30-10.45 Coffee and tea

10.45-12.15 **Workshops I and II** continued

12.15-13.30 Lunch

(12.30-13.30) (EAA Council meeting, members only) (Room 95)

(13.30-14.30) (EAA Board meeting)(Room 95)

## Thursday August 23, 2018

13.30-16.00 Parallel Sessions 3 and 4:

**Scientific session 3: Bioarchaeology II** (Auditorium O100)

(Chair: Jesper L. Boldsen)

Analysing the spatiality of death in Modern Portugal (15th-19th century).  
*Cristina Barroso Cruz, Verónica Mateus Pereira*

Staging Death or Stages of Death. Population and Ritual in Scandinavian Iron Age Society.  
*Sidsel Wåhlin*

Haagerup Rural Cemetery – A Field School Excavation  
*Vicki R. L. Kristensen, Jesper L. Boldsen, Dorthe D. Pedersen*

Age-identification of cremations via microstructural analysis of burned human bones.  
*Otto L, Braun C, Graw M, Grupe G*

From the Empire to the Early Middle Age: an isotope survey of the Roman population.  
*Sara Varano, Flavio De Angelis, Giordana Amicucci, Andrea Battistini, Carla Caldarini, Stefania Di Giannantonio, Romina Mosticone, Walter Pantano, Federica Zavaroni, Paola Catalano, Valentina Gazzaniga, Cristina Martínez-Labarga and Olga Rickards*

Sea spray effect in d13C, d18O, and d34S illustrated by Gaussian Mixture Model (GMM) clustering  
*Göhring, Andrea; Mauder, Markus; Kröger, Peer; Grupe, Gisela*

Food for thought: isotopic mixing models applied to data from early Neolithic Turkey and Greece.  
*Sidney Sebald, Anastasia Papathanasiou, Michael P. Richards, Gisela Grupe*

13.30-16.00 **Scientific session 4: Growth** (Room 97)

(Chair: Monika Krzyzanowska)

Undernutrition = stunting, stunting ≠ undernutrition. The old fairy tale of “clean your plate”.  
*Hermanussen M, Bogin B, Scheffler C*

Modern studies lack evidence of an association between nutrition and height in developing countries.  
*Scheffler C, Mumm R, Hermanussen M*

Influence of stress in early ontogeny on the hand development and child growth.

*Monika Zemanová*, Miroslav Králík, Slawomir Koziel, Pavlina Ingrová, Anna Škultétyová

Biosocial inequalities in height in the 1970 British birth cohort

*Monika Krzyzanowska*, CG Nicholas Mascie-Taylor

The Effect of Sport Training on Morphological Parameters of Sport Gymnasts at Younger School Age.

*Petr Kutac*

Pace-of-Life Syndrome – Life-history, risk-taking and cardiovascular physiology in adolescents.

*Andreas Lehmann*, Jana A Eccard, *Christiane Scheffler*, Ralf HJM Kurvers and Melanie Dammhahn

Growth of contemporary Greenlandic children exceeds the WHO growth charts.

*Mathieu Roelants*, M. Kløvgård, NO Nielsen, TL Sørensen, P. Bjerregaard, B Olsen, P Júlíusson, H. Christensen

The Heath-Carter somatotype in Russian children and adults and its bioimpedance assessment

*Rudnev SG*, *Anisimova AV*, *Godina EZ*, *Negasheva MA*, *Sindeyeva LV*

16.00-16.30 Coffee & tea

16.30-18.00 Parallel Sessions 5 and 6

**Scientific session 5: Diseases in the past** (Auditorium O100)

(Chair: Svenja Weise)

The association between skeletal lesions and tuberculosis diagnosis using a probabilistic approach.

*Dorthe Dangvard Pedersen*, George R. Milner, Hans Jørn Kolmos, Jesper L. Boldsen.

The effect of leprotic infection on the risk of death in medieval rural Denmark

*K. Saige Kelmelis*, Michael H. Price, James W. Wood.

Dining in the Danish medieval leprosarium at Næstved: using stable isotopes to reconstruct the diet

*Anastasia Brozou*, Niels Lynnerup, Marcello Mannino, Andrew Millard.

16.30-18.00 **Scientific session 6: Genes and Morphology** (Room 97)

(Chair: Birgitte Schmidt-Astrup)

High prevalence of CYP2C19\*17 allele in the Roma population from Croatia.

*Matea Zajc Petranovic*, Zeljka Tomas, Tatjana Skaric-Juric, Nina Smolej Narancic, Branka Janicijevic, Marijana Pericic Salihovic.

CRIBS cohort: a base for family-based disease risk prediction.

*Luka Bočkor*, Ivan Dolanc, Tonko Carić, Jelena Šarac, Natalija Novokmet, Miran Čoklo, Saša Missoni.

Digit ratio (2D:4D) and month of birth: A link to the solstitial-melatonin-testosterone effect.

*Anita Szwed, Magdalena Kosinska, John T. Manning.*

Digit ratio (2D:4D) moderates the change in hand grip strength on an aggressive stimulus.

*Sławomir Kozieł, Marek Kociuba, Zofia Ignasiak.*

Sap Anthropometric Landmark: A New Morphometric Orientation Point of the Nasal Tip.

*Sultanova N.N.*

19.00-22.00 **Casual Conference Dinner at ADBOU, Lucernemarken 20**

### Friday August 24, 2018

09.00-10.30 **Invited speaker: Steve Ousley** (Auditorium O100)  
The State of the Science in Forensic Anthropology

10.30-11.30 **Poster session I:** (Guided by Nick Mascie-Taylor)  
Coffee and tea

11.30-12.30 Parallel Sessions 7 and 8  
**Scientific session 7: Forensic Anthropology** (Room O97)  
(Chair: Niels Lynnerup)

Forensic facial approximations: an analysis of the cross-population effect.  
*Amy J. Spies and Nanette Briers.*

Estimating stature of black South Africans from fragmentary tibiae.  
*Amy J. Spies, Mubarak A. Bidmos & Desiré Brits*

Sex estimation in intact and fragmentary crania using 3D derived interlandmark distances.  
*SMALL, C., L. SCHEPARTZ, J. HEMINGWAY, D. BRITS.*

11.30-12.30 **Scientific session 8: DNA** (Auditorium O100)  
(Chair: Ben Krause-Kyora)

Variability of VDR gene and susceptibility to bone loss in historical and modern populations from Poland.

*Paulina Borówka, Elżbieta Żądzińska, Joanna Mietlińska, Justyna Karkus, Dominik Strapagiel, Ewa Sewerynek, Wiesław Lorkiewicz*

Association of bone mineral density with LCT-13910 C/T polymorphism in ancient skeletal materials

*Anna Spinek, Barbara Mnich, Maciej Chyleński, Anna Juras, Krzysztof Szostek.*



Genetic origins of Armenians inferred from modern and ancient DNA.  
*Levon Yepiskoposyan, Anahit Hovhannisyan, Zaruhi Khachatryan, Armine Khudoyan.*

12.30-13.30 Lunch

13.30-15.00 Parallel Sessions 9 and 10:

**Scientific session 9: Perception and Surgery** (Room O97)  
(Chair: Maria Kaczmarek)

Celibacy, sexual abstain and religion in Czech Republic.  
*Věra Bártoová*

Gender differences in body image of young Lithuanian adults in relation to biopsychosocial factors.  
*Janina Tutkuvienė, Jonas Tutkus.*

Visceral fat tissue amount and facial attractiveness in women.  
*Bogusław Pawłowski, Agnieszka Żelaźniewicz, Judyta Nowak.*

Thickness of hamstring tendons for anterior cruciate ligament surgery in relation to body size.  
*Vytautas Tutkus, Simona Silove, Janina Tutkuvienė.*

13.30-15.00 **Scientific Session 10: Biosocial Studies** (Auditorium O100)  
(Chair: Michael Hermanussen)

Body image in Polish adolescent girls and underlying characteristics of menstrual cycle.  
*Trambacz-Oleszak Sylwia, Kaczmarek Maria.*

The relationship between facial morphology, socio-economic factors and body measurements.  
*Marie Jandová, Petra Urbanová.*

Rural-urban differences in body size and biological condition among Polish young women.  
*Iwona Wronka, Martyna Zurawiecka.*

Maternal postpartum psychosocial stress, breast milk composition and infant temperament.  
*Anna Ziomkiewicz, Magdalena Babiszewska, Anna Apanasewicz, Magdalena Piosek, Szymon Wichary*

Fluctuating asymmetry and socioeconomic status during childhood.  
*Martyna Zurawiecka.*

15.00-15.30 Coffee and tea

15.30-16.30 **Poster session II:** (Guided by Hans Christian Petersen)

16.30-17.30 **Scientific session 11: Bioarchaeology III** (Auditorium O100)  
(Chair: Dorthe Dangvard Pedersen)

A revised Transition Analysis method to estimate age-at-death from human skeletons.

*Weise S, Boldsen JL, Getz SM, Milner GRM, Ousley SD, Tarp P*

Imperial Rome Pathocenosis: A Holistic Approach to Disease.

*De Angelis F., Martínez-Labarga C., Götherström A., Catalano P., Gazzaniga V., Rickards O.*

A dish case observed on skeleton from middle ages Muslumantepe of Diyarbakir.

*AY Nazli*

Bone injuries in the archaeological skeletal material as a source of historical information.

*Agata Ciešlik*

A skull without its postcranial skeleton – a forensic or bioarchaeological case?  
*Dorthe Dangvard Pedersen, Birgitte Schmidt Astrup.*

## **Saturday August 25, 2018**

09.00-10.30 **Invited speaker: Roberto Macchiarelli** (Auditorium O100)  
From the outer morphology to the inner structure. Recent advances and perspectives in the study of the hominin fossil record

10.30-11.00 Coffee and tea

11.00-13.00 Parallel Sessions

**Scientific session 12: Growth and Disease** (Auditorium O100)  
(Chair: Janina Tutkuvienė)

Birth Cohort as a Tool for Exposing the Transgenerational Exposome – CRIBS Study Example.

*Miran Čoklo, Ivan Dolanc, Tonko Carić, Antonija Brozović Krijan, Luka Bočkor, Saša Missoni.*

Nutritional status of children with upper gastrointestinal diseases regarding breath H<sub>2</sub> excretion.

*Katarzyna Pawłowska-Seredyńska, Katarzyna Akutko, Wioleta Umławska, Barbara Iwańczak.*

Growth and nutritional states of children with adenotonsillar hypertrophy.  
*Wioleta Umlawska, Katarzyna Pawłowska-Seredyńska, Katarzyna Resler, Monika Morawska-Kochman, Tomasz Kręcicki.*

Serum concentration of insulin growth factor-1, its binding protein-3 and risk of hot flashes in middle aged women from Poland.

*Kaczmarek Maria, Pacholska-Bogalska Joanna, Kwaśniewski Wojciech, Kotarski Jan, Halerz-Nowakowska Barbara, Goździcka-Józefiak Anna.*

The relationship between bone status and oestrogen hormone level in girls and adult women

*Piroska FEHER, Dorina ANNAR, Annamaria ZSAKAI, Eva BODZSAR.*

11.00-13.00

**Scientific session 13: Paleoanthropology** (Room O97)

(Chair: Hans Christian Petersen)

The Ornamental Shell Collection and Possible Shell Tool in Üçağızlı Cave  
*Ayşen Açıkkol Yıldırım, Erksin Güleç, Turkey.*

The reconstruction of the stalagmitic floor, beneath of which the Petralona Man's skeleton was laying

*Nickos A. Poulianos,*

Three leaps in human evolution

*Oktay Kaynak*

13.00-13.30

**General assembly and Awards**, Closing of EAA 2018 and Goodbye (Auditorium O100)

14.00-

**Excursion** by bus to the [Jelling Monuments](#) (Unesco World Heritage)

## Poster Session I – Friday 24th August at 10.30-11.30 (Campus Square)

(Guided by Nick-Mascie-Taylor)

1. Assessment of physical, motor and performance characteristics of young wrestlers from Sivas, Turkey.  
*Sercan ACAR, 2Başak KOCA ÖZER.*
2. Perceived and diagnosed health in elderly people from Brazil and Spain.  
*Pilar Montero López, Ana Isabel Mora Urda, Taísa Sabrina Silva Pereira, M Carmen Bisi Molina*
3. A comparative dermatoglyphic characteristic of Bulgarian populations.  
*Nadegda Paraskova, Zorka Mitova. Sofia University,*
4. Heritability estimation of 2D:4D finger ratio in a Chuvashian populationbased sample.  
*E. Kobyljansky, V. Batsevich, L. Kalichman.*
5. Foot morphology in seniors.  
*Marek, Paveř; Přidalová, Miroslava; Kaplanová, Tereza.*
6. Evolution of de novo genes in humans and other primates.  
*Daniel Dowling.*
7. The relationship between facial morphology and sociosexuality.  
*Marie Jandová, Pavlína Ingrová, Miroslav Králík, Petra Urbanová, Věra Bártová.*
8. Assessment of physical, motor and performance characteristics of young wrestlers from Sivas, Turkey.  
*Sercan ACAR, 2Başak KOCA ÖZER.*
9. The Secular Trend of the Physical Growth and Development of Boys and Girls Aged 6 to 14 Years over the Past 120 Years in the Czech Lands.  
*Miroslav Kopecký.*
10. Dietary intake and nutritional status of children and adolescents aged 6-17 years in Turkey.  
*Başak Koca Özer, Cansev Meşe.*
11. Correlation between anthropometric measurements, somatotype, and blood pressure of children 7-12 years old in Yogyakarta Province, Indonesia.  
*Neni Trilusiana Rahmawati, Janatin Hastuti, Rusyad Adi Suriyanto, and Zaenal Muttaqien.*
12. Current somatic status of primary school children in Czech Republic.  
*M. Pridalova, V. Zborilova, T. Podzimkova, M. Cinařova.*
13. Evaluation of Growth Profiles of Preschool and School Children in Ankara, Turkey.  
*Basak KOCA OZER, Aysegul OZDEMIR, Sibel ONAL, Cansev MESE, Neriman ARAL, Mudriye BICAKCI, Ece OZBAL, Sebahat AYDOS.*

14. Validity and accuracy of self-reported height and weight among Turkish adolescents.  
*Sibel ÖNAL, Ayşegül ÖZDEMİR, Başak KOCA ÖZER.*
15. Weight status of primary school children In the Czech Republic.  
*Vendula Zbořilová, Miroslava Přidalová, Tereza Podzimková, Pavel Marek.*
16. Sex-related differences in chest dimensions and shape in 9-10 – years-old Bulgarian children.  
*Albena Dimitrova, Ivaila Yankova Pandourska.*
17. Patterns of skinfold thickness and nutritional status of Indonesian children and adolescents aged 6 – 18 years.  
*Janatin Hastuti, Neni Trilusiana Rahmawati, and Rusyad Adi Suriyanto.*

### **Poster Session II – Friday 24th August at 15.30-16.30 (Campus Square)**

(Guided by Hans Christian Petersen)

18. Homicide?  
*Søren Christoffersen and Dorthe Dangvard Pedersen*
19. Hans Christian Andersen's toothaches  
*Marianne Lauritzen, Bodil Theilade*
20. Morphological study of jugular foramen using 3D models of adult skulls.  
*Diana Toneva, Silviya Nikolova, Dora Zlatareva , Vassil Hadjidekov.*
21. A case of bilateral squamosal suture obliteration in adult male skull.  
*Silviya Nikolova, Diana Toneva, Ivan Georgiev.*
22. Forensic taphonomy in an indoor setting.  
*Ann-Sofie Ceciliason, Håkan Sandler.*
23. Regular and irregular burials from Ottoman period and Revival (15th-19th c) in West Bulgaria.  
*Nadezhda Atanassova. Vladislav Todorov.*
24. Pleistocene human traces in Ankara province, Turkey (2017)  
*Mehmet Sağır, İsmail Özer, İsmail Baykara, Seçil Sağır, Serkan Şahin, Sibel Önal, Ayşegül Özdemir*
25. Human activity in Pleistocene Period in West Anatolia, Turkey.  
*İsmail Özer, Mehmet Sağır, İsmail Baykara, Berkay Dinçer, Başak Koca Özer, Serkan Şahin, Ece Eren, Ayşegül Özdemir.*
26. Functional Analysis of Ahmarian Points at Üçağızlı Cave, Turkey.  
*Ece EREN, Erksin GÜLEÇ, Steven L. KUHN.*

27. Age and sex in Ribe – A comparison between osteological results and historical records.  
*Mette Alexandersen*
28. Breaking the Age Barrier: Trauma in Adults and the Elderly in the Danish Middle Ages.  
*Elizabeth Stevens, Robert D. Hoppa. University of Manitoba.*
29. Morphology of facial skeleton of the early Medieval elites (9th –10th century AD, Czech Republic).  
*Šárka Bejdová, Petr Velemínský, Ján Dupej, Lumír Poláček, Jana Velemínská.*
30. Diet, Lifestyle and Disease in a Copper Age community from “La Sassa” cave (Italy).  
*M. Romboni, F. De Angelis, F. Cortese, E. Romano, M.F. Rolfo, O. Rickards, L. Alessandri.*
30. The influence of oral health on the mandibular cortex in three archaeological populations from Croatia.  
*Ivana Savić Pavićin, Anita Adamić, Marin Vodanović, Mario Šlaus.*
31. Mobility in the Empire: oxygen isotope survey of Imperial Rome communities  
*Luca Gaspari, Flavio De Angelis, Andrea Battistini, Carla Caldarini, Stefania Di Giannantonio, Walter Pantano, Federica Zavaroni, Paola Catalano, Cristina Martínez-Labarga and Olga Rickards*
32. Cortical Bone Size and Stress in the Black Friars Cemetery: Evidence from Survivors and Non-Survivors.  
*Parker K, Beauchamp A, Scott AB, Boldsen JL, and Hoppa RD.*
33. Dietary patterns and migration in pre-industrial Copenhagen.  
*Marie Louise Jørkov, Darren R. Gröcke, Janet Montgomery*
34. Bioarchaeological Analyses of Growth Status of Havuzdere Medieval Infant, Child and Adolescent Population.  
*Ayşegül ÖZDEMİR, Ece EREN, Başak KOCA ÖZER, İsmail ÖZER.*
35. Childhood diet at medieval (1240s AD) Solt-Tételhegy, Hungary as reconstructed from stable carbon and nitrogen isotope analyses.  
*Ariana Gugora, Tosha L. Dupras, Erzsébet Fóthi*
36. DNA fingerprinting and Genetic history of Pacific islands peoples.  
*Melida Ines Nunez Castillo; Susanne Hummel.*
37. Age at death through 1000 years  
*Peter Tarp*

## **Assessment of physical, motor and performance characteristics of young wrestlers from Sivas, Turkey** (Poster)

1- Sercan ACAR, 2- Başak KOCA ÖZER

1- Cumhuriyet University, Department of Anthropology, Sivas, Turkey, 2- Ankara University, Department of Anthropology, Ankara, Turkey

Throughout the history Turks have given special importance to the wrestling sport and Sivas province -located at the eastern part of the Central Anatolia- has an important place providing many Olympic and World champions. Present study aims to evaluate the physical and motor characteristics of 86 male wrestlers between the ages of 10 and 21 years from Sivas province, representing rural environments. According to the standard anthropometric protocols height, weight, biepicondylar humerus and femur breadths, triceps, subscapular, supraspinale and medial calf skinfolds, flexed and tensed arm girth and calf girth were measured, and BMI and somatotypes were calculated. Using bio-impedance analysis body fat percentage and muscle density were conducted. Furthermore motor properties, upper extremity strength, speed, flexibility and durability characteristics have been determined. Results showed that mean height and weight were 162,2 cm and 64,3 kg, respectively. The mean BMI was found to be 23,91, fat % 16,15 and muscle density 49,35. Furthermore results showed that wrestlers have a good level of flexibility (29.13 cm), leg strength (215.65 cm) and grip strength (47.90). Somatotype analysis showed that wrestlers were endo-mesomorphic (2,85-4,29-1,92). In conclusion, body composition, somatotypes and motor test results were diverse in wrestlers according to their weight category and competition level due to fitness differences, nutrition and infrastructure divergence.

## **The Ornamental Shell Collection and Possible Shell Tool in Üçağızlı Cave**

Ayşen Açikkol Yıldırım, Erksin Güleç [aacikkol@gmail.com](mailto:aacikkol@gmail.com),

The aim of this study was to evaluate the ornamental shells in order to establish whether they were used as tools or not. A total of 1946 ornamental sea shells were found in Hatay Üçağızlı Cave (Turkey) during excavation seasons of 2005-2006, 2008 and 2010-2017. The F-I layers of the Cave are classified as Initial Upper Palaeolithic (IUP), D-E layers as Ahmariian-IUP transition and B-C layers Ahmariian (Early Upper Palaeolithic). The shells were divided into 3 categories; marine, freshwater and terrestrial. 12.44%, belonged to Ahmariian, 11.82% to Ahmariian-IUP Transition and 75.75% to IUP. 98.56% of the crustaceans belonged to marine, 1.13% to fresh water and 0.31% to terrestrial molluscs. Total of 11 crustaceans taxa representing crustaceans varied as; 10 in IUP, 8 in Ahmariian-IUP transition and 6 in Ahmariian. The trace of erosion and irregularity observed on the margins of a small number of *Glycymeris bimaculata* seashells from the year 2017 suggests that at least this taxa was used as an instrument by the early modern humans of Üçağızlı Cave.

## **Age and sex in Ribe – A comparison between osteological results and historical records** (Poster)

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The purpose of this research is to show the benefits in using historical records in osteological analyses concerning Danish skeleton material after 1600 to avoid bias in demographic studies.

The research is based on two types of dataset to study the age at death by sex in the population of Ribe. The first data set is based on a skeletal sample from Ribe dated 1600 to 1805. The second dataset is based on the parish registers from Ribe Dom- og Landsogn dated 1685-1807.

The male female ratio is the same in the two sets of data. The mean age at death is found to be the same. However, this is misleading. There were relatively fewer children in the skeletal sample than in the parish registers. Consequently, the actual mean age for adults was higher in the parish registers than among the skeletons. The difference was 11,7 years for men and 17,4 years for women.

### **Regular and irregular burials from Ottoman period and Revival (15<sup>th</sup>-19<sup>th</sup> c) in West Bulgaria (Poster)**

*Nadezhda Atanassova; Vladislav Todorov. Institute of Experimental Morphology, Pathology and Anthropology with Museum-BAS*

The Ottoman rule in the Bulgarian lands continued from the 15<sup>th</sup> to the 19<sup>th</sup> c. During this period the living conditions of Bulgarian population were extremely difficult. This study includes results from investigations of regular necropolises and some irregular burials from excavations in West Bulgaria. The research provide data on physical development, diseases, life expectancy, relative rate of mortality etc. The paleodemographic distribution showed very high mortality in children under 7 years of age. This is most likely due to poor hygiene conditions and lack of medical care, as a result of many infectious epidemics occurred. After this age, the mortality decreases sharply and increases again in the age group *Maturus* (40-60 years) when the major of males have been died. As regards to pathology of postcranial skeleton, the highest is the percentage of degenerative-dystrophic diseases which is due to heavy physical labor performed by Bulgarian population during the Ottoman Empire.

### **Unrelated Coastal Burials in Denmark. Rituals and Traditions**

*Tim Slumstrup Aunkilde. Museum of Southeastern Denmark*

Denmark has an unusually large amount of coastal area compared to its size. This gives the Danes an inherent connection to the sea, and have a long history with fishing industry as well as a major naval power. Archeological sites near the sea due to coastal erosion are therefore common as a large part of the population lived of the ocean.

Two storms in 2013 and 2015 caused coastal erosion that revealed two graves close to each other near the town of Vordingborg, Denmark.

The graves eventually turned out to be unrelated and thousands of years apart, although there were still similarities. It lead to an investigation into the practice of coastal burials in Denmark throughout time, its rituals, traditions and curious superstitions.



This presentation leans upon a variation of archeological finds of human remains, as well as oral tradition. The latter mainly after the introduction of Christianity with more clearly defined burial practices.

**Does the quality of mother's milk depend on help she receives from significant others?**  
*Magdalena Babiszewska<sup>1</sup>, Anna Ziomkiewicz<sup>1</sup>, Magdalena Piosek<sup>2</sup>, Anna Apanasewicz<sup>1</sup> & Marek Szoltysik<sup>3</sup>*

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Long chain polyunsaturated fatty acids (e.g. DHA and EPA) in breast milk are indispensable for cell membrane synthesis and neuronal growth. In humans the amount of fat in the mother's milk is highly variable between individuals. Differences in maternal diet or body composition do not explain most of this variability. Here we test if the support from kin and non-kin helpers influences the breast milk fatty acids composition and thus improve mother's physiological investment in her offspring. The preliminary findings on 90 subjects show, that when controlling for maternal diet and total energy expenditure, the number of helpers, thus the size of social network, has an impact on the DHA concentration in human milk. The larger mother's social network is, the bigger maternal investment in milk quality was observed. This result goes along with evolutionary studies on humans that emphasize the role of cooperative breeding for the human growth and early development. This study was supported by NSC-2015/17/B/NZ8/02436.

**Celibacy, sexual abstain and religion in Czech Republic**

*Věra Bártová, Masaryk University, Faculty of Science, Department of Anthropology, Kotlářská 2, Brno, email: verabartovaa@seznam.cz*

Sexuality and religion are both popular themes and their relation is also quit interesting and publish topic, however, religion and sexual abstain or celibacy stay aside. The aim of the study is to find out how people in Czech Republic understand the word celibacy, if there is any difference to term sexual abstain and if and how are these two kinds of sexual behavior connected with religion. To gain result for the given questions of research, over 1300 questionnaires (987 woman and 325 men) were collected from respondents aged from 16 to 83 years (mainly 18-26 years). The results show that majority of respondents connected celibacy with Christianity but the definition of celibacy varied quiet a lot. About 19% percent of respondents stated some kind of personal experience with sexual abstain. Some personal experience with sexual abstain declared about 59,65 % of individuals indicating themselves as practicing believers. On the contrary, it was only 22,34 % in non-practicing respondents.

**Dental enamel hypoplasia and famines: physiological stress in 18<sup>th</sup> century Provence.**

*Luana Batista-Goulart<sup>1</sup>, Isabelle Séguy<sup>2,1</sup> and Gérald Quatrehomme<sup>3,1</sup>*

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Dental linear enamel hypoplasia (LEH) is a well-established physiological stress marker, which gives information about the stress someone suffers until age 7. In this presentation we analyse the occurrence of LEH in an archaeo-osteological collection of victims of the Great Plague of Marseilles (1720-1722, south of France), who went through several known starvation episodes before the plague epidemic. Considering the historical and social contexts, our work aims at (1) verifying how each individual were affected by stress; (2) linking the stress episode with the historically known famines, using the individual age at death; and (3) analysing how both genders were affected. In this preliminary study, we consider 60 individuals, including immatures and matures, in order to evaluate the pertinence of this analysis, which we intend to apply to the entire collection (n=200).

### **Morphology of facial skeleton of the early Medieval elites (9th –10th century AD, Czech Republic) (Poster)**

*Šárka Bejdová<sup>1</sup>, Petr Velemínský<sup>2</sup>, Ján Dupej<sup>3</sup>, Lumír Poláček<sup>4</sup>, Jana Velemínská<sup>1</sup>*

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The main aim of the study was to analyse relationship between social status of the early Medieval Slavic population and morphology of facial skeleton using 3D methods of geometric morphometrics. Bioarchaeological and written sources suggest that the Great Moravian society was highly socially stratified. We suppose increased animal protein intake (such as meat) in higher socioeconomic classes requiring heavy masticator load.

The study evaluated the cranial CT images of 94 adults from the Mikulčice settlement. Individuals were divided on the basis of presence of grave goods (elite and non-elite graves) and on the basis of the localization of the graves (castle and sub-castle).

Results showed, that between the elite and non-elite individuals was much greater overlap in variability of the facial morphology than between the individuals from the castle and the sub-castle. According to our results, localization of the graves better reflects diet and social status of buried individuals.

### **CRIBS cohort: a base for family-based disease risk prediction**

*Luka Bočkor, Ivan Dolanc, Tonko Carić, Jelena Šarac, Natalija Novokmet, Miran Čoklo, Saša Missoni*

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During the last decade it has become increasingly evident that genetic variants can explain only a portion of individual's susceptibility to noncommunicable complex diseases. The spotlight of research therefore shifted to mechanisms of epigenetic modifications as central players in gene-environment interplay. The transgenerational propagation of both genetic

variants and epigenetic programming can contribute to an increased risk of complex diseases. In this work we are presenting data of 150 mother-child dyads collected within the longitudinal CRIBS study focusing on the main constituents of the metabolic syndrome (cardiovascular diseases and obesity), but also other diseases that emerge in family history. We show incidence of diseases in mother's families, biochemical parameters of mothers related to diseases and a plan of risk prediction and possible interventions based on environmental exposure and hereditary factors in mothers and their offspring.

### **Variability of VDR gene and susceptibility to bone loss in historical and modern populations from Poland.**

*Paulina Borówka<sup>1,2,3</sup>, Elżbieta Żądzińska<sup>1</sup>, Joanna Mietlińska<sup>1</sup>, Justyna Karkus<sup>1</sup>, Dominik Strapagiel<sup>2,3</sup>, Ewa Sewerynek<sup>4</sup>, Wiesław Lorkiewicz<sup>1</sup>*

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The vitamin D receptor (VDR) gene function is directly related to the vitamin D metabolisms, bone mineralization and bone remodeling. VDR gene has been considered as an important candidate which genetic variants (SNPs) could influence the expression and function of VDR protein and play key role in development of BMD (bone mineral density) and the pathogenesis of osteoporosis, which is the medical challenge among modern aging populations. Osteoporosis indicators such as low BMD or osteoporosis related genes SNPs variation has been reported also in historical populations up to date, through to aDNA studies. Here we present preliminary results of a pilot study based on custom solution-based targeted enrichment assay method developed for whole VDR gene detection in aDNA material derived from historical individuals from north-central Poland. Further study will include 200 individuals for VDR gene SNPs detection, which enable comparison on overall frequency among modern Polish population.

### **Dining in the Danish medieval leprosarium at Næstved: using stable isotopes to reconstruct the diet (Student award)**

*Anastasia Brozou, Niels Lynnerup, Marcello Mannino, Andrew Millard  
Department of Archaeology and Heritage Studies, Aarhus University*

During the 12th and 13th centuries, numerous leprosaria were founded in Europe. Given that leprosy was not considered infectious, this may reflect social dimensions of the disease. Aiming at exploring the impact of leprosy on medieval people and the organisation of the Danish leprosarium at Næstved, we reconstructed the diet of twenty patients using stable isotopes, and compared our results with relevant historical data. The isotope analysis revealed a terrestrial C3 diet and limited consumption of sea-fish. Contrary to historical evidence of daily fish consumption in the leprosarium, only six persons consumed relatively large amounts of freshwater fish. Leprosaria have been considered monastic, and thus the varied diet, poor in

aquatic protein, questions the monasticism of the hospital and points to a social stratification. A multi-isotope analysis of a larger sample would add to our understanding of the diet of the leprosy patients, as well as their treatment in the leprosarium.

**DNA fingerprinting and Genetic history of Pacific Island peoples (Poster)**

*Melinda Ines Nunez Castillo & Susanne Hummel.*

*Anthropology and Human Ecology, JFB-Institute, Goettingen University, Germany*

The origins of Pacific Islanders continue to intrigue archaeologists, anthropologists, linguists, and geneticists because of discrepancies between the cultural and linguistic patterns on the one hand and the genetic structure of its inhabitants on the other hand. Thus, the study of genetic history aspects of Pacific peoples will aid to determine their genetic substructure and allow the reconstruction of migration patterns. Seventeen autosomal short tandem repeats (STR) and Hypervariable Sequences (HVS) of the mitochondrial DNA have been analyzed from archaeological human remains originating from Melanesia and Polynesia to examine the population genetic structure. The results of the autosomal STR allele frequencies and the mitochondrial sequence information have been compared with modern genetic data from South America and Oceania populations to explore the possible genetic interaction between South America and Oceanian peoples before European contact.

**Forensic taphonomy in an indoor setting (Poster)**

*Ann-Sofie Ceciliason, Håkan Sandler, Dep. of surgical science; forensic medicine; Uppsala University; Sweden*

The majority of decayed human remains in Sweden are recovered in an indoor setting. Thus, without exposure to wind, rain, sun and large temperature fluctuations. Limitation in insect access and animal scavenger was also prominent. Other factors, e.g. position of the body, clothing or coverings, body size and weight and trauma/injuries may therefore have a larger impact on the indoor decay process. However, research in this specific setting is still limited. In this study 236 indoor cases were scored at forensic autopsy according to the Total Body Score (TBS) method and in 41 cases insects were present and 107 cases displayed desiccation in various stages. TBS fail to fully describe the indoor decay process and consequently, the postmortem interval (PMI) was overestimated in cases with insects and underestimated in cases with marked desiccation. A specific indoor TBS scale (plotted against log<sub>10</sub>PMI) was constructed, as well as, quantification of insect activity in order to enhance the model's precision. This new model has potential to improve quantification of indoor decay and estimation of PMI.

**Homicide? (Poster)**

*Søren Christoffersen, Dorthe Dangvard Pedersen. Institute of Forensic Medicine, University of Southern Denmark*

Partly skeletonized but obvious human remains found on the beach of the westcoast of Denmark. The remains were in very bad condition with multiple fractures – including skull fractures, severe tissue loss and initial phases of adipocire formation.

Upon examination of the skull fractures, several fragments suggested a bullet-hole in the back of the skull, suggesting homicide rather than suicide.

Conclusions regarding time and manner of death as well identification were reached. The corpse was later identified using dna.

### **Bone injuries in the archaeological skeletal material as a source of historical information.**

*Agata Cieřlik. L. Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Department of Anthropology*

The main goal of the presentation is to depict the structure of the injuries observed in the historical skeletal material excavated from seven Polish archaeological sites (11<sup>th</sup> - 17<sup>th</sup> century) in the context of the relations between the type and frequency of the injuries and living conditions of the examined populations. The sample size was 152 individuals: 97 males, 38 females, and 17 of undetermined sex. Traumata occurred in 168 cases (multiple injuries were also observed). The lesions were described according to the localization, type and the mechanism of their formation. Some factors, eg., the demographic structure and urban or rural living environment had an influence on the trauma patterns in examined populations. The analysis of the traumata structure observed in the skeletal material brought the information regarding the influence of the various factors, including the physical activity, violence, and health care on the lifestyles leading by the historical populations.

### **Birth Cohort as a Tool for Exposing the Transgenerational Exposome – CRIBS Study Example**

*Miran Ćoklo<sup>1</sup>, Ivan Dolanc<sup>1</sup>, Tonko Carić<sup>1</sup>, Antonija Brozović Krijan<sup>2</sup>, Luka Boćkor<sup>1</sup>, Saša Missoni<sup>1</sup>* <sup>1</sup>*Institute for Anthropological Research;* <sup>2</sup>*General Hospital Karlovac.*

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The exposome concept was initiated within the field of epidemiology in 2005 to encompass “the totality of human environmental exposures from conception onwards, complementing the genome”. In the context of birth cohort studies and as-early-as-possible complex disease’ prevention, our focus is on the influence of maternal exposome on the offspring early growth and development as well as health outcomes in adulthood. As an example on how birth cohort can be used as a powerfull tool in exposing the transgenerational propagation of maternal exposome effects, we are presenting data of 150 mother-child dyads collected within the longitudinal CRIBS study focusing on relationships between maternal (such as physical activity, nutritional and lifestyle habits) and child parameters (early growth and development). Also, additional strategies regarding toxicological burden and epigenetic modifications (e.g. glycosylation) will be proposed.

### **Analysing the spatiality of death in Modern Portugal (15th-19th century)**

Cristina Barroso Cruz<sup>1,2</sup> & Verónica Mateus Pereira

<sup>1</sup> ICArEHB (Univ. of Algarve); <sup>2</sup> CHAM — Centre for the Humanities (NOVA FCSH—UAc

Historic and ethnographic data show that ritualization of death can be related to the sociocultural role of individuals during life. Thus, is fair to assume, that funerary spatial organization, how people are buried and the material cultural associated, may inform about the the deceased, but also, their cultural background. Modern period burials (15th-19th centuries), given their recent chronology and generally well preserved state, can provide relevant information to explore this possible relation.

We gathered a sample of modern funerary sites, representing Portuguese districts, where primary funerary contexts were found revealing osteological remains. By combining paleodemographic and paleopathological data with the funerary spatiality and material culture we aim to identify eventual patterns that support this association. Preliminary results, so far, are inconsistent. Nevertheless, this approach may provide new insights in how death was perceived and performed in modern Portugal.

### **Imperial Rome Pathocenosis: A Holistic Approach to Disease**

*De Angelis F.<sup>1</sup>, Martínez-Labarga C.<sup>1</sup>, Götherström A.<sup>2</sup>, Catalano P.<sup>3</sup>, Gazzaniga V.<sup>4</sup>, Rickards O<sup>1</sup>.*

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The archaeological surveys in Rome have constantly revealed thousands of burials mainly dated back to the Imperial Age (1st-3rd centuries CE), whose deep analysis should be significant in the comprehensive understanding of people biological profiles. Accordingly, the huge development of biomolecular techniques provides a powerful tool for reconstructing crucial aspects of population history of Rome as well as its ecological and genetic structure, to be properly understood in the frame of the huge historical sources about its lifestyle and society. Selective genomic markers have been evaluated by high throughput sequencing approaches to identify putative genetic disorders people suffered from: their molecular characterization have aided in the identification of the pathocenosis affecting ancient Romans and several susceptibility loci revealed specific variation in individuals featured by pathological stigmata. This project is sponsored by MIUR-PRIN 2015PJ7H3K.

### **Sex-related differences in chest dimensions and shape in 9-10 – years-old Bulgarian children (Poster)**

*Albena Dimitrova, Ivaila Yankova Pandourska. Bulgarian Academy of Sciences, Institute of Experimental Morphology, Pathology and Anthropology with Museum*

This study aimed to characterize the chest dimensions and shape in Bulgarian schoolchildren and their relation with vital capacity and some obesity parameters. A total of 107 (60 boys and 47 girls) schoolchildren aged 9-10 years from Sofia, Bulgaria were studied. Chest's diameters and circumference, waist circumference and vital capacity of each subject were measured. Thoracic index and BMI were calculated. In 9-10 years old children the sexual differences in all

assessed variables are well expressed with priority for boys, who had more massive chest than girls. Significant positive association of all chest dimensions with BMI and waist circumference was observed, as correlation coefficients were mostly higher in boys than in girls. A positive relation between torso parameters and vital capacity also was found as in boys it was low and in girls - moderate. In both sexes the thoracic index determined a conic shape of chest, already similar to this one in adult man and women.

### **An anthropological overview of the Balkanian populations**

*Marios Dimopoulos. mrsdmp1s@yahoo.com*

Biasutti in his work "*Le Razze ed i Popoli della Terra*" stated that the Slavic-speaking Balkanians may not be categorized among any Slavic branch. Therefore they have only being "slavonised". Slavic tribes passed the Danube to the Balkans during the 6th and the 7th centuries AD. However, these Slavic populations, as the anthropological data indicate, were not numerous enough to change the anthropological type that lived prior to the 6th century AD in the vast Balkan area. Same theories were supported by the Russian anthropologists Debbets (teacher of Poulianos too), Trofimova and Tseboksarov, as well as the Romanian Manuila, who, already since 1957, underlined the anthropological similarities throughout the entire Balkan region. Coon also supported p. ex. that Montenegrins, although they speak Slavic, they are not Slavs by origin. Thus, the common belief accepted among most scientists is that the spread of Slavic languages was not accompanied by a mass movement of Slavs in the Balkans.

### **Evolution of *de novo* genes in humans and other primates**

**(Poster)**

*Daniel Dowling. Institute for Evolution and Biodiversity, Huefferstr. 1, Muenster, Germany*

Humans and other great apes are genetically remarkably similar. Despite this, recent analyses show that many genes are restricted to a single or several closely related species. Species-specific genes have been shown to be essential for biological processes and may be responsible for species-specific adaptations and traits. One explanation for the origin of species-specific genes is their emergence *de novo* from ancestrally non-coding DNA. Why these *de novo* genes initially arise, spread through a population, and evolve beneficial functions is currently unknown. Here, we analyze transcriptomes of humans and five other primate species. We identify novel transcripts arising from non-coding DNA and assign approximate ages allowing us to observe the evolution of *de novo* genes over ~30 million years of primate evolution. Additionally, we analyze the properties of potential proteins which *de novo* genes may code for.

### **Association of BMI at the age of 8 years with selected markers of adolescent growth spurt in boys**

*Magdalena Durda-Masny, Anita Szwed, Tomasz Hanć, Zbigniew Czaplą*

*Department of Human Biological Development, Institute of Anthropology, Adam Mickiewicz University in Poznan, Poland*

The aim of the study was to investigate the relationship between BMI at the age of 8 years with the timing of pubertal markers such as age at take-off (ATO), age at peak height velocity (APHV), velocity at take-off (VTO) and peak height velocity (PHV). Height and weight of 133 boys were measured at two-year intervals (age of 2, 4, 6, 8, 10 y). BMI was calculated on the basis of measurements obtained at 8 years of age. The growth model JPA2 available in the AUXAL SSI 3.1 program was used to assess selected markers of growth spurt. There were no significant differences in ATO between BMI groups. BMI differed the age at APHV (H=22.53;  $p<0.001$ ), VTO (H=16.42,  $p<0.001$ ) and PHV (H=10.6,  $p<0.034$ ). In overweight/obese boys APHV and PHV were the lowest, and VTO the highest compared to boys with normal BMI or underweight.

BMI at 8 years of age significantly affects the majority of markers of growth spurt in boys, but not ATO

### **Functional Analysis of Ahmarian Points at Üçağızlı Cave, Turkey (Poster)**

*Ece EREN, Erksin GÜLEÇ, Steven L. KUHN. Ankara University, Faculty of Languages, History and Geography, Department of Anthropology, Ankara, Turkey. [ecerer@ankara.edu.tr](mailto:ecerer@ankara.edu.tr)*

Stone points were functional stone tools that improved hunting efficiency for early human ancestors and facilitated dispersal of *Homo sapiens* from Africa to Eurasia. The study aims to provide information about the function of the Ahmarian points by analysing the impact scars and hafting modification on the points from the Ahmarian layers at Üçağızlı Cave. These attributes of the points were compared with the Ahmarian layers to determine whether there were changes in the use of points during the Ahmarian period at Üçağızlı Cave. A total of 309 lithic points were analysed and point types, impact scars, hafting modification, and notching on the points were recorded. The results indicated that the dominant point type was Ksar Akil point which preserved mostly flute-like impact scars on the distal ends. Impact scars were found to be 25%, hafting modification was found to be 66%, and 16% of the points demonstrated both notching and hafting modifications. These findings suggested that points with impact scars, hafting modification and notching could have been used as projectile points. Also, the comparison between the layers and attributes of the points revealed that there were no significant changes in the functions of the points across the Ahmarian layers at Üçağızlı Cave.

### **The relationship between bone status and oestrogen hormone level in girls and adult women (Student award)**

*Piroska FEHER, Dorina ANNAR, Annamaria ZSAKAI, Eva BODZSAR. Department of Biological Anthropology, Eotvos Lorand University; Pazmany P. s. 1/c, 1117 Budapest, Hungary*

The main aim of present analysis was to examine the relationship of the oestrogen level with bone structural parameters in adolescent girls and in young adult women.

Girls and women (n: 512, aged 7-75 years) were enrolled to the present analysis. Bone structure was measured by ultrasound osteometer (DTU-One Osteometer). Bone age of subadults was estimated by ultrasound Sunlight BoneAge device. Absolute bone mass was



estimated by Drinkwater-Ross anthropometric four component model. In a subsample oestrogen level was estimated from saliva samples, which were collected in the early follicular phase of the menstrual cycle.

The age changes in oestrogen level and bone structural parameters were analyzed. Significant relationship was revealed between BUA parameter (estimates the microarchitectural status of bones) and the salivary oestrogen level in adolescent girls and women. The higher the level of salivary oestrogen, the better bone indicators were found in women in the reproductive period.

### **Interactions between biological sex and frailty: Insights from laser microscopy of enamel defects.**

*Gamble J<sup>1</sup>; Boldsen J<sup>2</sup>; Hoppa R<sup>3</sup>; Milne B<sup>3</sup>*

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The Developmental Origins of Health and Disease paradigm has become increasingly important in clinical and experimental research, emphasizing the interaction between developmental plasticity and a life course approach to health. Bioarchaeology makes an important contribution to the questions being asked, with human skeletal remains providing information from different stages of the life course. Using laser confocal microscopy, dental enamel defects from a medieval Danish sample (60 males and 56 females) are evaluated in relation to mortality and growth to consider long-term physiological impacts. The results suggest a sex-specific difference in survivorship, with an increased frequency in enamel defects showing a significant negative impact on male but not female survivorship. No patterning is apparent between enamel defects and body proportions.

### **Mobility in the Empire: oxygen isotope survey of Imperial Rome communities**

**(Poster)**

*Luca Gaspari<sup>1</sup>, Flavio De Angelis<sup>1</sup>, Andrea Battistini<sup>2</sup>, Carla Caldarini<sup>2</sup>, Stefania Di Giannantonio<sup>2</sup>, Walter Pantano<sup>2</sup>, Federica Zavaroni<sup>2</sup>, Paola Catalano<sup>2</sup>, Cristina Martínez-Labarga<sup>1</sup> and Olga Rickards<sup>1</sup>*

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The paper aims to contribute in the reconstruction of migratory flows in Imperial Rome (1st-3rd centuries CE) in order to identify putative allochthonous people.

In order to scientifically assess migration to Rome, oxygen isotope analysis was performed on selected skeletons from several cemeteries scattered throughout the Suburbium. The obtained data fall within the  $\delta^{18}\text{O}$  values previously obtained from a roughly synchronic sample for close topographical areas. The comparison of isotopic and osteological data allows us to dissect people geographic origin to contribute in answering to the question “Who immigrated to Rome?”.

Despite this study generated new data supporting hypothesis related to people coming to Rome in the Imperial period, much more information is needed to fully contextualize questions about mobility in Imperial Rome to push in employing bioarchaeology in Roman migration studies.

This study is supported by grant from the M.I.U.R., PRIN Project 2015-prot. 2015PJ7H3K.

### **Sex-dependent pattern of changes in percentage of body fat in given BMI across developmental periods**

*Aleksandra Gomula, Agnieszka Suder, Sławomir Koziel*

*Institute of Immunology & Experimental Therapy, Polish Academy of Sciences*

The aim of the study was to estimate changes in the percentage of body fat within BMI in Polish girls and boys across subsequent developmental periods over nearly 50 years. Four surveys, conducted in Poland in 1966, 1978, 1988 and 2012, comprised data of boys and girls attending primary and all types of secondary schools, representative for all levels of urbanization. Three periods of development in boys and girls were identified: childhood, early and late adolescence. Body fat percentage was estimated using Slaughter et al. (1988) equation. A 3-degree polynomial regression was applied to the relationship between BMI and body fat, residual variance was calculated and then standardized. Two-way ANOVAs were run for surveys, age and developmental periods. Results revealed sex-dependent differences in the pattern of changes in body fat percentage within given BMI over the developmental periods, indicating increase in fat free mass in boys and opposite trend in girls.

### **Childhood diet at medieval (1240s AD) Solt-Tételhegy, Hungary as reconstructed from stable carbon and nitrogen isotope analyses (Poster)**

*Ariana Gugora<sup>1</sup>, Tosha L. Dupras<sup>2</sup>, Erzsébet Fóthi<sup>3</sup>*

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From 2005 to 2009, more than 100 skeletons were excavated from the medieval (13th century AD) Hungarian site of Solt-Tételhegy. While previous stable isotopic research has examined the diet of medieval European peoples, here we present the first such research conducted on a medieval Hungarian population. Stable carbon and nitrogen isotope analyses were performed on dental enamel and dentin from first and second molars from 24 individuals to reconstruct their childhood diet. The enamel  $\delta^{13}\text{C}$  values range from -14.4‰ to -8.6‰, with an average of -11.1‰, and the dentin  $\delta^{13}\text{C}$  values range from -19.4‰ to -14.9‰, with a mean of -17.4‰. These data suggest that  $\text{C}_3$  plants were the predominant plant type consumed by the majority of the study population, but varying quantities of  $\text{C}_4$  plants were also included in the diet. These results reflect the archaeological evidence of the dominance of  $\text{C}_3$  plants over  $\text{C}_4$  plants in medieval Europe. The dentin  $\delta^{15}\text{N}$  values range from 9.5‰ to 11.6‰, with a mean of 10.6‰, showing that animal protein constituted a moderate proportion of the diets of the sample population. Despite clear signs of status differences indicated by burial location, stable nitrogen isotope values also suggest that the individuals had relatively egalitarian access to animal protein. The results of this study reveal new information about diet during a very dynamic period of Hungarian history.

**Sea spray effect in  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$ , and  $\delta^{34}\text{S}$  illustrated by Gaussian Mixture Model (GMM) clustering (STUDENT AWARD)**

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Transport of sea spray in coastal areas (“sea spray” effect) can have a marked influence on the isotopic composition of the terrestrial environment. This effect shifts terrestrial isotopic values towards unusual high values masking the original terrestrial signature.

Using an approximation method we were able to show that the sea spray effect is not only present in sulphur stable isotopes of bone collagen, what is commonly accepted, but also in carbon and oxygen isotopes of bone carbonate.

Our correction procedure allowed to approximately recalculate the original terrestrial signature. The effect of the sea spray correction is illustrated using Gaussian Mixture Model clustering. Before correction clustering terrestrial herbivorous and marine mammals of the Haithabu and Schleswig sites at the Baltic coast in Northern Germany resulted in a “mixed” sea spray cluster, while herbivorous and marine mammals were separated into two distinct clusters after correction for the sea spray effect.

**Patterns of skinfold thickness and nutritional status of Indonesian children and adolescents aged 6 – 18 years (poster)**

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Extensive studies have reported anthropometric measures as growth indicators in children and adolescents. However, little information is available on growth patterns of skinfold thickness, especially in Indonesian populations. The objectives of this study were to assess growth patterns of skinfold thickness and nutritional status of Indonesian children and adolescents aged 6-18 years. Body weight, height, BMI, and skinfold thickness at triceps, subscapular, suprailiac, and calf were measured in 2531 children and adolescents (1036 boys, 1495 girls) aged 6–18 years. Nutritional status was defined using WHO cut-offs for BMI-for-age (Z-score). Analyses of ANOVA, *t*-test, chi-square test, and linear regression were performed. As many as 13.9% of boys were identified as thinness and severe thinness, greater than girls (8.1%); whereas obese (and overweight) children was comparable between boys and girls, i.e., 12.7% and 11.6%, respectively. Significant correlations ( $p < 0.001$ ) were found between total skinfold thickness and BMI in boys ( $r = 0.74$ ) and girls ( $r = 0.84$ ). Boys and girls showed different growth patterns of skinfold thickness since early ages, at eight years, but most of the skinfold sites indicated significant differences after age 12 years ( $p < 0.001$ ). We concluded that there were different growth patterns of skinfold thickness between boys and girls which appeared since earlier of ages. There might be a delayed growth in weight and height of Indonesian children that corresponded to nutritional status and affected growth attainment of boys and girls. Our study suggested that skinfold thickness may provide worthy information and should be included in the assessment of growth.

## **Undernutrition = stunting, stunting ≠ undernutrition. The old fairy tale of “clean your plate”**

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Remember your mother saying: “eat”, otherwise “you will not grow”. Fundamental concepts are transmitted early in life and result in popular wisdom that may not reflect scientific knowledge. But scientific knowledge may reflect popular wisdom. The link food=growth is intuitive, but disproven since >100 years. Undernutrition-related growth failure is temporary: height in the starved completely regenerates when food is restored. As this evidence fell into oblivion, the old popular link returned in high-ranking scientific papers already in the early 1970s. The terms “stunting” (height < critical cut-offs on WHO growth standards) and “undernutrition” are synonyms resulting in the false belief that world-wide, 165 million children < 5 yrs are undernourished. This is not the case. Stature signals status. Height of many species including primates, and historic data suggest social-driven competitive strategic growth adjustments, by social rather than physical biological factors, also in humans.

## **The relationship between facial morphology and sociosexuality (Poster)**

*Marie Jandová, Pavlína Ingrová, Miroslav Králík, Petra Urbanová, Věra Bártová. Department of Anthropology, Masaryk University, Brno, Czech Republic e-mail: [jandovam@mail.muni.cz](mailto:jandovam@mail.muni.cz)*

Sociosexuality represents a variable willingness of people to engage in casual uncommitted sex without an emotional bond to the selected mate. Predispositions for a certain level of sociosexuality likely develop under the influence of prenatal steroid hormones, which also affect the development of facial features. If a level of sociosexuality represents an executive component of an evolutionary/reproductive strategy then variations in sociosexuality should be correlated with the respective body traits, i.e., facial characteristics. The aim of the present study was to determine relationships between sociosexuality and shape of face. The studied material consisted of 3D facial models (FIDENTIS 3D Face Database) of young adults of Czech and Slovak nationality. Sociosexuality was evaluated mostly by means of Sociosexuality Orientation Inventory. The results confirmed the relationship between sociosexuality and facial morphology in both sexes, manifested particularly in the chin region.

## **The relationship between facial morphology, socio-economic factors and body measurements**

*Marie Jandová, Petra Urbanová Department of Anthropology, Masaryk University, Brno, Czech Republic, e-mail: [jandovam@mail.muni.cz](mailto:jandovam@mail.muni.cz)*

The effects of environmental factors on the human body have been studied mostly relative to the changes in body height and weight. However, they are also reflected in facial shape changes. The present study aims to explore facial morphology in relation to body measurements and socio-economic factors by employing an advanced approach grounded in 3D facial models.

A studied sample of 210 individuals (105 girls and 105 boys aged from 6 to 14.5 yrs) was retrieved from the FIDENTIS 3D Face Database. Each 3D face was described by a set of 31 3D landmarks and processed by the methods of geometric morphometrics. The facial variations were tested against weight, height, sex, age and circumstances affecting the way in which children live.

The results show correlation between facial shape and parents' smoking habits or divorce of parents in girls, whereas boys without siblings exhibit different facial morphology than boys with sisters. The shape variations correlate rather with BMI than height.

### **Presentation of some artificially deformed crania (5th-6th century AD) from Northeastern Hungary**

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Multitudinous appearance of the artificial cranial deformation was in connection with the Sarmatian, Alan, Goth, Gepidic and Hun peoples in the Carpathian Basin in Europe. In Hungary, most of deformed skulls are dated back to the Hun-Germanic period (5<sup>th</sup>-6<sup>th</sup> century AD). The basic aim of this study was to present characteristics of 10 artificially deformed crania excavated from two cemeteries (Ároktő-Csíkgát, Nyíregyháza M3/36c) by shedding light on the type and degree of deformation, head shaping techniques. Additionally, the possible neurosurgical disorders are also debated. No sexual differences of the deformed crania with respect to the modes, types and degree of modification were found. The deformation mode of the skulls from the Ároktő Csík-gát site is uniform due to the usage of bandage caused characteristically circular deformation. In contrast, finds of Nyíregyháza M3 36/c cemetery showed wider variety considering the type, the technique and the extent of deformation.

### **Dietary patterns and migration in pre-industrial Copenhagen**

**(Poster)**

*Marie Louise Jørgkov<sup>1</sup>, Darren R. Gröcke<sup>2</sup>, Janet Montgomery<sup>3</sup>*

*<sup>1</sup>Laboratory of Biological Anthropology, Institute of Forensic Medicine, University of Copenhagen, Denmark, <sup>2</sup>Department of Earth Sciences, Durham University, England;*

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Recent excavations of 17th-18th century burials in central Copenhagen have provided a unique opportunity to study diet, and mobility among Pre-industrial Copenhageners buried at Holmens Church. The aim was to study the direct evidence using carbon, nitrogen and strontium isotopes of bone and teeth from 81 individuals (63 adults (>18 years) and 18 subadults (0-17 years). The results indicate that fish and terrestrial animal protein constituted a large part of the diet, but males seem to have had a larger variety of food sources from the marine environment. Exclusive breastfeeding was practiced until the age of 1 year. Weaning took place until the age of 4 years. Incremental analysis from ten individuals confirm this weaning pattern, except for one adult where weaning took place within the first few months of life. Strontium analysis (n=25) show that more than half had strontium signals slightly higher than the common strontium (surface water) in the area around Copenhagen and Denmark.

## **Serum concentration of insulin growth factor-1, its binding protein-3 and risk of hot flashes in middle aged women from Poland**

*\*Kaczmarek Maria, Pacholska-Bogalska Joanna<sup>2</sup>, Kwaśniewski Wojciech<sup>3</sup>, Kotarski Jan<sup>3</sup>, Halerz-Nowakowska Barbara<sup>4</sup>, Goździcka-Józefiak Anna<sup>5</sup>* \*Department of Human Biological Development, Institute of Anthropology, Faculty of Biology, Adam Mickiewicz University in Poznań, Poland. E-mail address: [makac@amu.edu.pl](mailto:makac@amu.edu.pl)

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The association between hot-flashes (HT) and serum concentration of IGF-1 and IGFBP-3 was examined in a sample of 257 Polish women aged 40-58 years, and screened for reproductive health in 2011. Serum blood samples were collected to detect IGF-1, IGFBP-3, E2, inhibin B, FSH and LH using ELISA methodology. Polish version of the Menopause-specific Questionnaire (MSQ) was used to collect information on symptoms and individual characteristics. The study revealed that menopause status was an independent risk factor for the HT, with 3-4 times higher risk for this symptom after menopause. Higher levels of FSH and lower of IGF-1 significantly increased the risk for HT as well as did the lower level of education, worse health status and higher BMI. The association of IGF-1 with HT well describes the contribution of somatotrophic axis into physiological changes across the menopausal transition. General health status, BMI and educational attainment suggest that lifestyle changes might modulate the management of climacteric symptoms.

## **Three leaps in human evolution**

*Oktay Kaynak*. Independent researcher. [oktaykaynak@hotmail.com](mailto:oktaykaynak@hotmail.com)

Human are unique. This species had to experience three consecutive and important leaps before becoming modern human.

**Bipedalism:** 6-7mya as a result of Rift and plateau formation in east Africa, a primate made an adaptive response to that formation. This adaptive response was hunting and gathering food in shallow waters on two legs. This shallow water made a selective pressure on that primate to walk bipedally.

**Mental Overturning:** When about 2mya the body erection reached a certain angle, the embryo made an adaptive response to this vertical body posture. The embryo turned upside down. This is the mental overturning that started the growth of the cranium as well as the brain.

**Mental Threshold:** After chasing its enemy, the chimp throws the stick and stones. It does not say to itself: "This stick and stone have served me effectively; I better keep them for another occasion". But there will be a time and a brain capacity (500-550cc) that such a thought will occur.

**The effect of leprotic infection on the risk of death in medieval rural Denmark**  
(Student award)

*K. Saige Kelmelis, Michael H. Price, James W. Wood. Department of Anthropology, Pennsylvania State University, State College, Pennsylvania*

This study examines the risk of death associated with leprotic infection in individuals from the Danish rural cemetery of Øm Kloster (AD 1172–1536). We modeled the influence of leprotic infection on agespecific mortality accounting for sex and social status. The sample consisted of 311 adults from the Øm Kloster skeletal collection housed at the Institute of Forensic Medicine, University of Southern Denmark. We modeled morbidity and mortality using a three-state illness-death model with parameterizations for three transition hazards – nonlesioned to lesioned; nonlesioned to dead; lesioned to dead. The mortality hazard of lesioned individuals exceeded that of nonlesioned individuals by a factor of 1.4 (40%) for all, 1.7 for females, 1.0 for males, 1.3 for lay persons, and 1.7 for monastics. Overall, 15% of the sample died with skeletal manifestations of leprosy, though it is likely that more of the population carried the bacterium. This study improves understanding of medieval leprosy.

**Heritability estimation of 2D:4D finger ratio in a Chuvashian populationbased sample**

*E. Kobylansky, V. Batsevich, L. Kalichman*

(Poster)

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The aim of this study was to evaluate the inheritance of 2D:4D ratio traits in a large sample of ethnically homogeneous pedigrees. Familial correlations and heritability analysis in a sample of 1,541 subjects (803

men and 738 women, mean age of  $47.78 \pm 16.89$ , range 18-90 years), were evaluated. Familial correlations of 2D:4D ratio traits showed no significant correlation for spouses, however, parent-offspring (0.15-0.28,  $p < 0.001$ ) and sibling correlations (0.13-0.38,  $p < 0.009$ ) were found significant. Heritability ( $H^2$ ) of visual classification of 2D:4D ratio was 0.36 for the left and 0.28 for the right *hand*; *finger ratio was 0.55 and 0.66, respectively; the ray ratio was 0.49 and 0.59, respectively, indicating the existence of a clear familial aggregation of 2D:4D ratio variation in the Chuvashian pedigrees, which cannot be explained by common environmental effects. Results of our study suggest the familial aggregations of finger ratio variation (for all traits) in Chuvashian pedigrees.*

**The Secular Trend of the Physical Growth and Development of Boys and Girls Aged 6 to 14 Years over the Past 120 Years in the Czech Lands**  
(Poster)

*Miroslav Kopecky, Palacký University Olomouc, Faculty of Health Science, Department of Specialised Subjects and Practical Skills, Czech Republic*

In the 20th century, the secular trend was observed as a major biomedical process. Body height and weight were measured using the methods of standardized anthropometry. The survey was conducted between 2012 and 2015 at 37 elementary schools and included

2,050 boys and 1,981 girls aged 6 to 14 years. The parameters were compared with the 1895 anthropological survey reference data and with the findings of the 6th NAS in 2001. A comparison of the body height, weight, and corpulence index of boys and girls aged 6 to 14 measured in 1895 and in 2015 revealed that present-day boys and girls showed significantly higher values, higher year-on-year gains, and a shift in the peak height and weight velocity to younger age groups. Today, boys aged 14 years are taller than an adult man in 1895, and girls have a higher height at the age of 12 than adult women in 1895. Compared with the 2001 reference values, the mean heights of boys and both height and weight in the case of girls suggest a continuing stagnation or cessation of the positive secular trend in the Czech population. The observed higher mean weight in boys aged 6 to 14 years compared with the 2001 reference data suggests a growing prevalence of overweight and obesity in today's population of boys.

### **Digit ratio (2D:4D) moderates the change in hand grip strength on an aggressive stimulus**

*Sławomir Koziel, Marek Kociuba, Zofia Ignasiak.*

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The ratio of 2D:4D digit lengths is a proxy indicator of intrauterine hormonal exposure to a foetus. It was suggested that 2D:4D was associated with T magnitude of spikes in response to challenge situations. From the other hand, handgrip strength is a simple measure that predicts muscular strength. Thus, the present study were conducted to test whether an aggressive video show could change HGS in men and women and if 2D:4D has any moderating effect on the magnitude of this change. This cross sectional experimental study included 74 male and 76 female students. Participants were measured and examined at two occasions in 7 days gap. On the first occasion they were shown a blank screen, and on the second occasion, a 7 minutes long video of MMA (Mixed Martial Arts) fight as an aggressive stimulus. It was shown that 2D:4D ratio modulates response on aggressive video but only in females. The results are discussed in the context of sex differences in a challenge and aggression.

### **Haagerup Rural Cemetery – A Field School Excavation**

*Vicki R. L. Kristensen, PhD Student; Dorthe D. Pedersen, Jesper L. Boldsen. Institute of Forensic Medicine, ADBOU; [vkristensen@health.sdu.dk](mailto:vkristensen@health.sdu.dk)*

For the second year in a row an area of the abandoned rural cemetery of Haagerup has been excavated. The cemetery was in use in the period AD 1100-1555 during which an estimate of approx. 4,000 people were buried here. Through a total of eight weeks in summer 2017 and 2018 two teams of students from around the world have excavated 93 defined graves containing skeletal parts from 172 individuals under the guidance of staff from ADBOU (Unit of Anthropology, SDU) and The Archipelago Museum of Southern Denmark (Øhavsmuseet in Faaborg). Arm positions and grave typology suggests that the individuals excavated were buried within the time period AD 1100-1300.



The preliminary anthropological registrations of the skeletons so far excavated, suggest that the demography of this cemetery stands out from other excavated Danish medieval rural cemeteries.

The hope is to raise money to have the cemetery totally excavated. If possible, this would be the largest ever medieval cemetery excavation in Denmark.

### **Biosocial inequalities in height in the 1970 British birth cohort**

<sup>1</sup> Monika Krzyzanowska, <sup>2</sup>C G Nicholas Mascie-Taylor

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Background: Substantial increases in height have occurred concurrently with economic development in most populations in the last century. In high-income countries, environmental exposures appeared to have lessened and variation in height by socioeconomic position may have diminished. The aim of this study was to investigate biosocial inequalities in height in the 1970 British birth cohort.

Material and Results: Analyses of the height variation of 16-year-old members of the British Cohort Study who were born in 1970 revealed a number of biosocial factors associated with stature. After multiple regression analyses only six variables, namely mother's age at delivery, maternal smoking during pregnancy, birthweight, mother's education, region and eating/appetite problems remained significant. The total variation explained by these biosocial variables was 40,9%.

Conclusions: Within Great Britain, the adverse effects of biosocial factors on height at 16-year-old cohort members have lessened.

### **The Effect of Sport Training on Morphological Parameters of Sport Gymnasts at Younger School Age**

*Petr Kutac. University of Ostrava, Human Motion Diagnostics Center*

The intensity of gymnastic elements together with specific sport training should be reflected in the morphological parameters of the gymnasts. The objective of the study is to analyse the somatic parameters of female sport gymnasts in the pupil competition category and to compare them with the values of regular population in the corresponding age group. The study included 16 gymnasts (average age of 10.7±1.2 years) and 227 girls (average age 10.9±0.9 years), which were in the controlled group. The parameters monitored were body height (BH), body mass (BM), body mass index (BMI), body fat (BF), total body water (TBW), skeletal muscle mass (SMM), and visceral fat (VFA). Statistical significance was determined in all monitored parameters and practical significance was also confirmed. When compared with the control group, the gymnasts have lower BH (diff -9.7 cm), BM (diff -10.1 kg), BF (diff -14.4 %), VFA (diff -36.9 cm<sup>2</sup>) and higher ratio of TBW (diff 10.8 %), SMM (diff 7.9 %).

### **Origin and spread of infectious diseases – insights from ancient DNA**

*Ben Krause-Kyora. Institute of Clinical Molecular Biology, Kiel University*

Emerging and re-emerging infectious diseases is an important topic in modern health care. By connecting knowledge in history, anthropology and microbiology to describe the epidemic pathogens in ancient populations through co-evolution palaeomicrobiology can provide relevant information concerning modern infectious diseases. This can supply better comprehension of the determining factors in epidemics, such as the sources of pathogens and their routes of introduction and transmission among human populations in the long term. Due to advances in molecular analysis over the last two-decade ancient DNA (aDNA) of pathogens offers a new approach for the study of infectious diseases and host-pathogen interaction. The presentation will summarize the evidence obtained by aDNA research about the origin and spread of pathogens and the host-pathogen co-evolution.

### **Pace-of-Life Syndrome – Life-history, risk-taking and cardiovascular physiology in adolescents**

*Andreas Lehmann*<sup>1</sup>, *Jana A Eccard*<sup>1</sup>, *Christiane Scheffler*<sup>1</sup>, *Ralf HJM Kurvers*<sup>2</sup> and *Melanie Dammhahn*<sup>1</sup>

<sup>1</sup>Animal Ecology, University of Potsdam; <sup>2</sup>Center for Adaptive Rationality, MPI Human Development, Berlin

The pace-of-life syndrome (POLS) hypothesis posits that life-history characteristics, among-individual differences in behaviour, and physiological traits have coevolved in response to environmental conditions. The aim of our study was to test predicted relationships of POLS in a human population for the first time.

We used data of a representative sample of German adolescents from the KiGGS study and extracted maturation status, risk-taking behaviours and cardiovascular parameters.

Maturation status and cardiovascular physiology as well as maturation status and risk behaviour covaried in boys and girls. In comparison to same-aged slow maturing boys and girls fast maturing ones had higher blood pressure and expressed more risk taking behaviour. Covariation between life-history, risk-taking, and cardiovascular physiology; as well as increased risk-taking behaviour and higher scores on cardiovascular parameters in fast maturing adolescents supporting general predictions of the POLS hypothesis.

### **From the outer morphology to the inner structure. Recent advances and perspectives in the study of the hominin fossil record**

*Roberto Macchiarelli, Professor at the Dept. Geosciences of the Univ. of Poitiers and at the National Museum of Natural History of Paris (UMR 7194 CNRS), France*

Along the last two decades, significant methodological advances in the characterization of the primate dental and bony tissues have deeply affected our traditional research strategies and fostered new concepts and new questions in paleoanthropology. Coupled with the integration of the third dimension in structural visualization and the geometric morphometric-based quantitative assessment of shape variation, a significant enhancement occurred in the analytical shift from the hard outer morphology (the “container”) to the virtually rendered inner structure (the “contents”). Thanks to by now routinely utilized techniques of high resolution noninvasive exploration, extraction and imaging of the taxon-specific 'hidden' features, such

integration has greatly improved our understanding of the evolutionary, adaptive, and functional patterns characterizing the fossil hominin dentition and postcranial skeleton.

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### **Foot morphology in seniors**

**(Poster)**

*Marek, Pavel, Přidalová, Miroslava, Kaplanová, Tereza. Faculty of Physical Culture, Palacký University Olomouc*

**Background:** Senescence is associated with various changes, e.g. in the foot area. The main aim was to describe differences of selected morphological parameters of the foot with respect to laterality in the seniors. **Methods:** The study was conducted in 365 seniors, who attended University of Third Age (U3A). Footprints parameters, Chippaux–Smirak index (CSI), Foot index and body mass index (BMI) were measured for each subject. Statistical analysis was done via software Statistika 12. **Results:** The seniors usually had second degree of a normally arched foot. The mean angle of I. toe was higher than 6,4° in both foot. The mean angle of V. toe exceeds 16,9° in both foot. **Conclusions:** More than 80 % of the seniors of the U3A had a normally arched foot. There were found significant differences in the length of the forefoot, heel angle, and CSI from the aspect of laterality in senior women and entire group. Other selected parameters were without significant differences between right and left foot.

### **Workshop on Cohort studies**

*Professor C G Nicholas Mascie-Taylor and Dr hab. Monika Krzyżanowska.  
Churchill College, Cambridge, UK & University of Wrocław, Poland*

The main aim of this workshop is to introduce human biologists and those working in allied fields to the possibilities that arise from working with cohorts i.e. cohort studies.

Cohort studies refer to a type of study design where people are studied over time. After a brief overview of the types of study designs this workshop will describe what can be learnt from cohort studies using examples from a number of countries including Britain, USA and Bangladesh. The workshop will focus on anthropometric variables, migration patterns, health and well-being, poverty etc.

1. Introduction to study designs – NMT 9-9.45
2. Cohort – the British cohort studies an overview MK 9.45-10.30  
COFFEE BREAK 10.30-10.45
3. Detailed studies – overview of MKs work on NCDS 10.45-11.30
4. Cohort studies – poverty and health studies NMT 11.30-12.15

### **Paleoepidemiology: From bones to people**

*G.R. Milner<sup>1</sup> & J.L. Boldsen<sup>2</sup>*

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Paleoepidemiology, a growing area of research, seeks to estimate disease prevalence in the past, the relative risk of dying for different segments of those societies, and the impact of trauma and disease on past communities. To date, researchers have focused on the first two

topics, which involve taking into account challenges posed by dealing with mortality samples. Future work should also focus on the cost to past communities of disease or trauma-related disability and premature death, as measured through lost years of life. This workshop focuses on the concepts underlying paleoepidemiology, not specific analytical methods; highlights new developments that put the work on a solid quantitative and empirical footing; and points toward where this research should go to further our understanding of how people lived in the past.

### **Perceived and diagnosed health in elderly people from Brazil and Spain (Poster)**

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**Objective:** To compare the perception of health, and the number of diagnosed diseases in two samples of people aged 65 or over in Brazil and Spain.

**Methods:** The sample was composed of 677 Brazilians (59.5%), and 461 Spaniards (40.5%) with an average age of  $68.7 \pm 2.8$  and  $71.6 \pm 5.1$  year respectively. They were asked about health perception, which was self-reported as "bad", "regular", "good" and "very good". Information was also collected on the total number of diagnosed diseases that were grouped into "none", "one", "two or three" and "more than three".

**Results:** Significant differences were observed in the average number of diagnosed diseases, 82.6% of the Spaniards vs 17.4% of Brazilians had none diseases. Regarding the self-perception of health, 65.1% of Brazilians and 34.9% of Spaniards perceived it as good.

**Conclusion:** Despite having more diagnosed diseases the perceived health is better among Brazilians when compared with Spaniards

### **A dish case observed on skeleton from middle ages Muslumantepe of Diyarbakir**

*AY Nazli. Institute of Social Sciences, University of Gaziantep, Turkey*

Diffuse idiopathic skeletal hyperostosis (DISH) is calcification or a bony hardening of ligaments in areas where they attach to your spine. Also known as Forestier's disease, diffuse idiopathic skeletal hyperostosis may cause no symptoms and require no treatment. My observations on a skeleton of an adult male died at an age between 32-42 found at the excavations of Müslümantepe, Diyarbakir, reveals that the body has fracture in the right femur and has an extra bone formation in the 8, 9 and 10th anterior and left lateral segment of the vertebral spinal column. This lesion bridges bilaterally these three vertebrae. Though DISH pathology has long history on human skeleton – for example found on a Neanderthal fossil excavated at Shanidar – this case is the second one recorded so far at Anatolia. Previously Handan Üstündağ observed the effects of the disease during Kuşadası, Kadıkalesi / Ania excavations on the skeleton of a sixty years old female who lived in high social status during late Byzantine Period. The scholar correlates the disease to a high-calorie diet. This observation is apt to clinical files that usually records DISH and obesity together. However, a spiral (helical) fracture trace is observed on the right femur. It seems that the person had managed to live for a long time with his broken leg that was eventually healed. Our measurements on the fractured femur show that the leg got shorter about 9 centimeters as a result of the rupture. After the 9 centimeters shortening in the leg it became impossible for him to walk in a comfortable manner

so he probably began to walk only with the help of a walking stick, or another tool like that. The necessity for using a staff as a result of the shortening on the right leg led then to a posture defect (kyphosis). The DISH that hit his right femur most probably had happened due to the body weight put too much stress on the left side after leg was broken. Therefore, it is possible to associate DISH with fracture in this case.

### **A case of bilateral squamosal suture obliteration in adult male skull (Poster)**

*Silviya Nikolova<sup>1</sup>, Diana Toneva<sup>1</sup>, Ivan Georgiev<sup>2</sup>. <sup>1</sup> IEPMAM-BAS, <sup>2</sup> IICT-BAS*

The squamosal suture (Sqs) lies between the parietal bone and temporal squama. It has been observed that if the SqS obliterated at all, it occurs after the 80 years of age. The SqS craniosynostosis has been reported to occur up to 9%. It is commonly associated with syndromic and isolated major suture craniosynostosis. In this study we reported a case of bilateral SqS obliteration in an adult contemporary nonsyndromic male skull without alteration of the cranial configuration. The skull was scanned using industrial  $\mu$ CT system and then inspected. The whole SqS along with the parietomastoid suture and occipitomastoid suture were fully obliterated on the left side. On the right side, there was a short remnant of the SqS running backward from the *pterion*, the parietomastoid suture was also obliterated but the occipitomastoid one was patent. Besides that the isolated premature closure of the SqS is relatively rare finding, it could also be misleading for age estimation in medico-legal cases.

### **Age-identification of cremations via microstructural analysis of burned human bones**

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In order to improve standing macromorphological age determination methods for cremated remains, a catalogue of histomorphometrical parameters is generated. This is especially important in archaeological as well as forensic contexts.

Both known-age archaeological and forensic compact femoral bone samples are used. Pieces of about 1.5-2.0 cm were heated to different burning temperatures ranging from 100°C-1000°C. For each piece, a corresponding fragment was used as a reference for the temperature-related changes of the bone's microstructural organization and micromorphological parameters. To see whether the bone's microstructure gets better visible to facilitate the histological age-at-death-diagnosis, archaeological bone samples that can be allocated to a cremation temperature of about 300-400°C are separated into two corresponding pieces, whereby one of the pieces gets "re-combusted" for the time of one hour at 1000°C.

The current progress status of the catalogue will be presented.

### **The State of the Science in Forensic Anthropology**

*Stephen D. Ousley, Associate Professor, Department of Computing and Information Science  
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Forensic Anthropology has made great strides in the last decade in its traditional areas and in new directions in response to new challenges and opportunities. Human identification has been aided by DNA analysis, though forensic anthropologists need to be aware of how the data are collected and categorized. Another positive development is the increasingly routine CT-scanning of the deceased. There are still large and growing anatomical collections, but the age of virtual collections has begun, facilitating new research possibilities. A number of forensic anthropology books have been published recently with a strong emphasis on science, unlike at times in the past. The National Institute of Justice has funded many recent research projects in forensic anthropology. This presentation will highlight advances in the US, with which the author is most familiar, but will also take note of international developments, as forensic anthropology is becoming increasingly international in scope, theory, and practice.

**Validity and accuracy of self-reported height and weight among Turkish adolescents  
(Poster)**

*Sibel ÖNAL, Ayşegül ÖZDEMİR, Başak KOCA ÖZER. Ankara University, Faculty of Languages, History and Geography, Department of Anthropology, Ankara, Turkey*

Accuracy and validity of self-reported height and weight have not been evaluated particularly in adolescents in Turkey. The aim of this study is to measure the accuracy of self-reported height and weight. Height and weight of 356 adolescents (133 boys and 223 girls) aged 14-17 years were measured and a questionnaire completed. Results showed that mean accuracy for the overestimated height was +0.22 cm for boys, and +0.91 cm for girls, and underreporting weight was -0.80 kg for girls and overestimated +0.20 kg for boys. There was a significant difference in self-reported and measured values ( $p < 0.05$ ). The accuracy was found to be higher among students taking gym classes. In conclusion, girls underestimated body weight and overestimated body height more than boys. Gym class plays an important role in terms of validity of self-reported body measures and has a positive impact on self-perception among Turkish adolescents.

**Bioarchaeological Analyses of Growth Status of Havuzdere Medieval Infant, Child and Adolescent Population  
(Poster)**

*Ayşegül ÖZDEMİR, Ece EREN, Başak KOCA ÖZER, İsmail ÖZER  
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Human growth is characterized by high developmental plasticity, which varies with environmental and socio-cultural factors. The aim of the study is to evaluate the growth status of infant, children and adolescent skeletal remains of Havuzdere Medieval population. The growth of long bones (humerus, radius, ulna, femur and tibia) were studied from 87 skeletons whose dental ages were determined, stress indicators and height estimation were evaluated. The results revealed similar growth patterns for Medieval Anatolian populations where Havuzdere infants showed lower values in long bone measures. Enamel hypoplasia of primary dentition was found to be 16.5% in canine teeth, among permanent teeth it was found to be 63% in second incisors and 54.6% in first incisors and canines. Paleopathological analyses results showed that cribra orbitalia was found to be 30%, periostitis 1.1% and porotic

hyperostitis 9.2%. Differences in health status of Havuzdere population projects the differences in dietary habits, environmental and living conditions compared with Medieval contemporaries.

**Dietary intake and nutritional status of children and adolescents aged 6-17 years in Turkey (Poster)**

*Başak Koca Özer, Cansev Meşe. Ankara University, Faculty of Languages, History and Geography, Department of Anthropology*

One of the most effective environmental factors on the growth and development is nutrition. This study was carried out on 1568 individuals aged 6-17 years in Ankara. Height and weight measurements were taken and BMI for age was evaluated according to WHO standards. Energy and nutrient consumption was determined by the 24-hour recall method. Severe thinness was found to be 0.7%, thinness was 2.2%, overweight was 19% obesity was 11% and morbid obesity was 2.7. In the 6-9 years of age group 76.2% of boys and 64% of girls consume energy at a sufficient level, while 46.5% of boys and 57.3% of girls consumed adequate energy in 10-13 age group, where adequate energy intake 48.9% and 50%, respectively at age 14-17 years. Fiber consumption was highly inadequate in all three age groups. It was also found that the majority of adolescents have insufficient folic acid and calcium intake. It was found that lunch is the most skipped meal. In this context, providing nutrition education in both family and school programs may contribute to adequate and balanced nutrition of individuals.

**Evaluation of Growth Profiles of Preschool and School Children in Ankara, Turkey (poster)**

*Basak Koca Ozer, Aysegul Ozdemir, Sibel Onal, Cansev Mese, Neriman Aral, Mudriye Bicakci, Ece Ozbal, Sebahat Aydos. Ankara University, Faculty of Languages, History and Geography, Department of Anthropology, Ankara, Turkey.*

The aim of the study is to evaluate the growth and development of pre-school and schoolchildren from Ankara, Turkey. The study was carried out on 2,427 children from different socio-economic background aged 3-17 years. To evaluate the growth and development, anthropometric measurements; height, weight, long bone measurements, skin fold thicknesses and bio-impedance variables were collected, Development Index and Peer Relations Questionnaire were evaluated. Present study results showed that according to the WHO cut-offs 0.6% of the children were severely malnourished, 1.5% were low-weighted, 11.1% were overweight and 4% were obese, where the prevalence of obesity is higher in males. Sex differences at early ages -between the ages of 3 and 5- were significant in terms of cognitive development, communication skills and general development dimensions. It has been reported that the friendship relations of female adolescents are significantly higher than males. In conclusion the growth and development profiles represents different aspects of individual and environmental factors.

## **Human activity in Pleistocene Period in West Anatolia, Turkey (Poster)**

*İsmail Özer, Mehmet Sağır, İsmail Baykara, Berkay Dinçer, Başak Koca Özer, Serkan Şahin, Ece Eren, Ayşegül Özdemir. Ankara University, Faculty of Languages, History and Geography, Department of Anthropology (iozer@ankara.edu.tr)*

It is acknowledged in the light of today's information that human species first appeared in Africa and spread to other parts of the world. It is one of the most important issues to determine which routes human species observe during these exposures and where the living areas are to be evidenced. Due to its position between Africa, Asia and Europe, Anatolian peninsula is a critical prescription region for the investigation of human traces. The aim of the present study is to evaluate human traces in Çanakkale province, which is located in a key region in terms of Pleistocene human population dispersals, and present survey results that carried out between 2014-2017 seasons. During surveys 40 localities were discovered where Pleistocene period chipped stone tools were found, and 16 caves were found. One of these is İnkaya Cave, and in 2017 an excavation was conducted. Preliminary results showed that İnkaya Cave is an intensive human settlement, and the fossil human traces and the findings obtained brings a new discussion about west Anatolian region human dispersals.

## **A COMPARATIVE DERMATOGLYPHIC CHARACTERISTIC OF BULGARIAN POPULATIONS (Poster)**

*Nadegda Paraskova, Zorka Mitova. Faculty of Biology, Sofia University, Dept. Of Zoology and anthropology. E-mail: [nadjia\\_para@yahoo.com](mailto:nadjia_para@yahoo.com)*

Summary: 1600 individuals of both sexes (800 men and 800 women) from Central Western Bulgaria were studied anthropologically on dermatoglyphic traits. The obtained fingerprint and palm image data were compared with previous studies from other regions of Bulgaria.

In the treatment of dermatoglyphic material the method of Kammins and Midlo (1961) was used. The applied mathematical and statistical processing of the obtained results shows homogeneity in the Bulgarian population. This confirms the identical ethnogenesis in different regions of Bulgaria. Also, the defined bimonth and gender differences confirm the identical ethnogenesis of the contemporary Bulgarian population in historical terms.

Key words: dermatoglyphic traits, bimanual and sexual dimorphism

## **ICortica Bone Size and Stress in the Black Friars Cemetery: Evidence from Survivors and Non-Survivors (Poster)**

*Parker K, Beauchamp A, Scott AB, Boldsen JL, and Hoppa RD. University of Manitoba; Laurentian University; University of New Brunswick; Syddansk Universitet; University of Manitoba*

The Black Friars cemetery (Denmark) was in use from the first half of 13th century until AD 1607 with two distinct interment phases: the monastic phase (AD 1240–1536) and the public phase (AD 1536–1607). This poster examines the relationship between cortical bone size and standard osteological indicators of stress in adults (survivors) and subadults (non-survivors).



Stress indicators (cribra orbitalia, porotic hyperostosis, enamel hypoplastic lesions, Harris lines) were assessed for 152 adults and 51 subadults. Cortical bone growth and variation in adult size were examined, with total area, cortical area, and mid shaft cortical thickness calculated from femoral CT scans. Patterns between cortical bone size and stress are compared between survivors and non-survivors for the two time periods. Results are discussed in the context of changing socio-economic conditions and explored with respect to differential frailty, as posited in the osteological paradox, in survivors and non-survivors.

### **Nutritional status of children with upper gastrointestinal diseases regarding breath H<sub>2</sub> excretion**

*Katarzyna Pawłowska-Seredyńska<sup>1</sup>, Katarzyna Akutko<sup>2</sup>, Wioleta Umławska<sup>1</sup>, Barbara Iwańczak<sup>2</sup>*

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We collected anthropometric and clinical data of 102 children (6.7-18.0 y, 38 males) with upper gastrointestinal diseases (UGIDs). Anthropometric indices included body height, body weight, body mass index and three skinfold thicknesses (SFTs): tricipital, subscapular and abdominal. Anthropometric data were presented as z-scores and analyzed due to diagnosed disease entity (GERD/NERD or peptic ulcers/gastritis), *Helicobacter pylori* infection and results of lactose hydrogen (H<sub>2</sub>) breath test. Children with GERD/NERD were worse nourished than children with peptic ulcers/gastritis and the reference population. Subscapular and abdominal SFTs were lower in children with lactose malabsorption. In the total sample, abdominal SFT correlated negatively with the increment of breath H<sub>2</sub>, while tricipital and subscapular SFTs correlated positively with fasting H<sub>2</sub> level.

*Conclusion:* Nutritional status of children with UGIDs is related to the activity of intestinal microbiota.

### **Visceral fat tissue amount and facial attractiveness in women.**

*Bogusław Pawłowski, Agnieszka Żelaźniewicz, Judyta Nowak.*

*Department of Human Biology, University of Wrocław*

Women's facial attractiveness is supposed to signal biological quality. An important component of this quality is the amount of visceral fat tissue (VAT). VAT is metabolically more active than subcutaneous adipose tissue and has a negative impact on health and fertility. According to the hypothesis on the signaling role of physical attractiveness, greater amount of VAT should be then also reflected in lower facial attractiveness. The aim of this study was to test if the amount of VAT in women is related to women's faces attractiveness, captured in the 2nd-4th day of the menstrual cycle. Face photographs of 171 women, aged 25-34, were assessed by men in terms of attractiveness. Women's VAT was measured by Body Composition Analyzer. Serum estradiol, testosterone, cortisol and health status were controlled. The amount of VAT was negatively related with perceived facial attractiveness ( $\beta=-.34, p<.01$ ). The results confirm that face attractiveness is a cue of a woman's biological condition.

### **A skull without its postcranial skeleton – a forensic or bioarchaeological case?**

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In October 2016, a skull was found in the woods in a coastal area in south Funen. The police, a forensic pathologist and an anthropologist were called to the site. The excavation was performed by a Police forensic team, with the forensic pathologist and anthropologist as observers.

A well preserved, complete skull including the mandible, atlas and axis was uncovered.

Sharp cutmarks were present on the left ramus of the mandible and the caudal surface of the axis indicating decapitation.

A partly healed cutmark on the left temporal bone and comminuted fracture on the left zygomatic bone were evidence of earlier trauma.

The anthropologist evaluated the skull on site, identifying the skull as male, age 40-50 years and of bioarchaeological and not forensic interest. The Police was then able to close the case on site.

Teeth were 14C dated and the time of death fell within the period AD 775 – 885 which is Viking age. The area is not a known burial site and until further inspection of the area this is seen as an isolated find of a decapitated head.

### **The association between skeletal lesions and tuberculosis diagnosis using a probabilistic approach**

*Dorthe Dangvard Pedersen<sup>1</sup>, George R. Milner<sup>2</sup>, Hans Jørn Kolmos<sup>3</sup>, Jesper L. Boldsen<sup>1</sup>  
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Sensitivity and specificity estimates for 18 skeletal lesions were generated from modern skeletal samples for future paleoepidemiological analyses of tuberculosis in archaeological samples.

A case-control study was conducted using 480 skeletons from two 20<sup>th</sup> century American skeletal collections. One-half of the skeletons were documented tuberculosis cases (Terry Collection), and the remaining age and sex-matched skeletons were controls (Bass Collection). The association between 18 candidate lesions and TB was established by comparing lesion distributions in case and control groups.

Twelve lesions were not useful as tuberculosis indicators as they among others were found with very low frequencies and the sample therefore was not large enough to detect their association with the disease. The remaining six lesions occurred significantly more often among cases than in controls and tended to be associated with one another. These lesions on the ribs, spine, pelvis, and ulna are shown to be good tuberculosis indicators for paleoepidemiological purposes.

### **High prevalence of CYP2C19\*17 allele in the Roma population from Croatia**

*Matea Zajc Petranovic, Zeljka Tomas, Tatjana Skaric-Juric, Nina Smolej Narancic, Branka Janicijevic, Marijana Pericic Salihovic.*

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*CYP2C19* gene is a member of cytochrome P450 family that codes for enzymes involved in the biotransformation of many endogenous and exogenous substances. Roma are a transnational minority population with numerous health problems, often treated with drugs metabolised by *CYP2C19* enzyme. Ten *CYP2C19* loci were genotyped in 440 Roma from Croatia, six of which were monomorphic (rs28399504, rs4986893, rs55640102, rs56337013, rs72558186 and rs41291556). Minor allele frequency (MAF) of rs4244285 in the Roma population was 15.5%, similar to the surrounding Croatian population, and MAF of rs12248560 (*CYP2C19\*17*) was 28.3%, higher not only compared to Croatian population, but also to other world populations. MAF of rs3758581 in the Croatian Roma was 18.3%, which is also notably higher than in other populations. Genetic profile of *CYP2C19* in Croatian Roma might be the result of reproductive isolation and definitely should be taken into account in prescribing drugs, to prevent adverse drug reactions.

### **The reconstruction of the stalagmitic floor, beneath of which the Petralona Man's skeleton was laying**

*Nickos A. Poulianos. Anthropological Association of Greece, 7 Daphnomili st., Athens*

Inside "Mausoleum", a small chamber (~2 x 3 m) of Petralona cave, the known human skull was found in 1960. In the same year its stalagmitic floor has being broken by the order of two Thessaloniki University professors, during a try of seeking the mandible and other postcranial bones. The chamber was subsequently excavated in 1977 by the author and several, more than a dozen of pieces were discovered inside the mixed up soil of the chamber. These fragments present a size from a few cm till 0,5 m in length, incorporating post-cranial broken human, but also animal, bones. On the basis of these stalagmitic pieces it is possible reconstruct (as with a puzzle) the ones existing Archanthropus' stalagmitic floor. However various unfortunate events prevented their presentation earlier, something that becomes possible today.

### **Current somatic status of primary school children in Czech Republic (Poster)**

*M. Pridalova, V. Zborilova, T. Podzimkova, M. Cinařova. Faculty of Physical Culture, Palacký University Olomouc*

Abdominal obesity, which may be specified on the basis of anthropometrically determined parameters (circumference parameters, WHR, body skin folds), more precisely the estimate of visceral fat amount by means of bioelectrical impedance or DEXA method, is closely related to obesity increase. The aim was to assess the incidence and extent of abdominal obesity in 6–11 years-old Czech schoolchildren and compare the temporal changes. Data were obtained from 1628 early school-age children attending elementary schools in the Czech Republic. Selected somatic parameters were determined anthropometrically. The body composition was analysed through InBody 720. We find higher VFA in girls, but it prevails in boys since 10<sup>th</sup> year of age. This parameter does not seem to be suitable for abdominal obesity assessment, it shows to be more suitable for waist circumference and body height. Taking National

Anthropological Survey (2001) into consideration, the rise in trunk parameters was proven in both sexes, especially in abdominal circumference, not in gluteal circumference.

### **The body composition differences among polish children aged 6-13 using the decision tree algorithms.**

*P. Pruszkowska-Przybylska<sup>1</sup>, I. Rosset<sup>1</sup>, A. Sitek<sup>1</sup>, D. Strapagiel... & E. Żądzińska<sup>1</sup>*  
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The body composition among children seems to be an important indicator of obesity and underweight, which are recently growing problems. The aim of this study was to evaluate which from the investigated factors comprise background of children who were over 3<sup>rd</sup> and below 1<sup>st</sup> quartile in the case of BMI, fat and muscle mass. In our study 603 children were included, aged 6-13 years. The factors selected as a potential background comes from two groups: socioeconomic and prenatal. The data mining methods - the decision tree algorithms were used to provide set of the most important and linked factors which are connected with the body compositions and proportions. We proved that fat and muscle mass and BMI can be linked with: number of family members, sequence of birth, parental education, maternal working, trauma and taking medicaments during pregnancy, breastfeeding, socio-economical status. Moreover we determined that fat mass is strongly connected with muscle mass (prob=68%).

### **Correlation between anthropometric measurements, somatotype, and blood pressure of children 7-12 years old in Yogyakarta Province, Indonesia (Poster)**

*Neni Trilusiana Rahmawati, Janatin Hastuti, Rusyad Adi Suriyanto, and Zaenal Muttaqien*

Anthropometric and somatotype measurements are useful in the assessment of growth and development and vary with health of children and adolescents. It is known that high endomorphic scores associate with hypertension in the later adulthood. This study aimed to examine the relationship of anthropometric, somatotype, and blood pressure in healthy elementary school students. The study was conducted on 500 boys and girls, aged 7-12 years in Yogyakarta Province, Indonesia. Weight, height, the Heath-Carter somatotype and both systolic (SBP) and diastolic (DBP) blood pressures were recorded. *Pearson's correlation* coefficient and multiple linier regression were used, considering  $p < 0.05$ . The results showed that there were significant correlation ( $p < 0.01$ ) between height and endomorphic component to blood pressure with  $r = 0.18$  (height) and  $r = 0.11$  (endomorph), respectively. The mean somatotype of boys were 2.1-4.6-2.8 (ecto-mesomorph) and girls were 2.2-4.1-3.0 (ecto-mesomorph), while mean blood pressure of boys were  $90.3 \pm 11.6$  (SBP) and  $61.1 \pm 10.6$  (DBP), and of girls were  $87.6 \pm 10.5$  (SBP) and  $59.9 \pm 9.4$  (DBP). It can be concluded that the higher values of height and endomorphic components were the higher blood pressure of children aged 7-12 years in Yogyakarta Indonesia.

### **Growth of contemporary Greenlandic children exceeds the WHO growth charts**

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Linear growth in Greenlandic children was previously found to be stunted, but no recent data are available. We aimed to examine the growth of healthy children in present-day Greenland. Longitudinal growth data were extracted from medical records of 279 Greenlandic children aged 0-10 years. Length, weight, BMI and head circumference were converted to z-scores (SDS) using growth charts from Denmark and the World Health Organization (WHO). Growth reference ranges were estimated with the LMS method.

Compared to the WHO standards, mean length z-scores gradually decreased from 1.28 at birth to 0.39 by the age of 2 years; were close to zero between 2 and 5, but increased again (0.45SDS) between 5 and 10 years. Weight z-scores were highly elevated (0.73 – 0.93SDS) throughout the whole age range, while BMI z-scores gradually increased from 0.15 at birth to 1SDS after the age of 2 years. Head Circumference z-scores were consistently 0.8 – 1 SDS above the WHO median. Differences were usually smaller when compared to Danish references. Similar observations were made for the prevalence of children outside normal ranges.

Stunted linear growth was no longer present in Greenlandic infants and children. Possible explanatory factors include genetic mixing with non-Inuit populations, improved healthcare and nutrition. Patterns of growth relative to the WHO charts are similar to those observed in western countries.

### **Diet, Lifestyle and Disease in a Copper Age community from “La Sassa” cave (Italy)**

*M. Romboni, F. De Angelis, F. Cortese, E. Romano, M.F. Rolfo, O. Rickards, L. Alessandri  
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“La Sassa” is a natural karst cave in central Italy featured by a complex stratigraphy where Copper Age layers return several human remains. Preliminary archaeological, osteological, isotopic and genomic data allow us to deepen the knowledge on people buried in it along with a high number of faunal remains. Anthropological evaluation points out the existence of a structured community whose subsistence strategy was mainly based on agriculture and breeding, allowing a not so restricted human/domestics contacts that might be the proxy for the spreading of zoonotic disorders. An integrated analytic approach has currently pursued in selected individuals to link peculiar skeletal alterations and unbalanced nutritional requirements as well as people suffering from putative domestic-related pathologies would be deeply characterized to broaden the knowledge about the economic strategies characterizing the community.

### **The Heath-Carter somatotype in Russian children and adults and its bioimpedance assessment.**

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In our recent work, it became clear that the Heath-Carter somatotyping in children and adolescents is possible using bioimpedance analysis – the most widespread method of body composition research in population studies. The availability of mass population bioimpedance data in many countries, including Russia, makes it possible to extract more complete knowledge on biological variation of the somatotype. Here, we describe the results of validation of our previously obtained bioimpedance-based formulae, and present the revised formulae for the evaluation of the endomorphy and mesomorphy ratings of the Heath-Carter anthropometric somatotype in various study groups of the European and East Siberian parts of Russia (total n=8,250), along with data on age- and sex-related variability of the somatotype. Historical aspects and methodological issues of this approach are discussed.

### **Pleistocene human traces in Ankara province, Turkey (2017)**

**(Poster)**

*Mehmet Sağır\*, İsmail Özer, İsmail Baykara, Seçil Sağır, Serkan Şahin, Sibel Önal, Ayşegül Özdemir*

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Anatolia is one of the leading places that have hosted the beginning of the civilizations on the world since the people of the Paleolithic period live and settle on the grounds because of its geographical position. Every new study that conducted, scientifically supports this truth by bringing new findings to the light. Revealing stone tools from Paleolithic period as a result of the studies and archeological excavations in Ankara, which is the capital city of Republic of Turkey, shows that city's history dates back to long before than preliterate. In Turkey, in 2017 studies which are conducted with the aim of tracking prehistoric people's movements and traces in Ankara and its region, new findings and areas are detected in respect of Paleolithic period. In the research which was conducted in Ankara's Elmadağ, Gölbaşı, Bala, Kalecik, Çankaya and Kahraman Kazan districts, many biface, core, Levallois point, edge scraper, blade and flake typologically belongs to the Lower and Middle Paleolithic period were found.

### **The influence of oral health on the mandibular cortex in three archaeological populations from Croatia**

**(Poster)**

*Ivana Savić Pavičin<sup>1</sup>, Anita Adamić<sup>2</sup>, Marin Vodanović<sup>1</sup>, Mario Šlaus<sup>2</sup>*

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Three skeletal series from Croatia were examined for four dento-alveolar pathologies: caries, calculus, alveolar resorption and tooth wear. Digital orthopantomograms were recorded and the mandibular cortical index (MCI) was determined. The aim of the study was to establish differences in MCI values between the three populations, and possible influence of oral health status on mandibular cortical bone quality. The first series consisted of 26 skeletons from Šibenik Sv. Lovre site (10th – 13th century), the second of 33 skeletons from the late medieval Dugopolje site (13th - 16th century) and the third of 18 skeletons from the early modern Koprivno Vlach site (16th -18th century). Results showed no statistically significant differences in MCI between three groups. Of the four examined dento-alveolar pathologies, only tooth wear showed significant positive correlation with MCI. MCI was in positive correlation with age

in the complete sample. In conclusion, aging and mastication forces were factors influencing cortical bone quality.

### **Modern studies lack evidence of an association between nutrition and height in developing countries**

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Recent data on body height lead to the hypothesis that nutrition lacks significant influence on growth.

We analyzed anthropometric (height, BMI, skinfold thickness, elbow breadth) and socioeconomic data of some 6700 6-12 year old children from India (1982, 2011) and Indonesia (2018), and longitudinal data of the Young-life-Study to study the influence of nutrition on height.

Complex statistical modeling showed that in Ethiopia, Vietnam, Peru and India family nutritional situation does not influence height of children. There is no association between skinfold thickness and body height neither in Indonesia nor in India. Quite in contrast, the by definition, stunted Indonesian children (West-Timor) appear healthy and well-nourished with normal values for skinfold thickness and other anthropometric parameters. These findings seriously question current concepts of growth regulation, in particular the currently used WHO criteria of malnutrition

### **Food for thought: isotopic mixing models applied to data from early Neolithic Turkey and Greece.**

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Collagen stable isotopes ( $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ) in archaeological human bones are commonly interpreted by bivariate plots and univariate statistics. This permits the assessment of the gross trophic level; however, an isotopic sourcing reveals much more information about the biomass contribution of selected food end-members. Since it is assumed that the Neolithic transition was accompanied by dietary change, stable isotopic ratios of human and animal bones from the early Neolithic site of Nevalı Çori (Turkey; ca 8500 BCE), and five sites in Greece (Alepotrypa, Franchthi, Mavropigi, Theopetra, Xirolimni; ca 6800-3200 BCE) were re-interpreted by use of concentration-dependent mixing models provided by IsoConc and SISUS. While the largely vegetarian diet of the humans from Nevalı Çori was confirmed, new staples became visible in the later Greek populations indicative of changing subsistence economies.

### **Sex estimation in intact and fragmentary crania using 3D derived interlandmark distances**

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The skull is often sent to forensic anthropologists for profiling yet is frequently fragmented. This reduces the number of measurements obtainable for discriminant analysis. Forty-five landmarks were digitised across 227 white South African crania from the Raymond A. Dart Collection of Human Skeletons. 3D geometric morphometrics was used to derive interlandmark distances (ILDS) across six cranial regions and also globally. Discriminant equations were derived for each region and achieved the following sex estimation accuracies: basicranium- 74%; basipalate- 80.2%; zygomatic- 82.4; orbits- 71.8%; nasomaxilla- 83.7%; global cranium- 88.2%. Numerous ILDs used to derive the functions in this analysis are novel, demonstrating the efficacy of geometric morphometric methods and illustrating the need to reassess older techniques. The results provide a valuable contribution to forensics in South Africa as it provides means of sexing fragmentary material that may otherwise have been disregarded.

### **Estimating stature of black South Africans from fragmentary tibiae**

*Amy J. Spies<sup>1</sup>, Mubarak A. Bidmos<sup>1,2</sup> & Desiré Brits<sup>1</sup>, <sup>1</sup>School of Anatomical Sciences, University of the Witwatersrand, <sup>2</sup>College of Medicine, Qatar University*

Intact and fragmentary bones have been used to derive equations for estimating stature of skeletal remains. The population-specificity of equations prevents their use on populations different from the reference population. The aim of this study was to derive equations for estimating stature of black South Africans from tibial fragments. Total skeletal height (TSH) was calculated for two hundred skeletons and eleven variables representing fragments were measured on each tibia. Regression formulae using single and a combination of variables representing fragments were derived for estimating TSH and tibial length. The standard errors of estimate were slightly higher than those reported for intact tibiae. Equations for North American blacks and South African whites overestimated stature in black South Africans, but the equations derived in the present study accurately and reliably estimated stature. These equations can therefore be used to estimate stature when intact tibiae are not available.

### **Forensic facial approximations: an analysis of the cross-population effect**

*Amy J. Spies and Nanette Briers, School of Anatomical Sciences, University of the Witwatersrand*

Forensic facial approximations (FFA) aim to recreate the antemortem appearance of a skull in order to make an identification, but little is known about the factors affecting FFA recognition. The aim was to test if the cross-population effect influences FFA recognition and to determine which features are recognised in same- and other-population faces. Twenty black and twenty white volunteers assessed facial arrays for one black and one white FFA. Assessors also stated which features were most important in the recognition of each FFA. The white male was recognised more frequently by both assessor groups, but there was no difference in recognition rates of each FFA between groups. This suggests that the cross-population effect does not influence FFA recognition. Assessors recognised the eyes most frequently in same-population faces, while recognition was based mainly on the nose and external features for other-population faces. This knowledge may contribute to improving FFA accuracy.



## **Association of bone mineral density with LCT-13910 C/T polymorphism in ancient skeletal materials**

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The relation of LCT-13910 genotypes and bone mineral density (BMD) has been the subject of modern-day human population studies, giving inconsistent results. In the present study we analyze for the first time a relation of LCT-13910 genotypes and BMD in historical skeletal individuals. Among 22 medieval individuals from Sanok churchyard (South-Eastern Poland; dated from XIV to XVII c. AD) we identified 4 individuals with osteoporosis, 10 individuals with osteopenia and 8 individuals with normal BMD values. Analyses of BMD and LCT-13910 genotypes revealed that mean BMD was the highest in the individuals with lactose tolerance genotypes (TT and CT). We also found possible association of lower BMD at the radius and CC genotypes due to higher but not statistically significant frequency of osteoporosis in the lactose intolerant group ( $p = 0.60$ ). Statistically significant correlation was found between BMD and females aged 20-35 years, with tendency to reduce BMD with age ( $p=0.02$ ).

## **Breaking the Age Barrier: Trauma in Adults and the Elderly in the Danish Middle Ages (Poster)**

*Elizabeth Stevens, Robert D. Hoppa. University of Manitoba. Email:  
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Traumatic lesions in skeletal remains can provide important evidence of past behaviors and lifestyles. Further, trauma can provide a direct link between individuals and their physical and cultural environment, and is an important component of the biocultural analysis of past populations. The goal of this research was to use more concise age estimation techniques to better assess patterns of trauma at the population level. Age-related patterns are informative of the change in activities and lifestyles between urban and rural adults, including any differences between males and females. This study examined 345 adults from two rural (Nordby and Tirup) and two urban (Ole Worms Gade and Horsens Klosterkirk) populations dating between the 11th-19th centuries in Denmark. The results of this study observed a higher proportion of trauma in males, and in individuals over 70 years of age. No significant differences in trauma patterns between urban and rural residencies were observed.

## **Level of body fatness before pregnancy compared with changes of anthropometric parameters and feet loading in women at the end of the 1<sup>st</sup> trimester of gestation.**

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The present study was designed to investigate the longitudinal pattern of changes in weight gain, body fat distribution and feet loading during pregnancy in woman (n=35). The several anthropometric measures and feet loading (FreeMED force platform, Sensor Medica, Italy) were taken (1) before pregnancy and (2) at the end of the first trimester of pregnancy. An analysis of anthropometric parameters in 12<sup>th</sup> week of pregnancy demonstrated significant changes in mean values of waist circumference (WC) and waist to hip ratio (WHR), waist to height ratio (WHtR), as well as in mean values of external conjugate diameter (EC) in comparison to the results obtained before pregnancy. Women with higher initial BMI and %FAT achieved on average lower values of growths of body weight, BMI, Rohrer index, mid-upper arm circumference (MUAC), WC, WHR and WHtR. In the first trimester of pregnancy no adaptive changes in the pattern of feet loading took place

### **Sap Anthropometric Landmark: A New Morphometric Orientation Point of the Nasal Tip**

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Numerous anthropometric landmarks have been documented within the craniofacial complex, however there is no landmark for measuring the width of the nasal tip. The nasal tip width has been measured in many different ways, but there is no golden standard.

**Aim:** introduce new anthropometric landmark of the nose for measuring a width of nasal tip and new proportions of the nasal tip width to the other horizontal measures of the nose.

**Materials and Methods:** *Subalare point* is point of the nasal tip, which is located at the junction of the dome and lateral crus. Sap is identified by the tips of the sliding caliper, in the course of measuring the nasal tip width. This landmark is best observed from frontal view.

**Measurement:** Nasal tip width    **Instrument:** Sliding digital caliper

**Method:** Face your subject, with the caliper held horizontally. Open the caliper slightly wider than the width of your subject's nasal tip. Approach with the caliper until the tips are just past the maximum lateral curvature of the tip. Carefully close the tips until the inner edges just touch the lateral edges of the tip. Very important do not compress these soft tissue when measuring. You must be certain that your subject is relaxed, without moving the nasal tip at the time of the measurement.

Proportion indices of nasal tip width to the other horizontal measures of nose:

Nasal tip width/Nose width Index:  $sap-sap \times 100/al-al$ ;

Nasal tip width/Nasal base width Index:  $sap-sap \times 100/ac-ac$ ;

Nasal tip width/Nasal root width Index:  $sap-sap \times 100/mf-mf$

**Conclusion:** The identification of the new anthropometric landmark will help to measure the width of the nasal tip, determine the proportions and facilitate analysis of the nasal surface aesthetics.

### **Digit ratio (2D:4D) and month of birth: A link to the solstitial-melatonin-testosterone effect**

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Background: Digit ratio (2D:4D) is a sexually dimorphic trait and its determination in utero is influenced by testosterone. The solstitial-melatonin-testosterone hypothesis posits that melatonin inhibits the production of foetal testosterone and melatonin levels are at their lowest in months when light levels are high.

**Aims:** We test the relationship between 2D:4D, month-of-birth and light levels.

Material and methods: We recruited participants whose year of birth was spread across the 20th Century. 323 Polish men and women. Finger lengths, month-of-birth, mean daylight hours per month in and around Poznan, Poland.

Results: Our sample was born between 1907 and 1997. In comparison to late-Spring births, late-Autumn births had low right-left 2D:4D (high prenatal testosterone). Regarding light levels, there were significant relationships between low right 2D:4D and right-left 2D:4D (high prenatal testosterone) and long days at the end of the 1st trimester. These relationships were strongest for participants born in the first half of the 20th Century.

**Conclusions:** Participants born in the late-Autumn and who experienced long days in the 2nd and 3rd prenatal months had low 2D:4D. The effects were strongest for early 20th Century births where photoperiods would be less disrupted by artificial light.

### **Age at death through 1000 years**

**(Poster)**

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Age at death in historical collections is a highly-debated subject.

Unfortunately, the method of choice for estimating age at death has a higher impact on the result than the skeletal material used. Most standard methods tend to underestimate age at death. For this study, a newly developed method called 'the experience-based method' has been used. The method has a high correlation between the estimated and real age at death (Milner et al, AAPA conference in 2016).

A study of around 1400 skeletons (AD 800 to AD 1800) from the Danish town of Ribe shows an increased mean age at death over time. Looking at the Viking age and the medieval period, males and females had approximately the same mean age at death. Going from the medieval to the post medieval periods, both males and females had increased mean age at death. However, the mean age at death for females increased significantly compared to males. The same pattern is seen today where females have a higher mean age at death than males.

### **Morphological study of jugular foramen using 3D models of adult skulls** **(Poster)**

Diana Toneva<sup>1</sup>, Silviya Nikolova<sup>1</sup>, Dora Zlatareva<sup>2</sup>, Vassil Hadjidekov<sup>2</sup>. <sup>1</sup>IEMPAM-BAS, <sup>2</sup>Medical University of Sofia

The study aimed to investigate the size of jugular foramen (JF) in relation to sex and laterality and to establish the incidence of dome bony roof and complete separation of the JF in Bulgarians. The CT scans of 59 individuals were examined. The bone tissue was segmented using Slicer 3D software and the generated 3D models were exported in PLY format. The length and width of JF were measured bilaterally. They were calculated as Euclidean distances based on the 3D coordinates of the picked points. The presence of domed roof and complete osseous bridging of the JF was established. The sex and bilateral differences were evaluated for statistical significance. Sex differences were not found in the size of JF, so it could be used as a sex indicator. Bilateral differences were established for the JF width in males. The size of the right JF was greater than the left one. The domed and subdivided JF were observed more frequently in males than in females.

### **Body image in Polish adolescent girls and underlying characteristics of menstrual cycle**

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Puberty is one of the critical periods of ontogeny for shaping the body image. Adolescent girls are vulnerable to developing a negative body image due to physical and sexual changes occurring during puberty. The aim of the cross-sectional study was to assess the body image in a sample of 330 girls aged 12-18 years depending on their menstrual cycle characteristics. The finding revealed an association between weight status, age at menarche and menstrual cycle phase with body image. Negative body image was significantly associated with different phases of the menstrual cycle and increasing body weight status. The likelihood of body dissatisfaction was greatest during the premenstrual phase of the menstrual cycle and among obese girls. The study confirmed the association between body image dissatisfaction in young girls and different phases of the menstrual cycle after controlling for weight status.

### **Thickness of hamstring tendons for anterior cruciate ligament surgery in relation to body size**

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The objective of this study was to measure the diameters of 5- and 6-strand hamstring autografts, and to evaluate the predictability of their thickness by the other body size indices. In total, 122 adult patients, who had undergone arthroscopic anterior cruciate ligament (ACL) reconstruction using 5- or 6-strand hamstring autografts, were enrolled to the study. Multiple linear regression was performed to determine relationship between autograft's thickness and body size indices. The diameters of femoral end of 5-6 strand grafts in males/females, on average, were 8.9-9.3/8.3-8.5 mm (respectively). A significant positive correlation was detected between the diameter of autograft's femoral end and patient's height ( $r = 0.53-0.55$ ,  $p < 0.001$ ), weight ( $r = 0.50-0.60$ ,  $p < 0.001$ ) and BMI ( $r = 0.35-0.43$ ;  $p < 0.01$ ). However, to

better predict the diameter of autograft, body composition (lean body mass and body fat tissue) should be studied in relation to autograft's size.

### **Gender differences in body image of young Lithuanian adults in relation to biopsychosocial factors**

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The aim of present study was to establish differences in body size perception among 18-38 y. old Lithuanian adults in relation to gender, age, body mass index and psychosocial determinants (using special questionnaires). In total, 135 females and 113 males (18-38 y. of age) were enrolled to the study. J.A.Stunkard's (1983) standardized figures were used to evaluate body size perception: 9 figures for females (9 F) and 9 sizes for males (9 M). On average, all women considered themselves having figure size  $F = 3,9$  ( $SD=0,71$ ), while males –  $M = 4,23$  ( $SD=1,41$ ). All females (younger and older) desired to be thinner than referred themselves ( $p<0,01$ ). However, younger males wanted bigger body size, while older males – to be slimmer ( $p<0,05$ ). Interestingly, older females picked as the most attractive slightly slimmer males' figure than younger women ( $p<0,05$ ). Psychosocial factors (education, financial security, self-esteem and psychological wellbeing) in relation to body image will be provided.

### **Growth and nutritional states of children with adenotonsillar hypertrophy**

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The aim of study was to determine growth and nutritional states of children with adenotonsillar hypertrophy (AH). The relationship between the course of the disease and the content and distribution of body fat was also examined.

We collected anthropometric and clinical data of 107 children (2.5-12.0y, 55 males) with AH. Anthropometric indices included body height, body weight, body mass index, three skinfold thicknesses and results of the bioelectrical impedance analysis (BIA). Anthropometric indices of our subjects were converted to z-scores using Warsaw growth charts, and BIA results were presented as age-standardized residuals. Children with AH did not reveal any growth disorders due to the course of the disease. However, there was positive relationship of body fatness with the degree of tonsil hypertrophy. Results were more significant in boys.

*Conclusion:* A greater degree of tonsil hypertrophy is associated with greater body fat content, especially in males

### **From the Empire to the Early Middle Age: an isotope survey of the Roman population**

*Sara Varano<sup>1</sup>, Flavio De Angelis<sup>1</sup>, Giordana Amicucci<sup>2</sup>, Andrea Battistini<sup>2</sup>, Carla Caldarini<sup>2</sup>, Stefania Di Giannantonio<sup>2</sup>, Romina Mosticoni<sup>2</sup>, Walter Pantano<sup>2</sup>, Federica Zavaroni<sup>2</sup>, Paola Catalano<sup>2</sup>, Valentina Gazzaniga<sup>3</sup>, Cristina Martínez-Labarga<sup>1</sup> and Olga Rickards<sup>1</sup>*

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Recent archaeological excavations in the Roman area revealed thousands of burials dated back from the Imperial to the Early Middle Ages, representing an excellent opportunity to uncover the biological profile of Romans in this outstanding periods, when the fallout of the Empire pushed drastic social and economic changes. 374 human samples from 10 necropolises (2<sup>nd</sup>-11<sup>th</sup> century CE) have been submitted to carbon and nitrogen isotope analysis to address their dietary habits. The isotope evaluation points out significant odds among historical periods. In particular an average drop of 2‰ in nitrogen values has been detected between Imperial and Middle Ages, probably mirroring a decrease in high protein rich foodstuff consumption suggesting the transformations between Imperial period and Middle Ages might result in significant changes in lifestyles Roman population.

This study is supported by grant from the M.I.U.R. PRIN Project 2015PJ7H3K.

### **Changes in body composition of Hungarian female students, during university years**

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The aim of our survey is to make university students change their unhealthy lifestyle.

Students were examined with InBody 720 body composition analyzer in first and last year of their education. The semi-longitudinal survey ran from 2012 to 2018, with a sample of 587 females between 18 and 25.

Examination shows that body mass significantly increased with fat surplus. Protein, mineral, water and lean body mass were unchanged; body fat mass and obesity degree increased.

The placement of fat is interesting: while no relative or absolute growth of size can be observed on legs, on arms and trunk even visceral fat increasement is notable. That can be verified with their larger circumferences and increase of abdominal obesity degree.

BMI also changed: students with normal nutritional status went to overweight category, their fitness score decreased.

Results call our students' attention to the importance of physical activity and healthy nutrition.

### **Chasing the commoners – New finds from a Bronze Age excavation at Kalvehavegaard, Denmark**

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The archaeological record of Bronze Age Denmark comprises several rich elite burials, but misses a large proportion of the population – the commoners. For Southern Sweden, it has been proposed that these might be buried in gallery graves and flat ground cemeteries falsely attributed to the Late Neolithic.

In 2016, during a rescue excavation of two cremation graves with rich grave goods, two additional inhumations without valuable objects were found at the foot of a burial mound. The well-preserved skeletons have been <sup>14</sup>C dated to period II of the Danish Bronze Age (BC 1500

- 1300). In September 2017, eight more individuals were found at the same spot, four of them being children. The graves contained no metal and only few grave goods of organic material; one person was buried with a necklace made of shell beads.

This talk will focus on the results of the osteological analysis of all burials, including the cremations, and the conclusions about the social status of the buried implied by the different positioning and furnishing of the graves. The find of inhumation graves from this period is a rare event, and offers new insights into the life of the inhabitants of Bronze Age Denmark.

### **A revised Transition Analysis method to estimate age-at-death from human skeletons**

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Precise age estimates are a necessity in anthropology. We present a project which will improve Transition Analysis (TA). The available method can reliably estimate age throughout much of the adult lifespan, but is far from ideal. Recent work with experience-based age estimates indicates that a wider array of skeletal features over the whole body instead of only a few structures of high importance yields better results.

To define new traits and record their time of transition we examined ca. 1650 skeletons from known age skeletal collections on four continents: USA, South Africa, Thailand, and Portugal. For every individual, about 80 skeletal traits were recorded and their age-of-transition from absent to present will be estimated by logistic regression. These traits will be reduced to a smaller set of easily identifiable indicators. The result is a single composite age with 95% confidence limits, derived by Maximum Likelihood Estimation. Users can choose from different prior distributions derived from national or historical data. Last step is a computer program and an illustrated scoring manual which can easily be used by the forensic and anthropological community.

### **Rural-urban differences in body size and biological condition among Polish young women.**

*Iwona Wronka, Martyna Zurawiecka. Department of Anthropology, Institute of Zoology and Biomedical, Jagiellonian University, Cracow, Poland*

The aims of the study was to define whether in a group of young women the place of living in their childhood and adolescence have affected their body size and health status.

The data were obtained from 1305 female university students. Each person's height, weight, waist and hip circumferences were measured. A data on subject's health status were collected.

In the whole sample there was no significant difference in anthropometrical traits and health condition between rural and urban origin women. In case of comparing the two groups of women: changing place from a village to a city and from a city to another city more differences were visible. Rural origin students were affected by a tendency to central and abdominal obesity, while the urban ones were more often underweight. Rural origin students more rarely declared changes in nutritional and health status after the beginning of studies. Whereas, urban origin students were more often affected by sleeping problems and spine pains.

## **Staging Death or Stages of Death. Population and Ritual in Scandinavian Iron Age Society**

*Sidsel Wåhlin. Vendsyssel Historiske Museum, Denmark*

A presentation of an upcoming study on the ritual practice of depositing human remains in non-grave settings in South Scandinavian Iron Age Society. Svennum Offermose, a well-excavated bog with six human skulls is the central case but an analysis of the numerous skeletal bog finds is also crucial. Human remains in bogs are part of unique sites as well as part of a larger 'population of bog people'. Did the 'bog population' differ from that of the rest of the population? The individual bog and its spatial and chronological pattern will be archaeologically explored in terms of how and why it was crucial to the specific community to deposit human remains in a ritual setting. This study draws upon not only archaeology but also physical anthropology as well as other disciplines in order to bring it beyond a tale of six skulls or a count of bones and to address the questions of who, whom, where, when and why.

## **Genetic Origins of Armenians inferred from modern and ancient DNA**

*Levon Yepiskoposyan<sup>1,2</sup>, Anahit Hovhannisyan<sup>2</sup>, Zaruhi Khachatryan<sup>2</sup>, Armine Khudoyan<sup>2</sup><sup>1</sup> Russian-Armenian University, Yerevan, Armenia ([lepiskop@gmail.com](mailto:lepiskop@gmail.com)). <sup>2</sup> Institute of Molecular Biology, NAS RA, Yerevan, Armenia*

The modern Armenian gene pool displays immense diversity of lineages, indicating a large number of founding groups for the population. The vast majority of Armenian genetic features belongs to the lineages originated and expanded during or following the Neolithic. Armenians have about 30% of their ancestry derived from a source population represented by Neolithic Europeans.

No appreciable traces of genetic influence or distant input to the Armenian gene pool have been found despite frequent foreign invasions. Not only has there been insignificant admixture into the Armenian population within the last millennium, but also recent evidence specifically points to a lack of genetic contribution from external sources within the last 4,000 years.

Additionally, the results based on ancient DNA points to the matrilineal genetic continuity of the inhabitants of the region at least during the last 8,000 years.

## **Weight status of primary school children in the Czech Republic**

**(Poster)**

*Vendula Zbořilová, Miroslava Přidalová, Tereza Podzimková, Pavel Marek*

Different anthropometric indicators are used for the diagnosis of ideal body weight. The aim was to assess the weight status of 6-11 year-old children on the grounds of selected anthropometric indicators related to assessment of ideal body weight considering age and gender.

Data were obtained from 1628 children (boys, n= 757; girls, n= 871). The research was implemented in the years 2013 to 2015. Selected somatic parameters were determined by way of anthropometric examination. The body composition was analysed through BIA method (InBody 720). The participants were ranked into particular percentile ranges of BMI, which were determined on the basis of results of Nationwide Anthropological Survey of Children and



Adolescents in the Czech republic (NAS 2001) (Vignerová et al., 2006) and international recommended standards (Cole al., 2000).

The research showed that children with optimal body weight were of the highest number in percentage in both genders. Respectively, 7% of girls and 8% of boys were obese. Although the proportion of gender within categories of BMI for obesity and overweight was balanced, we observe a higher amount of fat mass in girls of all ages. The year-to-year increases in fat mass were greater in boys.

The study provides information about the current weight status of 6-11 year-old children from the Moravian region in the Czech Republic.

### **Influence of stress in early ontogeny on the hand development and child growth**

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Stress factors influencing early ontogeny can seriously affect the following growth and development of children and change their viability, reproduction and overall life expectancy. At the same time, the stress can change the morphogenesis of complex structures, like a human hand, and make them suitable markers of early developmental imbalances. This study is based on the X-ray records of hands collected during the Wrocław Longitudinal Study of Twins that was conducted by the Institute of Anthropology of the Polish Academy of Sciences in Wrocław in the years 1967 to 1983. The sample included 233 pairs of mono- and dizygotic twins. The main goal of the study was to find out possible relationships between recognized prenatal and postnatal stress affecting the subjects and the hand morphological and morphometric features, including statistical parameters of the hand postnatal growth. The methodology included both traditional and geometric morphometrics.

### **Maternal postpartum psychosocial stress, breast milk composition and infant temperament**

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The effect of maternal postpartum psychosocial stress and social support on breastfeeding pattern, milk composition and infant temperament has not been sufficiently explored. One hundred healthy mothers together with their 4-months old, born at term and exclusively breastfed infants took part in the study. Stress was assessed using psychological questionnaires (STAI, EPDS, RLChQ), acquired social support with BSS Scales and infant temperament with IBQR. The composition of maternal milk samples (protein, lactose, fat and energy value) was analyzed using Miris HMA<sup>®</sup>.

Neither maternal stress nor social support independently predicted breast milk composition however interaction of these factors was associated with it. Furthermore, stress predicted

breastfeeding pattern and infant temperament characteristics: Extraversion and Surgency and Negative Affectivity. The results will be discussed in the context of evolutionary hypothesis of cooperative breeding in humans.

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### **Vitamin D supply in Hungarian children**

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The increasing prevalence of disorders linked to vitamin D (VD) deficiency is reflected in the hundreds of elderly with osteoporosis-related fractures. These elderly people represent a small proportion of individuals with a suboptimal VD supply. Nowadays the screening for VD deficiency is carried out only in individuals who are at very high risk for deficiency, and population screening in individuals not at risk is still missing. The purpose of the 'Hungarian vitamin D' project is to assess VD supply in healthy Hungarians.

VD adequacy is best determined by measurement of 25(OH)D concentration in blood. However, VD status cannot be estimated by this method in an epidemiological survey, in a survey to examine hundreds of people in the fieldworks. Therefore the first phase of project aims to develop a new method for estimating VD level in saliva samples. We will introduce this new method (supported by Beres Foundation) and summarize the results of the comparative analysis of VD supply estimated in blood and saliva samples in 50 subjects.

### **Fluctuating asymmetry and socioeconomic status during childhood**

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Fluctuating asymmetry it is used as a marker of the impact of stress factors on the developing organism. The aim of study was to analyse the relationship between FA in the length of digits 2 and 4, as well as the digit ratio and socio-economic factors. Data was obtained from 768 female students aged 19 to 25. The measurement of the length of digits 2 and 4 of the right and left hand was taken twice in accordance with standard methodology. On the basis of those measurements 2D:4D ratio was calculated. The following data were collected in a questionnaire: the degree of urbanization of the place of residence before commencing studies, the number of older siblings, parent education and lateralization. the results show tendencies for FA to drop with an increase in parents' education, and to rise with an increase in the number of older siblings. In subject from rural areas the level of FA was lower than in subject from cities. The differences were statistically significant. in conclusion, the results of this study show that FA may be a good indicator of stress factors in the early stages of development.