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FOR ANTHROPOLOGY AND HEALTH

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GRUPO DE ESTUDOS EM EVOLUÇÃO HUMANA

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I BIOANTHROPOLOGICAL MEETING

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Programme | Abstracts Book

May 31st and June 1st, 2013

Department of Life Sciences, University of Coimbra, Portugal

I Bioanthropological Meeting:

a multidisciplinary approach | programme-abstracts

May 31ST–June 1ST 2013

CIAS

Research Centre for Anthropology and Health

Department of Life Sciences
Faculty of Sciences and Technology
University of Coimbra
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Rectory of the University of Coimbra for all the support.

Coimbra Tourism for helping on the orientation of the I BAM's participants

Mrs. Célia Cardoso and Mrs. Adelina Gomes, for helping on the organization.

Tiago Carvalhinho, who was responsible for giving a "face" to the I BAM.

PROGRAMME

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Bernard Wood, George Washington University, USA

10.40   **Pro-social behaviour across cultures: cooperation between university students is affected by cultural and "power" traits***

Daniela Costa, Paulo Gama Mota

10.55   *Coffee-break*

11.15   **Poster session**

11.40   **Microwear analysis of pig (Suoidea) incisors: potential use for the reconstruction of the environment of fossil hominins***

Ignacio Lazagabaster, Eugénia Cunha, Jan van der Made

11.55   **Correlations in the hominoid oral anatomy and their significance for Human Evolution***

Julie Ann Lawrence

12.10   **Morphological variation at the mandibular symphysis in *Homo*: a preliminary 3-D geometric morphometric analysis***

Jill Scott

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Elisabetta VISALBERGHI, ISTC-CNR, Italy

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Joana PRIETO, Susana CARVALHO, Patrícia IZAR, Olívia MENDONÇA-FURTADO, Noemi SPAGNOLETTI, Michele VERDERANE, Sofia N. WASTERLAIN, Elisabetta VISALBERGHI

14.55   **Effect of kinship on intra-group social dynamics in two sympatric colobus monkeys**

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Richard MARQUES, Susana CARVALHO, Tetsuro MATSUZAWA

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17.30   **Screening for melanocortin-4 receptor mutations in a cohort of Portuguese children with severe obesity**

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18.00   **Polymorphic variants influencing fetal hemoglobin (HbF) levels in healthy Portuguese subjects**

Clara PEREIRA, Luís RELVAS, Celeste BENTO, Augusto ABADE, Letícia RIBEIRO, Licínio MANCO

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SESSION IN ANTHROPOLOGY OF PAST POPULATIONS

Chair: Ana Luísa SANTOS

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Keith MANCHESTER, University of Bradford, UK

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11.30 **Living through death: a multidisciplinary approach to the analysis of anthropological field reports from primary inhumation archaeological sites (Portugal)**

Cristina Barroso CRUZ

11.45 **Skeletal growth pattern in a Portuguese sample**

Rebeca GARCÍA-GONZÁLEZ, José Miguel Carretero DÍAZ, Laura Rodríguez GARCÍA, Juan Luis Arsuaga FERRERAS

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David GONÇALVES

12.15 **More than bones: the future of archaeological recovery of human osteological remains and their contextual information**

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15.25 **Age estimation of non-adult human skeletal remains: testing regression formulas from measurements of the long bones***

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15.40 **Buried corpses decay: a process with many question marks**

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16.25 **A quite unusual case of a cremated body from a house fire**

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16.40   ☕ *COFFEE-BREAK*

16.50   **POSTER SESSION**

SESSION IN HUMAN ECOLOGY

Chair: Cristina PADEZ

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Melissa PARKER, University of Brunel, UK

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17.55   **Cancer mortality in Portugal: analyzing deaths and associated risk factors within a geographical view***

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18.10   **Understanding the changes in suicide rates in Portugal between 1991 and 2011***

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18.25   **Breakfast consumption and overweight in Portuguese children***

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18.55 **Intensity of aging males' symptoms, life satisfaction and socioeconomic factors in Polish adult men**

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19.10 **Does television make children unhealthy? Yes**

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2 | Landmarking in paleoneurology: comparing physical and laser scan endocasts*

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3 | Time-activity budget of the western lowland gorillas (*Gorilla gorilla gorilla*)

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4 | Environmental enrichment for captive primates: a research for primate welfare at Maia's Zoo*

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5 | The vertebral column of three hominoid species (*Homo sapiens*, *Pan troglodytes* and *Hylobates lar*): a preliminary shape analysis

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6 | Chimpanzees' intergroup aggression as reference model for the understanding of the evolution of violence*

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7 | African non-human primates in Europe in the Age of Discovery: their importation, use and role

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8 | Late Neolithic/Chalcolithic in Portugal: preliminary results from ancient DNA analysis*

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Ângela ARAÚJO, Ana Luísa SANTOS

10 | Preauricular sulcus, occupation and age in a sample of Portuguese males from the 19th and 20th centuries*

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11 | Metabolic diseases in a buried Chalcolithic child from El Portalón archaeological site (Sierra de Atapuerca, Spain)*

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12 | The black slaves: estimating ancestry through non-metric analysis*

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13 | Limb proportions in an African slaves sample from Lagos (Portugal)*

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15 | A possible case of pulmonary disease in a slave child from Lagos, Portugal*

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17 | Geometrical properties of the proximal femur in three identified Portuguese skeletal samples

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18 | Intentional cranial modification in aboriginal societies of Northwestern Argentina

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19 | **Dental traits in the Neolithic sample from the site of Outeiro Alto 2 (Brinches, Serpa, Portugal)**

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20 | **Trauma evidences in adult individuals from 1st - 3rd centuries AD from Roman *Ossonoba***

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45 | **Green spaces influence on physical activity of the older population from Coimbra***

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46 | Social class-specific secular trends in height among 19-year-old Polish men: national surveys from 1965 till 2010

Alicja SZKLARSKA, Anna LIPOWICZ, Halina KOŁODZIEJ, Monika ŁOPUSZAŃSKA, Tadeusz BIELICKI

[**Running for the award for best poster/oral communication having as first author a non-PhD]

ABSTRACTS

The origin of *Homo.* What are we looking for?

Bernard WOOD[1,*]

1 – George Washington University, United States of America

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This talk will consider the problems of identifying the origins of any genus and the particular challenges involved in identifying the origins of the genus *Homo*. It will consider how a genus should be defined and why genera matter. I will review the history of ideas about the nature of the genus *Homo*, and for reasons that will become apparent I will take 1964 as the watershed and consider in more detail how ideas have changed about the genus *Homo* since 1964. I shall consider the various factors that confound attempts to use the fossil record to reconstruct phylogenetic relationships and functional capacities will review the various ways we might be able to do a better job of phylogeny reconstruction and functional analysis. Finally, I will consider the criteria we should apply to the fossil record for recognizing genera and review ways we might be able to improve the chances of identifying homoplasy so that shared morphology can be more confidently assumed to be evidence of shared evolutionary history (i.e., that it is a homology and not a homoplasy).

Pro-social behavior across cultures: cooperation between university students is affected by cultural and "power" traits

Daniela Costa[1,*], Paulo Gama Mota[1,2]

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2 – Research Centre in Biodiversity and Genetic Resources (CIBIO), University of Porto, Portugal

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Human cooperation has been an evolutionary puzzle since we cooperate, to a large extent, with genetically unrelated individuals in unique and anonymous situations. Previous works have shown differences in cooperation games in different societies but is this propensity universal or variable with culture and other socio-economic factors? In this study was used an online program simulating two anonymous games – a dictator and an ultimatum - were each player could receive a token. Both situations were administered across 229 college students in Coimbra from three Portuguese-speaking countries (149 from Portugal; 64 from Brazil; and 26 from Cape Verde) and therefore with different cultural backgrounds but with the same educational level. As expect, the subjects increased the value of their offer from the dictator game to the ultimatum game, since in the last case there was a risk of retaliation of the proposal. It was found that variations in cooperation were a result of the sociocultural context, especially political power traits. Places where law administrations and functioning of institutions tend to be less efficient and structured show higher offers in both games, which can mean that this kind of societies pushes people to become more social activists struggling to resolve numerous social problems. In addition, it was found that cultural traits can be responsible for variations over the offers in the ultimatum game. These results suggest that pro-social behavior are marked by norms and institutions that sustain cooperation and reflects customs and values that have evolved culturally over human history in different societies.

Key words: human cooperation, dictator, ultimatum, culture, political power

Microwear analysis of pig (Suoidea) incisors: potential use for the reconstruction of the environment of fossil hominins

Ignacio Lazagabaster[1,*], Eugénia Cunha[2,3], Jan van der Made[1]

1 – Department of Paleobiology, Spanish National Research Council (CSIC), Spain
2 – Department of Life Sciences, University of Coimbra, Portugal
3 – Forensic Sciences Centre (CENCIFOR), University of Coimbra, Portugal

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The study of dental microwear features in extant animal taxa and the comparison with fossil relatives have yielded much of information about diet, ecological adaptation, mastication biomechanics and evolutionary trends of many species. Most research was carried out on modern and fossil primates, including humans, but also on other important groups. Considering their relevant role in modern and past ecological communities, surprisingly little effort was done to understand microwear patterns on suids, even though there is work on microwear in an archaeological context on pig domestication. There is, however, a great potential for the study of the suids which were common elements in the environments of the early hominids in East Africa. The most typical adaptation of the Suoidea (pigs and peccaries) is their rooting behaviour, providing access to subsurface food, including roots, rhizomes and small animals, predominantly earthworms. Depending on their preferences, different species have different rooting styles, using their incisors to extract the food from the soil. In order to characterize the different rooting styles, a methodology for microwear studies on incisors is being developed, using five extant species from the superfamily Suoidea: *Sus scrofa* (Iberian Peninsula), *Potamochoerus porcus* (West Africa), *Phacochoerus* sp. (Sub-Saharan Africa), *Babyrousa* sp. (Indonesia) and *Tayassu pecari* (South-and-Central America). The methodology and results will be applied to fossil species and will contribute to a better understanding of the evolution and ecology of suids like *Nyanzachoerus*, *Notochoerus*, *Metridiochoerus* and *Kolpochoerus*, which responded to the same environmental changes that shaped human evolution.

Key words: digging behavior, diet, ecological community, soil

Correlations in the hominoid oral anatomy and their significance for human evolution

Julie Ann LAWRENCE[1,*]

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This study identifies novel anatomical correlations within and across the traditional ideas of modularity and integration of the skull. Although facial anatomy and dentition have been the subject of many individual analyses, metric treatment of both upper and lower jaws has not been so thoroughly performed. A holistic approach to cranial and mandibular morphology acts as a window into the critical period of human evolution between a massive shift to bipedalism and the later brain expansion in *Homo*. Key evolutionary changes have been identified in the skull and its individual elements but their interactions have yet to be fully appreciated. Both 3D and 2D measurements were taken on the crania and mandibles of gorillas, chimpanzees, and modern humans, held at the University of Cambridge. This paper presents the results of the inter-specific comparisons to provide an insight into what defines mouth shape across hominoids. The hominoid data also serves as a comparative framework for the analysis and interpretation of australopithecine fossil specimens examined at the University of Witwatersrand and Ditsong Natural History Museum in South Africa. From the preliminary analysis of 145 craniofacial and mandibular variables, 13 showed significant differences between hominoid species and became the focus for further investigation. They include three on the midline of the face, three on the maxilla, two on the mandible, three on the palate and two related to the zygomatic arch. Taken together, they bring a new understanding of the distinctive features of the mouth and its adaptive significance.

Key words: Palaeoanthropology, craniofacial morphometrics, dentition, primates

Morphological variation at the mandibular symphysis in *Homo*: a preliminary 3-D geometric morphometric analysis

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The chin is considered a *Homo sapiens* autapomorphy, but despite extensive literature describing the anatomical features comprising the anterior mandibular symphysis, the timing of their appearance throughout *Homo* evolution is still poorly understood, particularly given the incipient chins seen on some Neandertals (*e.g.*, Zafarraya). This study tests the hypothesis that five key features of the chin (mental fossae, incurvatio mandibulae, superior mental trigone, tuber symphyseos, and lateral tubercles) will significantly differentiate adult *H. sapiens* (n=10) from casts of both *Homo heidelbergensis* (n=3) and *Homo neanderthalensis* (n=9). Three-dimensional mandibular surface renderings were recorded with a NextEngine Scanner, and a sliding semilandmark grid was placed over the anterior symphyseal surface of each specimen and converted to shape coordinates via generalized Procrustes analysis which then underwent principal components analysis. The shape variation represented by each principal component (PC) was assessed via visualization of 3-D warp grids. Tukey's HSD test confirms that *H. sapiens* separate from both *H. neanderthalensis* and *H. heidelbergensis* along PC1; however, along PC2, *H. sapiens* and *H. neanderthalensis* group together, but separately from *H. heidelbergensis*. While warp grids for PC1 emphasize the topography of the chin itself, PC2 emphasizes the incurvatio mandibulae, highlighting the differences that have long been noted regarding the lack of topography on the *H. heidelbergensis* symphysis compared to both *H. sapiens* and some Neandertals. Given the importance of the chin in defining *H. sapiens*, this research, demonstrating overlap in overall anterior symphyseal shape between *H. sapiens* and Neandertals, raises questions about the distinctiveness of the human chin.

Key words: chin, mentum osseum, Paleoanthropology, Pleistocene *Homo*, autapomorphy

Portuguese dental microevolution: a study on Neolithic and Modern samples using an alternative morphometric analysis

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Microevolution has been described as small-scale changes, happening generation by generation, in gene content and frequency within natural populations. We have analysed micro-changes in the morphology of first upper molars (M^1) in two Portuguese samples: one from the Late Neolithic (4130±90 BP; N=54) and another from the early 20th century (N=50). Instead of the traditional buccolingual/mesiodistal method of measuring morphometric traits, we used the occlusal polygon method which is based on a polygon created by linking the four molar cusp apices using digital analysis. Some authors have identified different evolutionary trends in Neanderthals and modern humans with this method. Our objective was to assess the existence of changes in the occlusal polygon area, and thus M^1 general morphology. This method allows us to evaluate both tooth size and relative cusp position in the occlusal plane. Contrary to the tooth size reduction commonly found from the past 10 thousand years in studies that use buccolingual/mesiodistal measurements, no statistically significant change of the total occlusal area of the crown was observed between these samples. Nevertheless, we report an increase of 7.45% (n/N) in the size of the occlusal polygon, and hence 9.38% (n/N) in its relative area, from 27.30% (n/N) of the total crown area to 30.30% (n/N) over this time span. This implies that microevolutionary changes among Portuguese populations led to changes in the positions of M^1 cusps, since their apices have moved away from the centre of the crown to a more peripheral position. This apparent increasing trend contrasts with the one reported in studies of both Neanderthals and modern humans.

Key words: occlusal polygon method, morphometrics, evolutionary trend, cusps, molars

Landmarking in paleoneurology: comparing physical and laser scan endocasts

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Paleoneurology studies the endocranial variation in fossil species through the analysis of endocasts. Currently, most morphometric approaches are based on geometrical models and multivariate statistics. Geometrical modelling is based on landmarks, namely anatomical points represented by Euclidean coordinates. Reliability of landmarks is essential to a meaningful analysis. Landmarks must be consistent and biologically significant. Endocasts supply scarce geometrical references, and identification of the anatomical regions can be difficult. Landmarking depends upon factors including the experience of the anatomist and the possibility to handle the specimens. Modern morphometrics largely relies on digital anatomy, which introduces further problems, as the different perception of the anatomical elements. We compared physical and digital endocasts from living hominoids to evaluate the uncertainty associated with the location of major cortical references, and how this can be influenced by the two different data sources. Nineteen brain landmarks were collected ten times each from either physical and laser scanned endocasts from seven species (*Homo sapiens*, *Pan troglodytes*, *Pan paniscus*, *Gorilla gorilla*, *Pongo pygmaeus, Hylobates moloch* and *Symphalangus syndactylus*), by using a Microscribe and Landmark Editor, respectively. Error analyses were computed to assess the reliability of each landmark. According to our results, cortical landmarks are reliable for most inter-specific analyses. The parietal landmarks are the less consistent, although the error is not excessive after a proper training. Digital and physical landmarking give similar results, but with different degree of uncertainty depending upon the anatomical region and endocast-specific traits which can influence the perception of the geometrical features.

Key words: endocranium, error assessment, surface scan, geometric morphometrics

Insights from the wild capuchin monkeys using stone tools

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The use of stones as hammers and anvils has been considered a behaviour characterizing our ancestors and the Western chimpanzees, and often chimpanzees have been used to model early human evolution. I will illustrate the results of observational and experimental studies carried out by the Etho*Cebus* project on wild bearded capuchin monkeys (*Sapajus libidinosus*) living in Fazenda Boa Vista (FBV, Piauí, Brazil). This population, in contrast with the vast majority of capuchin populations, uses stone hammers and anvils to crack open very resistant nuts and access their nutritious kernels. They routinely use tools throughout the year and to this purpose they use proportionally heavy stones in relation to their body mass. In FBV stones suited as hammers (in terms of material and mass) are rare. Therefore, stones should be found and transported to the anvil; several experiments demonstrated that capuchins are very selective in their choice of stones, nuts, and anvil sites. In other words, capuchins' tool use behaviour is characterized by great skills and frequent decision making. Since our findings indicate that capuchins' performance has many analogies with that of chimpanzees they challenge the notions that selectivity, transport and physical skill in tool use are characteristic only of humans, human ancestors, and great apes. Furthermore, they contradict widespread assumptions, such as the one according to which tool use is a strategy prompted by food scarcity. Stone tool use by capuchin monkeys opens up a new reference point for thinking about tool use across species and across evolutionary time.

Vertebrate consumption by wild bearded capuchin monkeys (*Sapajus libidinosus*) from Fazenda Boa Vista (Piauí, Brazil)

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Among New World primates, capuchin monkeys are the most generalist feeders. In the last decades, vertebrate consumption by different species of capuchins has received increasing attention, considering the hypothesis that it may represent an alternative or complementary nutritional resource to fruits, or even invertebrates. For this study, vertebrate consumption (mammals, reptiles, avian prey) by two wild groups of bearded capuchins monkeys (*Sapajus libidinosus*) living in Fazenda Boa Vista (FBV, Piauí, Brazil) was recorded over the course of 48 months (5798 observation hours: May 2006 to December 2010) through scan sampling and "all occurrences" methods. Field data were examined across sexes and age classes, as well as between the dry and the wet seasons, considering individual events (type I) and dyadic or polyadic events (type II). Results showed that vertebrate consumption events at FBV were rare (n = 280). Males engaged in more events than females, which may be due to sexual dimorphism, dominance interactions or sexual differences in nutritional demands. Adults and juveniles performed most events of both types, and infants' performance in type II events was probably influenced by the social context. Reptiles were the most consumed prey, and the monkeys frequently ate the internal organs. Consumption occurred mainly in the wet season, when food is abundant. Therefore, the predatory activity of capuchin monkeys at this site appears to be opportunistic and possibly dependent on vertebrate prey abundance, rather than a food alternative during periods of low fruit availability.

Key words: predatory activity, capuchin monkeys, primate behaviour, feeding ecology, Fazenda Boa Vista

Effect of kinship on intra-group social dynamics in two sympatric colobus monkeys

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The African colobine *Piliocolobus badius temminckii* (Temminck's red colobus) and *Colobus polykomos* (western black-and-white colobus), exhibit contrasting social systems: *P. b. temminckii* live in large multi-male/multi-female groups with female-biased dispersal. *C. polykomos'* groups are much smaller with one to three adult males and dispersal can be mediated by both sexes. We investigated the influence of kinship on intra-group social dynamics of these two sympatric colobus monkeys. Focal and *Ad libitum* data were collected for a social group of each species in Cantanhez Forest National Park, Guinea-Bissau, between October 2008 and June 2009. Intra-group pairwise relatedness was estimated using faecal DNA from nine *C. polykomos* individuals and 15 *P. b. temminckii* individuals genotyped for 15 microsatellite loci. If kinship is to be determinant shaping these groups' social dynamics we should expect individuals to direct their affiliative interactions to their related counterparts. However, although we could not exclude kinship as an important factor determining the *C. polykomos* focal group's social interactions, that was not the case for *P. b. temminckii*. Our results showed that, grooming was very frequent among unrelated *P. b. temminckii* females and rare among related males. By combining analysis on the time budgets, social interactions and relatedness we show that the intra-group behavioural patterns in the *P. b. temminckii* group is different from other red colobus studied, suggesting that anthropogenic and/or ecological factors, more than kinship, may be important shaping this groups' social bonding.

Key words: non-invasive sampling, relatedness, time-budgets, social behaviour, Guinea Bissau

The first technologies and the role of social learning in mastering simple tool use: a chimpanzee (*Pan troglodytes*) approach to Human Evolution

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Current research inspired by strategic modeling, in which data on extant primate species are used to derive general principles, focuses on processes that may have influenced the evolution of the first technologies and on the role of social learning during the mastering of early tool use. With the aim of understanding the mechanisms involved in learning stone tool use, we investigated the individual processes of observation during the customary nut-cracking behavior, performed at an "outdoor laboratory", by the chimpanzees of Bossou, Guinea, West Africa (*Pan troglodytes verus*). At data collecting time, between December 2008 and February 2009, the group was composed by 13 subjects (6 males and 7 females). Previous studies focused on the individuals observing this stone tool use ("observer") and on the target tool-users ("observed"). For the first time, we focused also on the other available individuals that could be targets of observation, and on trying to detangle which variables affect this selection. We have analyzed and codified videos on chimpanzee activities recorded by two cameras. During 47 experimental sessions, we recorded 121 episodes of observation. Following previous results, we found that the youngest subjects (infant, juvenile) preferentially observe individuals with whom they share direct kinship. However, oldest individuals (sub-adults, adults) seem to select the most efficient individuals as their targets of observation. Immediately after these 121 episodes of observation, the observers performed 24 nut-cracking attempts. Subjects observing more efficient individuals and making longer episodes of observation, show the highest levels of efficiency, when performing nut-cracking behaviour.

Key words: Human Evolution, chimpanzee, tool use, nut-cracking, social learning

Environmental enrichment in captive group of chimpanzees and its role on the re-socialization process: a case study

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As highly social and intelligent beings, primates require a great level of social and environmental stimuli. By improving the complexity of the environment their behavioural repertoire and activity budget should became as close as possible to what observed with their wild conspecifics. The present study consists in the introduction of two different types of foraging devices in a social group of captive chimpanzees (N=8) in Mona Foundation, Spain: an artificial termite mound and a hosepipe, after a base-line period. Termite mound could be used by more than one individual at the same time (social context), while the hosepipes only be used individually. Changes, activity budget and level of association were assessed the group (Scan Sampling), but especially on the newest member (Focal), who had presented some significant behavioural variation as well as abnormal behaviours (hair pulling). Our main objective was to decrease such abnormal behaviours and increase social behaviours in the activity budget. Our hypotheses were confirmed as the enrichment with a social component did enhance social interactions (affilitive interactions and grooming in the entire group) during both types of enrichment and decreased inactivity and abnormal behaviours, especially during termite mound period (self-inflicted behaviours in Africa; stereotypic and non-stereotypic behaviours in the group). Summarizing, both enrichment devices had a positive influence on chimpanzees' behaviours. Creating bigger variety and opportunity of use is important, considering that enrichment strategies should depend on the group and the individual personalities giving them freedom of choice. Improving social interactions is important to reduce abnormal behaviours.

Key words: environmental enrichment, *Pan troglodytes*, re-socialization, abnormal behaviours

Time-activity budget of the western lowland gorillas (*Gorilla gorilla gorilla*)

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The way in which individuals allocate time to their daily activities has important consequences for survival and reproduction. Most studies of activity budgets have shown that the time spent in different activities can vary both diurnally and seasonally within groups. Gorillas follow daily regular activity patterns. After feeding (9am/ 10am), gorillas move and rest. When temperatures rise, as in most species, gorillas rest, socialize and digest their meals (10am/14pm). Later, they resume feeding and before the sunset they move to their night sleeping sites (17pm/18pm). We aimed to describe and analyse the social behaviour of the gorilla colony living in the Lisbon Zoo by assessing the time-budget of each individual. We assumed that if individual time-budgets were not very different from the ones exhibited by gorillas in the wild, such similarity might be interpreted as a sign of somehow solid and stable psychological and emotional well-being. The colony was composed of four adult individuals (one male and three females). Ad libitum, focal and scan samples were used and the observation day period was divided in two time-blocks as behaviour changes throughout the day. Results were analyzed using non-parametric statistics due to data features (e.g. non-normal distribution). "Inactivity" was the behavioural pattern where most individuals spent their time. The remaining time was occupied in "feeding", with very little time spent "moving". In the morning, "feeding" accounted for more than 14% of the total time budgets of all the colony members (Ulka, Backi, Anguka and Nazibu). In the afternoon, time spent on "feeding" was below 14% for all individuals. However, "moving" was not considerably different between the two time-block observation periods. The time spent "resting" also decreased during afternoon.

Key words: Primatology, nonhuman primates, social interactions

Environmental enrichment for captive primates: a research for primate welfare at Maia's Zoo

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Many varieties of EE are now a standard routine worldwide in recovery centres, zoos and laboratories, as public opinion demand better conditions for animals and law stipulate its practice. The aim of this study is to test if individuals of three non-human primate species at Maia's Zoo [gibbons (N=2), mona monkeys (N=2) and brown lemurs (N=2)] need EE (evaluating inactivity and abnormal behaviours occurrence) and if the devices implemented reduce boredom and apathy, symptoms that captive animals are more prom to. The apparatus here presented acts as a cognitive stimulus and feeding enrichment. Also, to prove its applicability the type of enrichment device chosen must be simple and inexpensive to build. With this in mind, the feeding device in this experiment consisted of food-filed small pieces of bamboo canes and a wire box filled with fruits and straw. We predict that foraging behaviour will increase in all three species as inactivity and locomotor behaviour decrease. Gibbons are expected to interact more with those devices, followed by monas monkeys and lemurs. Stereotypic behaviour should also become moderate. Grooming and affiliative behaviours should increase in both enriched situation. Observations are still ongoing. However, is already clear that the effect of an enriching foraging strategy depends on the species and its individual's personalities, important aspects which should be taken into account when designed and maintained EE programs. EE technique was to be projected according to the desired effect and we must ensure the "freedom of choice" in a successful enrichment's planning.

Key Words: feeding apparatus, behaviour opportunity, captivity, individuality

The vertebral column of three hominoid species (*Homo sapiens*, *Pan troglodytes* and *Hylobates lar*): a preliminary shape analysis

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The vertebral column forms the structural core of the vertebrate body, being composed by various segments termed vertebrae. It plays a fundamental role in posture and locomotion. *H. lar*, *P. troglodytes* and *H. sapiens* are hominoids with different locomotor repertoires and adaptations. The white-handed gibbon is mostly a brachiator and the common chimpanzee is a knuckle-walker. Both species display occasional bipedal behaviour. Humans are primarily bipedal. Chimpanzees and humans are morphologically and genetically very close. As such, we intended to test hypotheses on the role of homoplasy (namely locomotor behaviour) in the evolution of the vertebral column in these extant hominoids. Comparison of vertebral column in the three hominoids was executed within a geometric morphometrics framework. Three-dimensional vertebral landmarks were taken (from C3 vertebra through L5). Landmark coordinates were subjected to a generalized Procrustes analysis and subsequently to principal components and cluster analyses. Results suggest a modification in the shape (they become more "lumbarized") and size (there is an increment of vertebral body size) of the last thoracic vertebrae in *Homo* and *Hylobates* – hinting an association between locomotor behaviour and the shape of the vertebrae.

Key words: hominoids, vertebrae, locomotor behaviour, geometric morphometrics

Chimpanzees' intergroup aggression as reference model for the understanding of the evolution of violence

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In last decades, the origin of aggression has represented one of the main themes of human evolution, with various evidences suggesting a distant evolutionary history. Evolutionary psychology advocates that human aggression is a product of a long evolutionary process, starting from the premise that all human behaviour has, as its fundamental basis, the existence of internal mechanisms resulting from selective forces over time. Simultaneously, the incorporation of evolutionary theory in studying non-human primates (NHPs) enabled to interpret their behaviour as a trace subject to selective pressure. Thereby, the evolutionary proximity human-chimpanzee, sharing a common ancestor about 7Mya, justifies the use of behavioural studies of these NHPs for studying human evolutionary path. Several studies have shown chimpanzees as one of the most aggressive NHPs species, with intergroup interactions displaying the highest levels of hostility/agonistic behaviours and where violent physical attacks by male groups, while patrolling border territory, against isolated members (males/females/juveniles/offspring) of neighbouring communities, occur with some frequency. The chimpanzees' intergroup aggression is suggested to be an adaptive strategy adopted in certain environmental conditions; therefore, aggression itself is not an inevitable/"fixed" behaviour. These studies may prove relevant to construct reference models for the understanding of the evolutionary path of human aggression; therefore, contribute to understand the key factors for displaying aggressiveness. From an extensive literature search, and an analytical confrontation between theories/hypotheses formulated from behavioural data, the present master thesis project aims to provide an explicit theoretical framework about the relevance of studying chimpanzees' intergroup aggression and what it can offer for understanding the evolution of human violence.

Key words: *Pan troglodytes*, intergroup social relations, agonistic behavior, Human Evolution

African non-human primates in Europe in the Age of Discovery: their importation, use and role

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The current work presents the results of a review of the European literary sources of the Age of discovery, which contain reports on African non-human primates. Specifically, we examine reports of trade, importation and presence of these primates in Renaissance European courts. In this research we also investigate Renaissance European iconographic sources showing primate depictions. Recent evidence proves that in all the phases of the European expansion in the 15th and 16th centuries, primates were a constant presence and very sought after animals. Many literary sources of this age indicate that monkeys were among the most common animals brought back to Europe and a frequently offered gift to Europeans by local African rulers. The colored sub-Saharan African monkeys were new to European courts and quickly became appreciated as pets. They represented an authentic status symbol that underscored their owners' influence and social position. They were also used as gifts in diplomatic embassies. Among the specie that reached Europe (dead or alive) during the 15th and 16th centuries we can found: *Macaca sylvanus*, *Chlorocebus sabeus*, *Papio papio*, *Papio hamadryas*, *Papio* sp., *Cercopithecus diana* vel *roloway*, *Cercopithecus petaurista*, *Mandrillus leucocephalus*, *Pan troglodytes verus*, *Erythrocebus patas* and probably *Cercocebus atys*. Some of these species were also mentioned and described in the naturalistic works of the 15th century, such as those of the Swiss Conrad Gesner and the Italian Ulisse Aldrovandi. Until now was impossible to estimate the quantity of monkeys brought back to Europe. The trade on African primate populations seems to have not led to a rapid local extinction in sub-Saharan West Africa (as did happen with other mammals such as elephants and monk seals), nevertheless their populations is likely very reduced today in comparison with the abundance reported in the pre-colonial period by almost all of the European travelers.

Key words: History of Primatology, Catarrhini, trade, pets, 15th and 16th centuries

Perspectives of population genetics for primate survival in Guinea-Bissau: progress and prospects

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The Human Genome Project was presented in its final form 10 years ago, and some authors claim, categorically, that biology has changed forever. It opened up a box of complexity and new genetic directions arose. One example of that myriad of applications can be the use of noninvasive genetic techniques into primate conservation. My talk will be based around the topic of conservation genetics, with a particular focus in endangered primates of Guinea-Bissau. First, I will review the current state-of-the-art in terms of how genetic data can be integrated (and translated) into primate conservation action. Second, I will revisit the West African chimpanzee phylogeography by assessing the genetic diversity and structure of the chimpanzees in Guinea-Bissau and in the Nimba region (Republic of Guinea). Finally, I will demonstrate how DNA barcoding can be a valuable tool to determine the bushmeat trade in Bissau markets.

Does anthropogenic hunting influence dispersal strategies in primate species? A comparative study in Guinea baboons (*Papio papio*)

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Hunting practices can induce changes in dispersal behaviour via group density variation across space or by inducing defensive behavioural responses. Such conditional-dependent dispersal patterns have been scarcely investigated for primate species. We compared two populations of Guinea baboons (*Papio papio*) subject to different levels of human pressure to test for changes in the composition of social units and in the dispersal behaviour. In Guinea-Bissau (GB), baboons have been heavily hunted and suffered a range contraction. In Senegal (SEN), baboons have increased in numbers and harvesting is not significantly affecting the population. By using a molecular sex determination protocol and thirteen microsatellite *loci*, we investigated differences in the proportion of males and females and the mean pairwise relatedness within social units. Furthermore, we compared sex-specific patterns of gene flow. The final dataset included 149 genotypes of different individuals for the GB population (55 males and 89 females, quality index > 0.55, averaging 0.87 across loci), which were collected from 17 social units in three sampling locations in southern GB distanced at a maximum of 150 km. For the SEN population, 165 genotypes (97 males and 68 females, quality index > 0.50, mean 0.86 across loci) were collected from five sampling units within Parc National du Niokolo Koba, distanced at a maximum of 66 km. In GB we found a pattern of lower ratio of males within social units and social units with un-related individuals. The clear female-biased dispersal pattern displayed in SEN was attenuated in GB, where, in the same geographical scale of 66 km, both sexes disperse. Considering all samples collected within GB, the origin of dispersing males in one sampling location, when compared with females, was predominantly from a genetically differentiated population, resulting in the formation of a contact zone. For SEN males, philopatry could be a means to avoid competition with conspecifics and aggressive encounters, while in GB male dispersal could result from higher hunting-mortality risk or as a means to increase reproductive outcome.

Key words: *Papio*, sex-biased dispersal, condition-dependent dispersal, poaching, contact zone

Haplotype analysis of common HFE mutations in the Portuguese population

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Hereditary Haemochromatosis (HH; MIM# 235200), an autosomal recessive disorder caused by increased iron absorption, is one of the most common genetic diseases among individuals of European origin. In the Portuguese population, haemochromatosis HFE gene mutations were found at frequencies (average) of 0.033 for C282Y and 0.17 for H63D. However, the associated haplotypes using intragenic polymorphisms remain to be established. The main objective of this study was to investigate the haplotype background associated with C282Y, H63D and S65C mutations in the Portuguese population, using HFE intragenic polymorphisms. Three internal HFE SNPs IVS2(+4)T/C, IVS4(-44)T/C and IVS5(-47)G/A were analysed in a total of 150 samples: homozygous C282Y (n=12) and H63D (n=19); heterozygous C282Y (n=18), H63D (n=34) and S65C (n=6); compound heterozygous C282Y/H63D (n=17) and S65C/H63D (n=3); subjects without HFE mutations (n=41). SNPs were genotyped by PCR-RFLP using RsaI, HaeIII and NlaIV, respectively. Digested products were resolved in 2% agarose gels. Haplotypes were established unambiguously in homozygous subjects or derived through the PLINK software. Chromosomes C282Y (n=59), H63D (n=92) and S65C (n=9) were found associated exclusively with haplotypes TTG, CTA and CCA, respectively. In non-mutant chromosomes, five of the eight possible haplotypes were found: TTG (53.3%), TTA (23.5%), CTA (9.8%), CCA (7.1%) and CTG (6.3%). The mutation associated haplotypes in the Portuguese population, C282Y:TTG, H63D:CTA and S65C:CCA, are the same that have been reported in other European populations, suggesting a single origin for each HFE mutation. Regarding normal chromosomes, the most common haplotypes reported for other European populations were found.

Key words: C282Y, H63D, S65C, Portugal

Screening for melanocortin-4 receptor mutations in a cohort of Portuguese children with severe obesity

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The melanocortin-4 receptor (*MC4R*) gene, located in the chromosome 18q21.3, is critically involved in regulating energy balance. It is the most common cause of monogenic obesity and could be a first step to unravel genetic causes of obesity. The main goal of this study was to screen for *MC4R* gene mutations in a sample of Portuguese children with severe obesity. A total of 32 severely obese children from Portuguese origin, with a body mass index (BMI) ≥ 99th (ranging 6-10 years-old), were studied. The promoter and the entire coding region of *MC4R* gene were analysed by direct sequencing. Pregap4 software was used to compare the sequence obtained with the *MC4R* gene normal sequence. Two *MC4R* gene mutations were found at heterozygous state: the previously described 5'UTR single nucleotide polymorphism -178A>C (rs34114122), identified in a girl with a BMI Z-score= 2.51; and the common missense mutation 307G>A (Val103Ile, rs2229616) in the *MC4R* gene coding region, identified in a boy with a BMI Z-score= 2.60. The frequency obtained for the Val103Ile missense mutation in our study was 3.1%, a value similar to the frequency observed in other European populations (ranging 1 to 5%). No other pathogenic *MC4R* gene mutations were detected in our study sample. These results suggest that pathogenic mutations in the *MC4R* gene might not be a common cause of severe obesity in Portuguese children.

Key words: *MC4R* gene, obesity, Portuguese children, Val103Ile, rs34114122

Mitochondrial DNA and genetic origin of Cabo Verde population
- preliminary results

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Mitochondrial DNA analysis found an important role in population genetics. Features that increase the vested interest of mitochondrial DNA (mtDNA) are the high copy number per cell, maternal inheritance, absence of recombination, and high mutation rate. Due to higher overall mutation rate, mtDNA control region is comparatively enriched in sequence variation and therefore its analysis is important to establish haplotypes and haplogroups. Haplogroup assignment became noteworthy to clarify the origin and evolution of a population. As well as occurs all over Europe, in Portugal, and particularly in Lisboa, immigrant populations are increasing. The Instituto Nacional de Medicina Legal e Ciências Forenses is carrying out a comprehensive genetic study with the aim of portray the genetic diversity of the immigrants who live in Lisboa. Within that objective we study a sample of 103 individuals of Cabo Verde immigrant population, living in Lisboa, and classify all haplotypes into haplogroups. MtDNA control region was amplified using two pairs of primers L15997/H016 and L16555/ H599. The cycle sequencing was performed using the ABI Prism® BigDye® Terminator v.3.1 Cycle Sequence Kit (Applied Biosystems, Foster City, CA) and BetterBuffer (Microzone Limited, Sussek, UK). Analysis was done with ABI DNA Sequencing Analysis V5.2 and SeqScape v2.5. The obtained haplotypes were compared with the Cambridge Reference Sequence (CRS) and typed following the nomenclature of the International Union of Pure and Applied Chemistry (IUPAC). Haplogroups were determined on the mtDNAmanager. Preliminary results showed great variability, with high frequency of unique haplotypes and significant values of nucleotide and sequence diversity. The majority of mtDNA sequences were included into specific African mtDNA haplogroups and a minority of mtDNA lineages belongs to West Eurasian haplogroups, which seems to be in line with the historical version of the archipelago colonization with Portuguese male individuals, mobilized from the metropolis for the ex-colony, and African female slaves.

Key words: mtDNA, population genetics, Cabo Verde

Polymorphic variants influencing fetal hemoglobin (HbF) levels in healthy Portuguese subjects

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Common forms of hereditary persistence of fetal hemoglobin (HPFH) (HbF levels 2-30%) typically result from polymorphisms in the fetal globin genes (*HBG1* and *HBG2*) or along the beta-globin cluster. Recent genetic association studies found other loci involved in HbF expression, including polymorphisms in the *BCL11A* gene (chr. 2p) and *HBS1L-MYB* (HMIP) intergenic region (chr. 6p), in patients with β-globin disorders (sickle cell disease and β-thalassemia) originated from different populations. The main objective of this work was to evaluate whether genetic variability in loci *BCL11A*, *HMIP* and *HBG2* (XmnI) is involved in common forms of HPFH. Sixty subjects of Portuguese origin, with normal hematological parameters and HbF levels 0.2-7.4%, aged 2-61 years, were recruited for the study. Informed consent was provided by all the participants. HbF levels were determined by HPLC (Variant^2-Bio-Rad) and log transformed. Five single nucleotide polymorphisms (SNPs) (rs11886868, rs766432, rs9399137, rs6934903 and rs7482144) were genotyped by PCR-RFLP or TaqMan assays. Statistical analysis was performed by using the PLINK software. Allele frequencies, Hardy-Weinberg p-values and association results between SNPs and HbF were estimated for all the polymorphisms. Linear regression models used to test the association between SNPs and HbF levels showed statistical significance for *BCL11A* SNPs rs11886868 ($p=7.3 \times 10^{-5}$) and rs766432 (p=0.002). No significant interactions with HbF levels (p>0.05) were observed for *HMIP* (rs9399137, rs6934903) and XmnI (rs7482144) polymorphisms. Results suggest that the increase of HbF levels in Portuguese individuals with common forms of HPFH is associated with *BCL11A* polymorphisms, but not with *HMIP* or *HBG2* (XmnI) *loci*.

Key words: HbF, HPFH, BCL11A, HMIP, XMNI

Late Neolithic/Chalcolithic in Portugal: preliminary results from ancient DNA analysis

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The use of ancient DNA techniques allows us to answer questions that osteological methods cannot always satisfactorily respond, for instance the sexual diagnosis in non-adult human or very fragmented remains, or the resolution of population migration patterns. The main goal of this study is the genetic characterization of populations from the late Neolithic/Chalcolithic from mainland Portugal, in order to answer several questions such as the process of Neolithization in this region of Europe or the existence of kinship in collective burials from this time frame. Thirty samples, corresponding to 30 individuals from 3 different archaeological sites, Hypogeum of São Paulo II, Perdigões complex – sepulcher 2 and fossa 11, and Dolmen of Ansião, were subjected to DNA extraction through two distinct methods: phenol-chloroform method and a silica based method. From these 30 individuals, partial or complete amplification of the HVR-I region of the mitochondrial DNA was possible for 16 samples and HVR-I sequences were obtained for 15 individuals so far. Based on the HVR-I mutated positions and PCR-RFLP analysis of coding region sites, it was possible to narrow the mitochondrial haplogroups of 8 of the samples, yielding results similar to those obtained in previous studies, with most of the samples belonging to haplogroups H or U. Seven samples were identified as males and one as female according to the amplification of the SRY and Amelogenin genes. All of the results and resulting conclusions are preliminary, as the study is still ongoing and more samples will be analysed in the future.

Key words: mitochondrial haplogroups, HVR-I, Paleogenetics, sexual determination

Raising the dead: clinical interpretation in Palaeopathology

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Palaeopathology is an objective scientific analytical discipline. The source material is the corporeal remains of past peoples, and its remit is to examine and describe pathological lesions in this material and to propose a diagnosis of disease in these peoples. This end-point of remit does not, per se, promote the understanding of the clinical presentation of disease in past peoples. It does not humanise the raw pathological data, and, therefore, does not put "flesh and blood" on the remains of past peoples. Palaeopathology, as a discipline, is not fulfilled unless it proceeds to an understanding of illness, as defined by patient symptoms and physical signs. Therefore, it should be regarded as an extension of investigative clinical medicine into earlier societies. The procedures in palaeopathological practice are the same, intellectually, as those in clinical practice, albeit reversed in analytical order. As palaeopathologists we should strive to understand the suffering, physical and psychological, inherent in our diagnoses, and the social implications of the illness. This can only be done by reference to recent clinical experience and written records of recent centuries. This presentation seeks to demonstrate, using specific archaeological specimens, how we may interpret and elucidate the illness and suffering of humankind in antiquity, and so bring to life our forebears.

Headaches from the past: Cranial lesions in Middle Neolithic at the tomb cave of Lugar do Canto (Portugal)

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Lugar do Canto (Alcanede, Santarém) is a collective tomb within a natural cave. It was discovered in July of 1975 by the land owner during the construction of a water cistern. Some months later, G. Zbyszweski and O. V. Ferreira, from the Geological Services of Portugal, in collaboration with M. Leitão, C. North and J. Norton conducted the excavation and recovery of different archaeological and anthropological deposits scattered by several chambers of the cave. The results were later published (Leitão *et al.,* 1987), including a chapter summarizing the study of the collection of human remains conducted by one of us (SR) between 1979 and 1980 for a MS in Anthropology. In the following years this collection was scattered, with a portion of it being sent to the Smithsonian Institute in Washington D.C. (USA), other part kept at the the Geology Museum (although under the wrong name) and with M. Leitão at his house. Later on, due to J. L. Cardoso commitment, a part of M. Leitão's collection was deposited at the National Museum for Archaeology, and other part is under his personal care. Presently, all the above portions of Lugar do Canto human osteological collection are under revision. This first analysis estimated a minimal number of 48 individuals of both sexes and from several age groups. Among the cranial remains, several lesions were detected. These include cases of trepanations, fractures and other types that will be present and discuss in the present work.

Key words: Lugar do Canto, Neolithic, trepanation, depressed cranial fractures, trauma

Funus acerbum: a reflection about child burials from roman provinces

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The death of a child among Romans provoked a mixed reaction: despite being a frequent and expected phenomenon, it was nonetheless perceived as *mors imatura*, leading to a wide range of procedures within the *funus acerbum*. This work aims to present and analyse specific funerary practices given to children, in particular babies and infants, during the Roman times. Based on examples mainly gathered in *Hispania* but also from other areas of the Roman Empire (dated from the first to the third centuries A. D.), factors which may have influenced the funerary rituals applied to infants will be considered. The data presented includes seven individuals from *Augusta Emerita* (Mérida, Spain) and one from *Salacia* (Alcácer do Sal, Portugal) aged less than four years old and cases from a survey made in bibliography concerning funerary areas of others roman cities located on the current countries of Spain, Portugal, France, Italy and United Kingdom. The way Roman society perceived the loss of those individuals was affected by their age at death. Moreover, the funerary investment and mourning were inversely proportional to their life's duration. Historical, archaeological and anthropological sources revealed particularities on the body treatment (inhumation *versus* cremation), burial location and grave characteristics of those who died at birth or after a few months. On the other hand, older children were normally given burial rituals similar to those of adults (determined by factors such as social-economic status and/or the cause of death) although they can show singularities in terms of grave furniture, namely, baby bottles, toys, miniatures or objects with prophylactic and symbolic value. This study contributed to a more comprehensive understanding about child funerary rituals during the Imperial Age.

Key words: *mors immature*, Roman funerary practices, infant burial, *Hispania*

Bioarchaeology of dental calculus: plant consumption in Medieval Lithuania

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Dental calculus is often omitted from bioarchaeological research. The first goal of the present study was the extraction and analysis of microfossils entrapped in human dental calculus from two Lithuanian archaeological skeletal collections. Distinctive microfossil (starch and phytolith) morphological characteristics have been used to identify the use of different plant types and to make the palaeodietary reconstruction of medieval urban population. The second goal was the statistical comparison of dental calculus indices between four different medieval populations. Differences in dental calculus' amounts, between dental arcades, sexes, age groups and population groups were expected. Lithuanian Medieval and Post Medieval dental calculus samples from various geographic locations and presumably different social background (urban and rural) were isolated from teeth and analyzed. Extraction of microfossils was carried using established methods by pulverizing calculus samples or dissolving them in 10% hydrochloric acid. Then samples were centrifuged, rinsed in distilled water and subsequently centrifuged. The remaining samples were mounted on microscope slides in glycerol/water solution and examined under a light microscope in cross polarized light. Statistical comparison of dental calculus indices was done using Mann- Whitney U test. Although not all of the samples resulted in microfossil recovery, the majority of them produced starch grains consistent with wheat, barley, millet, legumes and other possibly diagnostic grains. Some grains are modified and could be attributed to different past cooking practices.Statistical analysis revealed differences in amount of calculus deposits between dental arcades and different populations.This type of analysis produced direct evidence and insight into the dietary preferences of medieval individuals.

Key words: plant consumption, starch analysis, dietary reconstruction

Possible simultaneous occurrence of ankylosing spondylitis and diffuse idiopathic skeletal hyperostosis at the medieval necropolis (12th-13th centuries AD) of Palat del Rey, León, Spain

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A possible simultaneous occurrence of Ankylosing spondylitis (AS) and Diffuse idiopathic skeletal hyperostosis (DISH) is reported. The studies have been exclusively based solely on macroscopic examination and radiological analysis of both spinals, due to the absence of other parts of the skeleton. Solely one of the individuals is preserved skull, hip and sacrum. The excavation was not performed in its entirety and part of the individuals remain buried in the archaeological site. Both diseases have similar aspect but different etiologies that affect the axial skeleton and peripheral entheses. AS is a non-infection, inflammatory disease whilst DISH is related to obesity, type II diabetes, and probably with a multisystem hormonal disorder. AS and DISH are more common in men than in women. Nevertheless, AS usually starts between the 2nd and 3rd decades of life, and DISH is found in individuals around the age of 40 years. The aim of this work is to establish a differential diagnosis as accurate as possible between AS and DISH, and to try to establish a relationship between these diseases and life habits. Both diseases are observed on two women. One of them died with about 35-40 years old (Lovejoy et al., 1985; Brothwell, 1981; Meindl and Lovejoy, 1985; Buikstra and Ubelaker, 1994; Ubelaker, 2007), and the other one died at about 40-50 years old. In this case the age has been estimated from changes suffered by the *annulus fibrosus*'s vertebrae with age (Reverte, 1999). The two women were found at the medieval archaeological site (XII-XIII AD), specifically in the necropolis located inside the church Palat del Rey (León, Spain).

Key words: Ankylosing spondylitis, Diffuse idiopathic skeletal hyperostosis, medieval archaeological

Dental wear in a medieval Portuguese skeletal sample and its relation with dietary habits

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The study of dental wear in archeological populations is of great value when the intention is to realize how the human past populations lived. The aim of this study is to analyze the pattern of dental wear (attrition and abrasion) presented by the individuals belonging to the medieval population of São João de Almedina (Coimbra, Portugal). The sample is composed by 58 adult dentitions (28 males, 20 females and 10 individuals of unknown sex). Occlusal tooth wear was recorded according to the eight-stage method developed by Smith (1984), whereas approximal attrition was scored following Hillson (2001). The preliminary analysis points to an occlusal wear average of 3, 85, which indicates a medium wear with great exposition of dentine. The mesial and distal attrition rates are low, being mostly of grade 1. These results will be interpreted in terms of the biological, socioeconomic and behavioral conditions (type of food ingested, food preparation techniques, among others) prevailing at the medieval times, using information from other wear studies and historic data. Besides, dental wear will be compared with that recorded by Wasterlain (2006) for the population of Coimbra in the late 19th and early 20th centuries, using the same methodology. This comparison is aimed to infer about how dental wear has evolved from a pre- to a post-industrial population. Finally, an unusual pattern of dental wear was observed in the anterior teeth of two indivuals, possibly corresponding to abrasion. The first case affects the buccal side of the central incisors of 55-65 year-old male, whereas the second one respects to the distal side of the upper lateral incisors of one male whose age-at-death ranges between 45 and 60 years. Both cases present a sulcus on the enamel, parallel to and right above the gum line that seems related to non-dietary abrasion due to a personal habit or activity.

Key words: dental pathology, tooth wear, Coimbra, Portugal

Oral pathologies in San Pablo medieval population (Burgos, Spain)

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This paper shows a detailed study of oral pathologies in a sample from the medieval monastery of San Pablo (Burgos, Spain). Presence or absence and type of dental caries, calculus, periodontal disease, abscesses and dental wear have been recorded in 71 individuals of both sexes and all groups of ages at death. To do that, an especial database was created, in which the type and gravity of each disease were recorded. Of those 71 individuals 29 are adults (9 females, 20 males) and 42 are subadults. Four different age groups were established based on permanent molar eruption, what allow us to determine different development status. The first group is based on the non-eruption of M1, the second one on the eruption of M1 but not M2, the third group is based on the eruption of M2 and the last group has M3 totally developed. Sex estimation was done on the basis of non-metric pelvis traits. No attempt of sexing immature skeletons was carried out. The relation between dental pathologies' frequencies and age as well as sex was explored by chi-square tests. Dental calculus was found to be the most common disease and its frequency increases with age. Alveolar bone loss, caused by periodontal disease, is the less frequent disease. Caries is highly prevalent in all groups. Taking into account all these data together, a hypothesis of an abrasive diet, rich in sugar and other carbohydrates, is supported. Moreover, an inverse relationship between caries and attrition has been found. Different hypotheses will be explored in order to explain this last assumption.

Key words: Dental Paleopathology, Middle Age-Renaissance, nutritional and health status

Living through death: a multidisciplinary approach to the analysis of anthropological field reports from primary inhumation archaeological sites (Portugal)

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The ritualization of death offers an overview on cultural and social belonging of individuals. The access to these elements is many times revealed in funerary archaeological sites where it is also possible to recover biological data from the deceased. At a first glance it may seem that biological and cultural dimensions are detached, however, in funerary contexts, more often then not, they are intertwined. In this sense, a more thorough picture on past populations may result from combining biological and cultural data. To achieve this goal, it is crucial to adopt a multidisciplinary approach.

Supported by the bioarchaeological theoretical approach and field anthropology ("Anthropologie de terrain") methodology, it is possible to take full advantage of the information held in funerary contexts. Information regarding 464 individuals found in primary inhumation was analyzed from anthropological field reports, produced between 1994 and 2007, archived at the Paleodemography and Paleopathology Laboratory (University of Coimbra). Information regarding conservation, funerary anthropology, paleodemography and paleopathology was analyzed. Results show that these reports present important inconsistencies concerning the data they assemble, despite that, it is possible to reveal that: most reports are from Medieval (30.3%) and Modern (24.2%) periods; culturally, Christian burial gestures are the most common; paleodemographic data present an asymmetric distribution of sexes (34.7% males) and age at death (45.68% adults); osteoarthrosis (41.6%) and enthesopathies (60.7%) are the most frequent reported pathologies. With this work, we aim to uncover some of the biological and cultural aspects of the past, and we further propose a reflection on the current approach to primary inhumation archaeological sites.

Key words: Past populations Anthropology, Bioarchaeology, field Anthropology, Archaeology, Funerary Anthropology

Skeletal growth pattern in a Portuguese sample

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Growth is a continuum process that implies a progressive incremental change in size and morphology. The final growth outcome is the result of a complex interaction between genetic and environmental factors. Development of sexual dimorphism among both different skeleton parts and distinct populations can help us to understand how these factors interact. For this reason this work has two main goals. First, sexual differences in the post cranial long bones growth patterns are established in a Portuguese sample. Second, development of sexual dimorphism in this population is compared with that in an English one previously published by Humphrey (1998). The Portuguese sample was derived from the collections housed in the Bocage Museum (National Museum of Natural History, Lisbon, Portugal) and in the Department of Life Sciences at Coimbra University (Coimbra, Portugal). Both collections are formed by Portuguese people who lived in the 19th and 20th centuries with similar socioeconomic indicators, living conditions and causes of death. For this reason, they are treated as a single population for the present analysis. The measure sample varies among bones but comprise, at least, 60 males and 60 females. The measurements taken in each long bone (maximum length and diameters at mid-shaft) were fitted in a Gompertz curve. Sexual differences in growth rate and duration in each different variable were established by an F-test of Gompertz parameters. The proportion of sexual dimorphism resulting from sexual differences in growth rate and duration varies between English and Portuguese samples. For example, in the first sample, relative contribution of growth rate to adult sexual dimorphism of long bone lengths is bigger than that of duration. However in Portugues sample, there is a great contribution of growth duration.

Key words: development, sexual dimorphism, Gompertz curve

The potential of cremation weight for bioarchaeological research

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Cremation was a very popular practice in many past -cultural contexts and, not infrequently, it was the only/majorfunerary custom adopted Hence, their importance for the biological knowledge of past populations as well as for their mortuary practices is thus unmistakable. Regrettably, heat-induced changes limit our capabilities to retrieve osteological data from bones. Therefore, lack of reliability regarding bioanthropological inspection is a peril always present when dealing with cremains. A good example of one analytical approach that may enclose such peril is the one related to skeletal weight. This approach has been used as a replacement of more conventional and well-established methods that are usually applied to unburned skeletons because its analytical value is not as impaired by taphonomic-related fragmentation – bone weight remains somewhat the same. In sum, bone weight has been pointed out has a potentially valuable indicator four parameters: the minimum number of individuals; the sex of the deceased; the completeness of the skeleton; and the representativeness of each anatomical region on a given burial. However, how reliable is this kind of approach? Cremation weights were documented for Portuguese modern cremations and its potential for the estimation of the four parameters was then investigated by using both modern and archaeological cremains. Results demonstrated that, under certain circumstances, bone weight may carry valuable insights regarding the bioarchaeological research of cremains although its value is increased by using other non-osteological data.

Key words: Biological Anthropology, cremains, skeletal weight, mortuary practices, burned bones

More than bones: the future of archaeological recovery of human osteological remains and their contextual information

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Mortuary and funerary sites, often solely materialized by sedimentary discontinuities and human skeletal remains, are among the most delicate archaeological cases, rending the efficiency of the salvation work highly dependent of excavation and documentation options. Because of the fragility of the remains and volume of data, the salvation of funerary/mortuary sites is extremely dependant on excavation and documentation procedures. Consequently, we developed a thorough Geoarchaeology/Arqueothanatology terrain protocol for the recovery of human remains and contextual information, which was first applied in 2009 to the excavation of Valle da Gafaria (Lagos, Portugal), the oldest known mortuary site of African slaves in the world (XV-XVII centuries), aiming to assure a detailed perception of this unique site by contemporaneous and future generations. We have ever since improved the protocol, introducing state-of-art technology: combining time series of digital data produced by middle-range terrestrial laser-scanning, digital photogrammetry and geophysical surveying with the archaeothanatological information and GIS produces a detailed 4D database of the synchronic and diachronic evolution of the sites. Results showed that, if a consistent field protocol is mandatory to understand past funerary behaviours, the use of advanced Geomatics, Geophysics and Spatial technologies considerably enhances our ability to produce significant historical information, relevant to society: scientists, stakeholders, communities and general public.

Key words: Archaeothanatology, Geoarchaeology, field protocol, interdisciplinarity

Questions surrounding the management of human osteological remains resulting from archaeological contexts

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In the past decades, archaeological interventions increased significantly in Portugal. Development projects have triggered a whole array of salvage archaeology actions, following a well defined state policy for Archaeology and Cultural Heritage. All public and private development interventions require previous archaeological work, thus minimizing the possible negative impact that they might have on our common heritage. It was in this context that we saw a major growth in the identification of cemetery areas from different time periods across the whole territory, thus creating an enormous amount of human remains exhumed from these sites. Although this fact significantly enhanced our research possibilities, it also brought up new problems concerning the management of these osteological collections. Presently, the national archaeology database (*Endovelico*) has more than 5.000 funerary sites recorded, most of them with human remains. Management and conservation of these collections - some of them with thousands of skeletons - are not compatible with most of the deposit areas available throughout the country. In parallel, there are ethical issues being raised, regarding what the most suitable deposit area should be, for these past human populations. Some of these issues are reflected in some cases with which Portuguese Heritage has recently been confronted with. These cases will be presented, in order to enrich our debate and hopefully reach a consensus regarding the management and conservation of such important collections.

Key words: human osteological remains, management of osteological collections, Archaeological Database - Endovelico

Representation of disease in a Makonde sculpture collection curated by the University of Coimbra

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Disease is a biological and social phenomenon experienced by all human groups and it is subject of diversely cultural representations. The study of these representations allows interdisciplinary and biocultural approaches. The aim of this work is to present evidence of disease representation in a collection of 135 sculptures donated in 2007 to the University of Coimbra by Maria Luisa Silva, by the will of her husband, Manuel dos Santos Soares (MSS), to leave in his birthplace a collection of "African blackwood sculptures of Genuine Art from the Makonde ethnic goup". The carvings have dimensions of approximately 10 to 50 cm and represent human and zoomorphic figures, collected between 1940-1974 by MSS in the Makonde Plateau, district of Cabo Delgado, when he worked as agronomist. A detailed observation enabled the identification of seven sculptures, representing individuals showing lesions consistent with leprosy, poliomyelitis, and kyphosis as well as with other possible pathological conditions. Other representations revealed identity marks (profusely decorated with facial scarification, lip and auricular piercings), couples in sexual intercourse, people defecating, animal biting a person, among others. The ethnographic context and the international recognition of Makonde sculptures led to a large-scale production. However, the representation of diseases by this group, or in African sculpture in general, is rare according to the bibliography consulted, highlighting the relevance of this collection.

Key words: Mozambique, Paleopathology, Ethnography, identity marks, leprosy, poliomyelitis

Vertebral lesions on human remains recovered from the 19th to 20th centuries public cemetery of Amieira do Tejo, Portugal

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The individuals presented in this work were recovered during two archaeological field seasons carried out inside the Castle of Amieira do Tejo, which was adapted to a public cemetery between 1839 and 1936. The skeletal sample consists of a minimum number of 62 individuals, of which 17 are adults (7 males, 7 females, and 3 individuals of unknown sex) and 9 are non-adults (7 infants, 1 child, and 1 adolescent). This paper aims to present and describe two cases of pathological relevance. The first case refers to a poorly preserved mature adult male with lytic lesions in the anterior-superior angle of three vertebral bodies (T11, L1, and an undetermined lumbar). Schmorl nodes are present in the body surfaces of these vertebrae as well as in other six (T11, T12, L1, L2, L3, and L4). T12 is fused with the left rib and L5 is ankylosed with the sacrum. The second case refers to an also poorly preserved mature adult male, who shows similar lytic lesions in two lumbar vertebrae. Both skeletons do not present other pathological changes. The differential diagnosis led us to consider osteoarthritis, tuberculosis, vertebral osteochondrosis, and brucellosis. The reported lesions are discussed with the description present in the paleopathological literature, radiological examination and the occupations stated in the obituary records of Amieira do Tejo population, which show that 15 out of 294 (5,1%) adult men were shepherds. This study benefits from the biographic data of the population and confirms the importance of documentary sources and a biocultural approach in paleopathology.

Key words: pathology, differential diagnosis, osteolytic lesion, adults

Preauricular sulcus, occupation and age in a sample of Portuguese males from the 19th and 20th centuries

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The preauricular sulcus is a groove, located anteroinferior to the iliac auricular surface, resulting from bone resorption due to the tension produced by attaching ligaments. Consequently, it is possible that greater stress can lead its emergence. Preauricular sulcus can appear in both sexes, however, its etiology is still not well understood. The present study wishes to determine whether occupation or age are associated with the presence of the preauricular sulcus on 173 male individuals (18 to 96 years old) from two Portuguese identified skeletal collections. The sample was divided into two groups according to occupation: manual (n=100) and nonmanual (n=73). Individuals from the manual group were considered to have a more physical demanding occupation and, inversely, the nonmanual group was composed by individuals with less physically demanding occupations. The absence or presence of the preauricular sulcus was recorded, and its possible association with occupation or age was determinedThe number and percentage of individuals with preauricular sulcus were similar in both occupational groups (Manual group: n=24, 24.0%; Nonmanual group: n=18, 24.7%), and the chi-square test results show that there is no statistically significant difference ($\chi 2= 0.010$; $p=0.921$). Similar results were obtained for age ($p= 0.793$). Thus, occupation and age does not seem to be associated with the presence of the preauricular sulcus in this male sample. Further research is necessary, especially in female individuals.

Key words: paraglenoid groove, preauricular area, biomechanical stress

Metabolic diseases in a buried Chalcolithic child from El Portalón Archaeological site (Sierra de Atapuerca, Spain)

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During the 2012 field season, the first complete burial of a subadult individual (Atp'12.1420) was discovered in the Holocene site of El Portalón (Sierra de Atapuerca, Burgos, Spain). The burial was intact and a rather complete skeleton was recovered in good state of conservation. Atp'12.1420 has been directly dated by radiocarbon in 4.350 ± 30 years BP (Cal BP 5030 to 5020), being therefore attributed to the Chalcolithic period. Age at death of this individual is estimated based on crown and root mineralization and it is established in seven years old. Macroscopic and CT-scan analysis of ATP'12.1420 revealed some pathological signs and stress indicators in both the dentition and skeleton. Caries are present in deciduous upper second molars (dm^2) and a periosteal lesion in left dm^2 could have been caused by an abscess or a periapical cyst. Enamel hypoplasias are found in permanent teeth and abnormal porosity and subperiosteal new bone formation in both, skull (greater wing of sphenoid, palate and mandibular coronoid process) and in all diaphysis of long bones. Abnormal porosity is referred here as the presence of holes of various sizes penetrating the compact or trabecular bone. Although these stress indicators are non-specific and could be related to nutritional deficiencies or growth disturbances, the degrees of severity and distribution are compatible with a diagnosis of rickets or scurvy. If this diagnosis is correct, Atp'12.1420 represents one of the few documented cases of these metabolic diseases in recent prehistoric times.

Key words: recent Prehistory, scurvy, rickets, abnormal porosity

The black slaves: estimating ancestry through non-metric analysis

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In forensic anthropological analysis, ancestry estimation is essential in establishing the individual's biological profile. Several metric and non-metric approaches have been developed in order to estimate adults' ancestry based on skeletal remains. The morphological analysis of the skull, particularly of the face where there are useful structures to assess ancestry, is the main method used. The aim of the present work is to present the results of the application of morphological methods for assessing ancestry in 35 African slaves' skulls. These skeletal remains belong to African slaves discarded during the 15th-17th centuries in a waste disposal site at Valle da Gafaria, Lagos (Portugal), being therefore individuals with Negroid characteristics. Thirty-eight morphological characters of the skull were selected from the Rhine (1990) list, and their precision tested. Three characteristics were excluded due to the low precision presented. The traits observed in the present sample include broad nose, reduced spine, low and rounded root, low bridge, guttered lower border, hyperbolic palate, rectangular orbits, and great prognathism. Other traits, such as shovel shapes incisors, carabelli's cusps, nasal projection, inion hook and metopic trace, are absent from this sample. The obtained results are consistent with a Black population. In other words, the non-metric analysis of the skull proved to be very useful in assessing ancestry in this sample, being a good methodology to continue applying both in past populations and forensic sciences.

Key words: population affinities, anthroposcopic analysis, cranium, Anthropology of Past Populations, Forensic Anthropology

Limb proportions in an African slaves sample from Lagos (Portugal)

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Limb proportions can be an indicator of the type of environment one population lives in. It can also provide some evidences about the nutritional effects on growth. Therefore, the main goal of the current study is to test whether the individuals (N =21 adults; 14 females and 7 males) from an African skeletal sample dated from the 15th-16th centuries, recovered in Lagos (Portugal), show distal stretching of the limbs (limbs with longer distal bones in comparison with the proximal ones). Sampling was constrained by the fact that this type of study should only be applied to adults and because the methods require a relatively good condition of the osteological material. Standard osteometric dimensions were taken according to Martin's methodology on the left humerus, radius, femurs and tibias in order to calculate brachial, crural, and intermembral indices. The results were compared to those obtained by Wasterlain (2000) for the Identified Skeletal Collection from the University of Coimbra, and reveal that the 21 individuals present distal stretching of the limbs. Besides, the upper limbs tend to be longer in relation to the lower ones. Since these individuals were African, these results corroborate the theory correlating climate and limb proportions. However, more studies should be done, especially with larger samples, for more accurate results.

Key words: limb morphological variation, climate, Negroid skeletal sample

Evidences of illness in the Medieval ossuary exhumed near the Torre Sineira (Miranda do Corvo)

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Inserted in the project of the Rede Urbana dos Castelos e Muralhas Medievais do Mondego (RCMM) an archaeological intervention near the Torre Sineira in Miranda do Corvo was undertaken in 2011. This excavation revealed a large ossuary. A subsample from this sample, representing a minimum number of minimum of 153 individuals, 110 adults and 43 non-adults, of both sexes revealed four pathological cases that will be presented and discussed in this paper. All cases were observed in adult bones and include traumatic, degenerative and congenital and infection diseases. The former one represents a complete fracture of a left ulna, without fusion of both diaphysis fragments. A complete fusion of the right 2nd and 3rd metacarpals, the trapezoid and capitate was observed. Besides degenerative joint disease, other possible diagnosis, as rheumatoid arthritis are discussed. Evidence of congenital disease, namely calcaneo-navicular non-osseous coalition was observed in 3 calcaneus (2 rights and 1 left) corresponding to a minimum of two individuals. Untimely, signs of severe infection disease were register in the diaphysis of a right femur which is completely covered with a thick layer of bone forming a type of involucrum. It is also visible a small hole, 10mm, which seems to correspond to a cloacae which presence allows us to suggest a diagnosis of osteomyelitis.

Key words: ossuary, cloacae, fracture, non-osseous coalition, rheumatoid arthritis

A possible case of pulmonary disease in a slave child from Lagos, Portugal

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The purpose of this report is to present a case of a possible pulmonary non--tuberculous disease in an African slave child from *Valle da Gafaria*, Lagos (15th-17th centuries), discussing its differential diagnosis based on the lesions' pattern. Age-at-death was estimated between 7 and 11 years-old using standards of development for permanent mandibular teeth, and charters for calcification and eruption times. The anatomical preservation index obtained for this individual (78.98%) represents a very good state of preservation. The skeleton was examined by gross inspection, and the bones radiographed through digital mammography. Several lesions are apparent in this individual, some of which are lytic in nature. The lytic lesions (measuring 4 to 11 millimeters) are present in the sternal extremity (visceral surface) of four right ribs. There are also multiple areas of new bone formation, both woven and lamellar. More specifically, the visceral surfaces of the ribs show proliferative changes, taking the form of periosteal reactions which are moderate in extent. In some ribs, new bone apposition led to the enlargement of the shafts. Periostitis is also found in the diaphyseal shafts of both femora and the right humerus. Although, at the first sight, ribs' lesions could be suggestive of tuberculosis, their location and morphology do not support such diagnosis. So, other pathologies such as bronchitis, pneumonia or pleurisy should integrate the differential diagnosis.

Key words: ribs' lesions, childhood, slavery, Paleopathology

Bronze Age populations of the Northwestern Iberia. Anthropological and pathological features of Quinta de Água Branca (Vila Nova de Cerveira) and Agra de Antas (Esposende)

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This work aims to study some anthropological and pathological features of the Bronze Age populations in northwestern Iberia. This will be done based on the study of bones from two funerary contexts of the Northwest Atlantic coast of Portugal: the Quinta de Água Branca cist and the Agra de Antas / S. Paio de Antas cists necropolis. Both were radiometrically dated from the 2nd millennium BC, ie from the Bronze Age. From bone analysis of Quinta de Água Branca, it is only possible to say that they belonged to an adult, probably male, with evidences of caries. The study of bones from the necropolis of Agra de Antas revealed the presence of at least four individuals. One, a adult male, aged more than 40-45 and less than 60 years at the time of death, who suffered from degenerative diseases such as osteoarthritis. Another individuals was adult, male, between 40-60 years of age, tall - 168.9 ± 6.90 cm- and robust- He displayed degenerative changes all over the skeleton, both articular (osteoarthritis) as non-articular (entheseal changes) that foreshadow continued physical activity. He also exhibited an old fracture in his the left forearm. Degenerative lesions of the upper limbs, enable to assume that this individual had performed repeated and continuing efforts. This should be related to the frequent use of the upper limbs muscles, including the ligaments of the fingers. Furthermore, this individual also displayed a severe and angled teeth wear, suggesting an abrasive diet and possibly a malocclusion. The remaining two other individuals were adults as well. Both were smaller, less robust and younger than those described above. One of them would be female while the other male. No pathological alterations were registered. Despite the small set of data we can consider that the western facade of the Northwest Portuguese, during the 2nd millennium BC, some communities practiced primary inhumation of adults of both sexes. Almost all of them had problems of dental caries. And the degenerative changes, both articular and non-articular of the individuals from Agra das Antas should be highlighted.

Key words: Northwest of Portugal, funerary context, Bronze Age, anthropological features, pathologies

Geometrical properties of the proximal femur in three identified Portuguese skeletal samples

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Bone continuously adapts to biomechanical stress. Moreover, bone geometry is a potential risk factor for fractures, increasing or diminishing bone strength and the proclivity to fall. As such, we assessed three bi-dimensional geometrical parameters of the proximal femur (femoral neck axis length, femoral neck width and neck-shaft angle) in three identified Portuguese skeletal samples (Coimbra Identified Skeletal Collection; Luis Lopes Collection, Lisbon; and Identified Skeletal Collection of the 21st Century, Santarém) aiming to discern secular trends (considering individual years of birth and death) in the proximal femur phenotype throughout the 20th century in Portugal. The association of the so-called osteoporotic fractures (hip, vertebral, proximal humerus and distal radius fractures; N=89/492; 18,1%) with proximal femur geometry was also evaluated. It was not detected a definite secular trend in the proximal femur geometry during the last century. Notwithstanding, the femoral neck width, in both sexes of the pooled sample (all skeletal samples tested together), and the neck-shaft angle, in the females' pooled sample, are significantly associated with osteoporotic fractures.

Key words: bone geometry, femur, osteoporotic fractures, osteological reference samples, Portugal

Intentional cranial modification in aboriginal societies of northwestern Argentina

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Intentional cranial deformation is the practice of body modification which involves the alteration of the human skull shape. It is done by distorting the normal growth of infant crania applying different techniques, including the use of pads, boards, bandages and manual molding or massaging as well. In past aboriginal societies, cranial modifications have been used as a marker of gender, ancestry, social status, aesthetics, and for ritual purposes. The aim of this study is to present the evidences of intentional modification of the skull shape found in aboriginal societies of the provinces of Catamarca and Santiago del Estero in the Argentinean northwestern region. The individuals analyzed in the present study were recovered from pre-Columbian archaeological sites in the Hualfín valley and the rivers Dulce and Salado basins in the mentioned provinces. The sample consists of 80 adult crania dated between centuries X and XVI AD. Patterns of deformation were examined, including the morphological appearance of the deformed skull and their degrees of modification. Osteological evidence reveals modification of the skull shape in both sexes. Occipital flattening of the crania, also known as *tabular erecta* form of intentional deformation, has a frequency of 89% on this skeletal sample, and it seems it was predominant in the plains and valleys of northwestern Argentina before the contact with Europeans. These results reveal that skull deformation in these ancient populations was a decisive indicator of social inclusion and ethnicity and was not necessarily related to the social status of the individuals with modified crania.

Key words: cultural modification, head, pre-Columbian Argentina

Dental traits in the Neolithic sample from the site of Outeiro Alto 2 (Brinches, Serpa, Portugal)

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The dental morphology analysis is essential in past population's studies. It evidences genetic and/or familiar bonds allowing inferences about individual and/or groups affinities. This type of studies is quite viable, quick and costs very little. Besides that, the durability and endurance of teeth facing taphonomic and environmental factors allows the deduction of valuable information in very fragmented osteological remains. The main goal of this study is the analysis of dental traits in the Late Neolithic sample exhumed from "*núcleo C*" of the archaeological site of "*Outeiro Alto 2*" (*Brinches, Serpa*). This includes the dental remains recovered from Hypogea 5 and 16. Fourteen dental traits were register according to ASUDAS. Among the most relevant data are the frequencies obtained for upper canines of the mesial accessory ridge (bushman) (left: 42.86%, N=7; right: 27.27%, N=11) and the distal accessory ridge (left: 42.86%, N=7; right: 45.45%, N=11), in Hypogeum 5. For Hypogeum 16 the frequencies are lower for both traits; mesial accessory ridge are lower (bushman) (left: 11.11%, N=9; right: 16.67%, N=6) and distal accessory ridge (left: 22.22%, N=9; right: 33.33%, N=6). In Hypogeum 5, positive expression (ASU = + 5) of Carabelli cusp in first molar are, respectively, 30% (N=10) and 14.29% (N=7), for Hypogea 5 and 16. These data represent a contribution to the characterization of dental morphological traits of Portuguese Late Neolithic population and are discussed considering available data of other Portuguese coeval samples.

Key words: Late Neolithic, Outeiro Alto 2, morphological dental traits, accessory ridge in canines, carabelli trait

Trauma evidences in adult individuals from 1st-3rd centuries AD from Roman Ossonoba

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The necropolis of *Ossonoba*, located in the center of the current city of Faro (Algarve, Portugal), has been excavated by ARKHAIOS in 2004. The artifacts found indicate its use between the 1st and 3rd centuries AD. Of the 82 exhumed skeletons, so far 34 (41.5%) adult individuals were analyzed, 19 males (56%) and 14 females (41%). The aim of this work is to show the evidence of trauma found in this sample. The analysis performed showed 13 cases of possible trauma distributed by 9 individuals, 6 males (67% - N=6/9) and 3 females (33% - N= 3/9). In females were found one lesion in the frontal bone and evidence of Colles' fracture in the left radius (burial 76), one fracture in the left clavicle (burial 18) and a possible dislocation in one right foot phalange (burial 33). In males, we observed three individuals with evidences of two fractures each: burial 34 with a possible trauma in the right ulna and left tibia, burial 67 with evidence of Colles' fracture in right ulna and radius and burial 68 with a possible trauma in the right clavicle and another in the 9th right rib. Also, evidence of trauma were recorded in a left clavicle (burial 13), in the right scapula (burial 24) and one possible case in the humerus, that led to the formation of a new joint with the radius (burial 75). Trauma is one of the most prevalent conditions encountered in human archaeological remains. In this sample, a high number of individuals with evidence of trauma has been observed (26% of the individuals). However, this value is greatly influenced by the state of preservation of the skeletal remains. The reasons that can lead to the emergence of this condition are extensive, and include accidental and intentional violence.

Key words: Paleopathology, traumatic pathology, 1st to 3rd centuries AD, Algarve

Degenerative injuries in the upper left limb in an individual from Hipogeu 3 in Vale de Barrancas, Berinjel, Beja

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In 2012, in the scope of Subconcessão da Auto-Estrada do Baixo Alentejo, it was excavated in Berinjel (Beja) a set of archaeological sites by the firm ERA Arqueologia. Between the collective burials excavated, the Vale de Barrancas 1 site includes 7 hipogea containing human osteological remains. Among the material recovered from Hipogeu 3 (provisional NMI of 6 individuals), it was registered severe degenerative alterations in three bones from the upper left limb, in the elbow articulation. Although the pieces were not found articulated between them, the similarity of the injuries suggests they belong to the same individual. In this paper it will be described such alterations, particularly relevant if we consider that these injuries are rarely reported in coeval studies and that they would've had important implications in this individual's daily activities. This case also allows us to add more data concerning the quotidian of these pre-historic individuals, who lived and died in this south-eastern region of Alentejo.

Key words: osteoartrosis, Vale de Barrancas 1, degenerative pathology, hipogea, final Neolithic

Mortuary practices at the Perdigões Enclosure: inhumations and cremations in pits

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Perdigões is a large set of ditched enclosures located in Alentejo, South of Portugal, and dates from Late Neolithic/Chalcolithic periods. This enclosure presents a remarkable variety of funerary contexts: primary depositions in pits, secondary depositions in tholoi type monuments and ditches and depositions of cremated remains in a pit and in open area. In this work we present the results of the paleoanthropological study of human remains recovered from different pits, containing inhumations or cremations. In pits 7 and 11 were found primary inhumations of, respectively one adult and three non-adults. Pit 16 contained a secondary deposition of cremated remains representing a minimum number of 6 adults and 3 non-adults. Despite the high degree of fragmentation of the human bones recovered from these funerary contexts some anthropological data (estimation of minimum number of individuals, demographic data and evidence of diseases) were obtained. These were complemented by ancient DNA analysis. The results will be interpreted taking into account the different funerary solutions observed.

Key words: Late Neolithic/Chalcolithic, funerary practices, inhumations, cremations

A possible case of *Concha bullosa* in a female adult cranium recovered from the 'jail cleaning yard' of Évora Inquisition (Portugal)

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Concha bullosa is usually characterized as the hypertrophy of the middle nasal conchae, the inferior projections of the ethmoid bone. Few cases are reported in the paleopathological literature and its etiology is still little known, but trauma during nasal cartilage growth and genetics are identified as the main causes, which should be understood more as an anatomical variation than the result of a disease. This work aims to present a case identified in a cranium coming from commingled remains recovered in the 'jail cleaning yard' of the Évora Inquisition. This is the only case identified amongst the remains of 3 males and 9 female adult skeletons, within a minimum number of 16 individuals in commingled bones. The macroscopic observation of the complete cranium of an adult female led to the record of a pneumatization of the right nasal middle concha. This projection has an anterior-posterior maximum width of ca. 20mm and medial-lateral of ca. 10mm. The surface presents cortical bone spiculae and the nasal septum shows a marked shift to the left, which may cause the change of air flow in the nasal cavity and can generate inflammatory changes, nosebleeds or obstruction, eventually resulting in infection of paranasal conchae. The association between *Concha bullosa* and sinusitis is still in debate. The diferential diagnosis, that will benefit from the use of CT scan, includes fibrous dysplasia and tumor. The discussion of this case intended to contribute to the knowledge of this rarely reported condition and alert to the need of its research in Portuguese skeletal populations.

Key words: dump, prisoners, discarded, septal deviation

The unburied individuals at the Évora Inquisition (Portugal): complementary between skeletons and documental interpretations

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An area of 20.75 m^2 from the so-called '*Jail cleaning yard*' of the religious court of the Évora Inquisition was excavated by Crivarque, Lda in 2007/2008. The archaeological context consisted of layers of sediment containing discharges of domestic waste. The present work aims to present and interpret the funerary anthropology associated with the human remains recovered. The sample under analysis consists of 12 adult individuals in articulation (3 male, 9 female) and a minimum of 16 adults in a context of commingled bones. Funerary structures were absent and no grave goods were found. Four individuals were in *decubitus supinus* (oriented E-W, S-N, SW-NE, NE-SW), four in *lateral decubitus*, 3 on the right side and 1 on the left (2 SW-NE and E-W, W-E, one each), three in *ventral decubitus* (2 SW-NE, 1 W-E) and in one skeleton the position wasn't registered in the field records. The position of the limbs is also quite variable, the upper usually on the chest/pelvis or folded on the body's opposite direction and the lower distended, flexed or crossed. The apparent absence of burial rituals is consistent with individuals not reconciled with the Catholic faith, according to the Inquisition historical processes. Furthermore, these documental sources allowed the identification of 87 prisoners who died during the period in which the dump has been in use, 11 (12,6%) of which confirmed discarded and charged of Judaism, heresy and/or apostasy. The specific context of this sample can help find possible explanations for Medieval/Modern burials outside the Christian standards, usually known as "atypical" or "deviant burials".

Key words: dump, prisoners, Judaism, discarded, atypical burials

The early practice of Physical Anthropology by the Renaissance Portuguese physician Amatus Lusitanus (1511-1568)

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The birth of physical anthropology is often attributed to Johann Friedrich Blumenbach (1752-1840), a German professor of medicine, naturalist and collector of human skulls. The works of his predecessors, such as Carolus Linnaeus (1707-1778), Georges-Louis Leclerc or Comte de Buffon (1707-1788) and Petrus Camper (1722-1789), reveal that the interest on human biological variation grew with the scientific revolution taking place over the Enlightenment. However, remarkable progresses occurred before, namely during the Renaissance, when human anatomy became subject of artistic and scientific interest, as witnessed by the iconographic representations of Leonardo da Vinci or the anatomical treatises of Andreas Vesalius. The old Galenic and Hippocratic paradigms regarding the human body gradually shifted during this period and the practice of human dissections opened the door to the scientific study of human tissues and organs, including bones and teeth. Thus, the Renaissance medical texts represent an interesting and underexplored source for the history of biological anthropology. This work aims to describe one of the earliest evidences of the practice of physical anthropology performed by Amatus Lusitanus (1511-1568), pseudonymous of João Rodrigues, born in Castelo Branco, Portugal. Between 1551 and 1561, this physician published 7 volumes entitled *Curationum medicinalium centuriae*, each containing 100 cures (*curas*) reporting unusual medical cases treated in several European countries. The last cure from the 4th *centuriae* describes his attempt to understand handedness by measuring the weight differences between left and right humeri. This evidence shows that Amatus Lusitanus may be considered one of the precursors of Portuguese physical anthropology.

Key words: History of Biological Anthropology, bone weight, handedness

Hypogea 1 and 2 from Sítio Monte Malheiro 2

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During the archaeological works at the Selmes's irrigation block (Vidigueira, Beja - Portugal) two hypogea were discovered in Sítio Monte Malheiro 2. Approximately 5m away from each other, both presented human osteological remains dated from the Final Neolithic. At the Hypogeum 1, three individuals in anatomical connection and three completely disarticulated were found, giving a total of six individuals adults and non adults. At the Hypogeum 2 it was possible to retrieve one skeleton in anatomical connection, and a set of disarticulated bones corresponding to a Minimum Number of Individuals of three individuals, making a total of four individuals adults and non adults. The human skeletal remains recovered from both hypogea presented a high level of fragmentation limiting their anthropological study. This work aims to present the results obtained from the funerary anthropological study and the paleobiological analysis of the human skeletal remains, in order to contribute to the characterization of the human communities that have inhabited this region of Portugal 5,000 years ago.

Key words: hypogeum, Late Neolithic/Chalcholithic, human skeletal remains, Monte Malheiro 2

Damaged goods: the case-study of an individual from the archaeological collection of slaves from Lagos (Algarve, Portugal)

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The main focus of this poster is to show the pathological traits of the individual number 72 from the osteoarchaeological collection *Valle da Gafaria*. The present collection was acquired through a salvation excavation in Lagos. The skeletons were retrieved from a dumpster with 5000m^2, and its utility spam was of two hundred years (15th-17th centuries). In the midst of urban garbage were found 158 skeletons of African ancestry. Based on several historical sources, it is thought that the African skeletons that constitute this collection belonged to slaves that perished shortly after they ported. The individual number 72, an adult male, was found in ventral decubitus with his upper limbs behind his back, and it has a fairly good osteological representativity, which translates in a good mapping of its pathological lesions. Through the use of the map of the lesions and macroscopic analysis a differential diagnostic will be proposed. At *priori* it is known that the individual has eburnation, marginal lipping and porosity in the diarthrodial joints of the spine and other regions of the body as such it could be osteoarthritis, but he also displays eburnation, porosity and osteophyte growth in the amphiarthrodial joints of the vertebral bodies, which could be an indicator of its severity. However, the infectious process on thoracic vertebrae does not fully support such diagnosis. So, other joint pathologies raging from degenerative to immune will be considered in the differential diagnosis.

Key words: eburnation, osteophytic growth, erosion, infectious processes

Multiple pathologies in a male individual exhumed of the Churchyard of Old Church of S. Pedro da Sobreira (Paredes), 13th-19th century

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The churchyard of the Old Church of S. Pedro da Sobreira (Paredes) worked as a cemetery between the 13th century and the end of the 19th century. During the archaeological excavations carried out in 2007 and 2008, 80 graves were excavated, of which 34 contained human bones, corresponding to a minimum number of 90 individuals (83 adults and 7 subadults). Among the exhumed sample, the individual 1 of the grave 71 (mature adult male) stands out. This skeleton presents the left talus and calcaneus fused. In these bones is also visible new lamellar bone formation. The left navicular, the right talus, calcaneus and navicular exhibit microporosity. Also, the shafts of the metatarsals display slightly deposition of lamellar bone. Possible diagnoses of this fusion are discussed. These include congenital and traumatic origin. Other pathological findings detected in this individual include signs of infection and degenerative pathology. On the visceral surface of the vertebral end of four right ribs deposition of a thin layer of woven bone was observed. Their articular facets exhibit osteolytic changes, accompanied by formation of new compact bone and marginal lipping. The articular facets of the vertebrae also exhibit these changes in more developed stage and body's destruction is severe (marked in the cervical ones). Moreover, the 6th and 7th cervical vertebrae are fused. Furthermore, the lipping is also more exuberant in the vertebral bodies.The distal end of the right femur and the corresponding patella shows notorious lipping and eburnation. The natures of these lesions are discussed in the historical-medical context of the Municipality of Paredes.

Key words: infection pathology, degenerative pathology, congenital fusion, traumatic fusion, Medieval/Modern

Hypercementosis in the West Prehispanic, México

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Individuals of seven pre-Hispanic Colima osteological collections show dental hypercementosis in two or more teeth. Out of 64 skeletons studied, 37.5% (24) show hypercementosis at various degrees, including severe cases. The method employed to assessed it was morphological aspect: thickening apical and area covered, besides radiological anaylsis. The presence of this condition has been associated with dental trauma, tooth wear, occlusal stress, periodontal disease and systemic diseases, including Paget´s. The objective of this study was to establish the tooth pattern, the frequency, type and degree of anomaly, its relationship with the oral pathology in question or Paget disease, detectable through paleopathological analysis of the skeletal remains and radiological study. For the purpose of this study, it was necessary to sex and age the sample, stablish the type and degree of injury and identify possible factors that caused its presence in the ancient habitants of Colima. The results indicate that this alteration is associated with periodontal, calculus disease and possible periodical anaemia. In the analyzed sample, hypercementosis is not associated with trauma or tooth wear as it been reported in previous studies for other populations.

Key words: hypercementosis, periodontal disease, anemia, Colima

Early illness: a possible case of meningitis in a Modern child from the foundling wheel of *Santa Casa da Misericórdia* (Faro, Portugal)

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The aim of the present study is to make the differential diagnosis of an uncommon pathological case, from an archaeological intervention in Santa Casa da Misericórdia (Faro, Portugal). The excavation, in 2006, brought to light the Santa Casa's cemetery (16th-19th centuries) with three phases of funerary use – three adult burials with catholic orientation; an ossuary with a wide demographic constitution; and 51 non-adult inhumations (aged from foetus to one adolescent, most being less than 12 months), corresponding to abandoned new-borns received in the institution by foundling wheel's mechanism means. These immature individuals are being studied as part of a Master thesis, in which the case here reported was identified. One well preserved 2 year-old skeleton (age-at-death estimated by dental calcification) presents unusual lithic intracranial marks in the parietal and occipital bones. All bones were examined under standardized lighting conditions by careful visual inspection, with the aid of a stereomicroscope. The differential diagnosis of the lesions gave rise to several possible pathological conditions, namely anaemia, scurvy, rickets, battered baby syndrome, and bacterial and tuberculous meningitis. However, after comparing the present case with the descriptions and images of different types of cranial lesions, those seem to match the ones of bacterial meningitis. The postcranial evidences (porosity and woven bone presence at the scapula and long bones) match this diagnosis. Considering the circumstances where the wheel's children lived, orphanages with poor nutritional and hygienic conditions, pathogens' exposure was highly likely to occur. This historical fact could explain a meningitis case.

Key words: meningitis, non-adult, growth, Paleopathology

Dolmens of Rego da Murta (Portugal): Burial practices and paleoanthropological analysis

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The village of Alvaiázere is integrated in the Portuguese region of Alto Ribatejo. It is a focal point of many cultural groups who arrived by inland or coastal, covering the courses of rivers, interacting with the landscape, and transforming this region in the key-element to the perception of the emergence of new technologies and thoughts, which occurred in the Neolithic, namely the megaliths phenomena.The megalithic complex of Rego da Murta is composed of a set of stone monuments which fits in the chronology of the Late Neolithic to early Bronze Age (V-II millennium BC), within an area of about 1 km^2, on the right bank of the stream of Rego da Murta. Of the many megalithic monuments, two dolmens stand out, the Dolmen I and Dolmen II of Rego da Murta. The human skeletal remains exhumed and already study until this date, revealed a minimum of about 20 individuals (9 non-adults and 11 adults, 2 of whom are males and 3 are females) for Dolmen I. The Dolmen II presents about 61 individuals (29 non-adults and 32 adults, 7 males and 5 females).This poster summarizes the data of the paleoanthropological study and the burial practices.

Key words: mortuary practices, anthropological data, Late Neolithic, dolmens, Rego da Murta

Past granite: anthropological analysis of the Mediaeval/Modern human skeletal remains from Pinhel (Guarda)

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In 2006 an archaeological intervention in Pinhel (Guarda) uncovered four mediaeval/modern necropolises, located at the forecourt of the church of *Santa Maria do Castelo*, *Santiago* Square, *São Martinho* Square and *Silva Gouveia* Street. In the present work, the paleoanthropological analysis of the human remains exhumed from the four necropolises is performed in order to characterize this sample. The analysed sample is composed by 20 adult individuals (7 males, 6 females and 7 individuals of unknown sex), 6 non-adults (three newborn, one 11 year- old child, two 6-9 month-old babies), and an ossuary with at least 7 adult individuals. Despite the high fragmentation and other taphonomic alterations of the bones, particularly in those exhumed from the church of Santa Maria do Castelo, it was possible to obtain important information about this population. The individuals' biological profile was drawn through age-at-death estimation, sexual diagnosis and stature´s estimation, using standard methods (Buikstra and Ubelaker, 1984). Several pathologies have been identified, namely oral, neoplastic, degenerative (both articular and non-articular) and infectious. Non-metric cranial and post-cranial characters were also recorded. Despite of being a relatively small and poorly preserved sample, it was possible to gather important information about the individuals who lived and died in this town during the mediaeval/modern times.

Key words: biological profile, Paleopathology, past populations

Evidence of the use of lime on a 15th-19th century archaeological population from the Convent of Saint Elói, Porto

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The Convent of Saint Elói was located in Porto in an area known as "Cardosas". It belonged to the order of Saint John Evangelist, functioning from 1490 to 1834. Part of its inside was excavated in 2009, prior to its reshuffle in order to accommodate a hotel. During the excavation, a sample of 66 individuals, comprising adults (N=45) and non-adults (N=21), was exhumed from both the Crypt and the Cloister, comprising osteological remains from in situ and ossuary contexts, which was studied for the elaboration of a Masters dissertation. It has been considered common knowledge that the use of lime accelerates the process of decomposition, having its use and therefore relevance in forensic cases as it has been used to accelerate cadaver. Since lime has been used over a long period of time and by several populations, the understanding of its effects on human remains is important, not only for forensic anthropology, but also for better understanding of archaeological contexts. This study presents some examples on which the presence of lime was observed, aiming to establish a connection between its use and the individuals or their burial place, in order to observe the possible relation between the use of lime and the place of burial or with disease. The presence of white powder was observed in all individuals from the Crypt (N=20) and in two individuals buried in the Cloister (graves 3 and 21). Several hypotheses could explain this phenomenon, namely hydrolysis, exposition to the elements, and lime deposition, being the latter considered the most likely. In what concerns spatial distribution, it is not odd that the deposition of lime was observed mainly in the Crypt, as it was part of one of the chapels of the church as it is one of the measures advised for burial inside buildings, to prevent odor and contagion as well as to insure the occurrence of decomposition . Concerning the two individuals in the Cloister, they were both males over 40 years of age, one of them suffering from a possible infectious disease.

Key words: Funerary Anthropology, crypt, cloister, burial

Non-osseous tarsal coalition: evidence from a 15th-19th Portuguese archaeological population from the Convent of Saint Elói

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The Convent of Saint Elói, which belonged to the order of Saint John Evangelist, was the 6th house of the congregation in Portugal and the only one located in Porto, in an area known today as "Palácio das Cardosas", a designation that portrays the memory of the bourgeois palace built after the Convent was shut down and sold. In 2009, the excavation work done prior to the demolishing and construction on the site exposed part of the Church and Cloister and uncovered some of the burials. A sample of 66 individuals, which was comprised by a majority of adults (N=45) of which most were over 50 years of age at the time of death, exhumed from the Crypt and Cloister, from *in situ* and ossuary contexts, was studied for the masters dissertation of the first author. As the third metatarsal and third cuneiform coalition has been rarely reported in studies concerning archaeological populations, we have decided to present some evidences of this congenital defect in our sample, hoping to contribute to the further understanding of this morphological feature.

This congenital defect t is usually bilateral and is characterized by a circular or oval shape in the proximal surface of the third metatarsal and on the distal surface of the third cuneiform, on which it is usually circumscribed to a third of the plantar surface, with some extent of variability in its morphology and size. In this sample, 5 cases of non-osseous coalition of the third metatarsal and third cuneiform were observed, all from ossuary contexts, of which 4 (4/41) were observed in the third metatarsal and 1 (1/22) in the third cuneiform, corresponding to a NMI of 3 individuals from the Cloister's graves 2,3 and 13. The proposed differential diagnose has taken into account biomechanical changes, arthritis, infection, trauma and non-osseous tarsal coalition. Unfortunately the absence of the Convent records has not allowed to establish the connection between the burials and family relations, only DNA testing could further clarify this matter.

Key words: third cuneiform, third metatarsal, ossuary, cloister

High infant mortality *versus* low number of diseases in paleopathological literature: the cases from S. Bartolomeu necropolis (Aljustrel, Portugal)

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In 1981/2, an archaeological emergency excavation was developed at the S. Bartolomeu necropolis, related to the pyrite mining site of Aljustrel (Beja, Portugal). The remains identified covered a wide chronological spectrum, from the Middle Ages to Modernity. This area is also known as *Vipasca*, the Roman designation of this cooper extraction center. The current research aims to study 23 fetuses/newborns among a MNI (minimum number of individuals) of 35 non-adult individuals (23/35=65.7%), questioning the living conditions of this population, in particularly of the women during pregnancy. New bone formation was identified in one skeleton as well as in commingled bones belonging to a minimal number of 7 individuals aged less than 1 year at the moment of death. Besides, a range of porous abnormalities affecting the bones of the skull (sphenoid, *pars basilaris, pars lateralis, pars petrosa*, mandible and maxilla), *scapulae*, *ilia* and long bones diaphysis was also found. Conditions like rickets, anemia and infections were considered in the differential diagnosis, but the characteristics and distribution patterns of these lesions suggest a metabolic aetiology, most probably scurvy. However, both paleopathological and clinical literature highlight the rarity of such conditions during breastfeeding even from severely malnourished mothers. Thus, this research also discusses the difficulty of paleopathology in interpreting the mortality of infants based on a few number of diseases known to leave bone changes particularly in the first months of life.

Key words: fetuses and newborns, metabolic diseases, Medieval and Modern periods, Aljustrel mines

The megalithic monument of Cabeço dos Moinhos (Brenha, Figueira da Foz, Portugal): anthropological data

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Cabeço dos Moinhos is a megalithic tomb built on a limestone outcrop located in a little hill placed on the ridgeline of Boa Viagem Mountain. Excavated by Santos Rocha in the end of the 19th century, this funerary monument reveals human bones, pottery, lithics and bone object dated to the Neolithic period. However it was reused during the third, second, and probably the first millennium BC. The focus of the present work is the study of the human remains nowadays housed in the Museu Municipal Santos Rocha (Figueira da Foz). The bone assemblage (1213 fragments), representing a minimum number of 10 individuals (8 adults and 2 non-adults) is composed by fragments of all parts of the skeleton, some of them displaying chromatic alterations due to the exposition of fire. The dominant colour change is black, indicating that these human remains were submitted to low temperatures (300ºC – 500ºC). Besides the descriptions of the alterations due to the exposition to fire, the obtained anthropological data are presented, as evidence of disease. All these evidences are discussed as a contribution of the understanding of burial practices in Western Central Portugal during the Prehistory.

Key words: Neolithic, human bones, burned bones, funerary practices

Scaphoid nonunion from the Medieval site Kladruby

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At the medieval burial site Kladruby, scaphoid nonunion was identified in two graves: No. 4019 (male in the age 40-50 years) and No. 4025 (admixture to the main finding undefined sex and age). Comparison with a model created by Hidaki and Nakamura (1998) using three-dimensional computed tomography allowed, on the basis of a clinical set consisting of three skiascopically checked patients (5 months, 3,7 years, 19 years after injury), to set up the chronological succession of the development of degenerative changes in not united scaphoid bone fractures. Between the 4th-7th year, onset of the development of generative changes on the distal scaphoid fragment takes place. From the 7th to 10th year pointing of the radial styloid occurs, and cysts may be visible on x-ray films. As a rule, enlargement of the distal fragment osteophyte occurs after 10th year. Using this classification it will be possible to determine the time of injury prior to death if the distal fragment of the scaphoid, and the radial bone are preserved at least (maybe also the contralateral- for comparison). In the 40 to 50 years old man from the grave No. 4019 this was 7-10 years prior to death, in the person from the grave No. 4025 the estimate amounts to 4-7 years prior to death. Progressive osteoarthritis inevitably develops in all cases with untreated scaphoid non-union fractures.

 Key words: bone fracture, development degenerative changes, Medieval population

Funerary anthropology of the Early Medieval cemetery of Torre Velha
(Castro de Avelãs, Bragança)

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This poster presents the results of the excavations campaign conducted at the early medieval cemetery of the archaeological site of Torre Velha (Castro de Avelãs, Bragança), during the summer of 2012. The analysis will be done in an integrated way, linking the (new) archaeological data (chronology and associated archaeological materials) and funerary anthropology, along with a brief historical overview of the site - one of the most referred in the archaeological literature of Trás-os-Montes, commonly identified as the capital of Zoelas in Roman times. The first phase of the work field revealed a Roman living area (whose materials point to a timeline that goes from the first century until the V / VI A.D.) and an early medieval cemetery, whose burials radiocarbon dating allowed to get a chronology between VI and XII centuries. Were exhumed 19 individuals from 18 graves excavated. The graves can be grouped into five distinct types, which will be described in the poster. Individuals were buried in supine position, with the head to west and the feet to the east (except the grave of the individual 14 (a child) that is oriented NW-SE) and with no archaeological materials associated, denouncing Christian despoliation of this time. Some of the graves have associated ossuaries, demonstrating the reutilization of the funerary space through times.

Keywords: Castro de Avelãs, Bragança, Early Middle Age, Funerary Anthropology

Case studies in Forensic Anthropology

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Forensic anthropology is an applied subdiscipline of biological anthropology that relates to medicolegal death investigations. It is considered its own discipline by many practitioners and researchers as it has evolved from the examination of isolated or individual cases to having a strong research schema. It is extremely important for a forensic anthropologist to have expert knowledge in many aspects of skeletal biology and human biological variation in order to be able to correctly asses, assist the medical examiner in making identifications, trauma reconstructions and other scientific recommendations or determinations that will ultimately have a legal consequence. In addition, many forensic anthropologists testify on their findings in court and it is imperative that the forensic anthropologist does not overstep their bounds or overstate their findings as they would have a detrimental effect on the case outcome. Cases that exemplify the breadth of work performed in the Forensic Analysis Laboratory at NC State University will be presented. An important aspect of forensic casework is that new research is often driven by questions that arise from this casework.

Temporal variation of Calliphoridae (Diptera) in urban and rural areas in Algarve, Portugal

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The determination of the PMI based in entomological studies has great advantages, compared to other methods, giving accurate results even when the corpse is in advanced decomposition stages. The type of species that occur in the corpse is influenced by geographical location, season or the type of habitat. Thus, the determination of the PMI or the place where death occurred, can only be resolved if the necrophagous fauna of the geographical region in question is known, as well as the seasonal variations and distribution of the different species. In order to investigate the specific composition and seasonal changes of the Calliphoridae species for distinct environments (rural and urban), one experiment was carried out during one year using bottle traps (Hwang & Turner, 2005). Algarve was the chosen region for this study, since no study was ever conducted here. 6,129 adult Diptera were collected, of which 4,256 belong to Calliphoridae family. Five species were identified: *Calliphora vicina*, *Calliphora vomitoria*, *Lucilia ampullacea, Lucilia caesar and Lucilia sericata*. *C. vicina* and *C. vomitoria* were associated with autumn and winter, while *L. sericata*, *L. caesar* and *L. ampullacea* were associated with spring and summer. Regarding the distribution, *C. vomitoria, L. caesar* and *L. ampullacea* were present in the rural environment, while *L. sericata* was found in the urban area. *C. vicina* demonstrated a ubiquitous distribution, maintaining activity in both types of environments studied. Results are compared with data from other studies in the Iberian Peninsula and species are classified according to their potential utility as forensic indicators of time and place of death.

Key words: Forensic Entomology, species, seasonality, distribution, PMI

An histological approach to age estimation in Forensic Anthropology: a preliminary study

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Bone histology has proved to be a relevant tool for age estimation in forensic contexts. Different bones and histological components can be used, and differences regarding the preparation of thin sections are observed, as well. The main goal of this research is to demonstrate the potential of the relative cortical bone area (RelCt.Ar) in age estimation of adults, using a microscopic free method. For this purpose, 18 identified samples (10 males and 8 females) were collected from the clavicles' midshaft in a Portuguese forensic context. The preparation of thin sections was made, after the maceration of the soft tissue, following the instructions of Maat and collaborators (2001). Cortical bone area was accessed using a regular digital scan, and all measurements were performed in Photoshop CS5. Results were highly conditioned by the sample size. For this reason, the study has a preliminary character. However, it was possible to observe that younger individuals presented higher values of RelCt.Ar relatively to older ones. Sex might also have influence on this histological feature, as the preliminary results indicate. The current study demonstrates that it is possible to use a histomorphometric approach for age estimation, without using complex and expensive equipment, only by means of a regular scan and simple methodology in the preparation of thin sections. Alterations in the RelCt.Ar might be correlated with age, as preliminary data suggest. Nevertheless, it is necessary to increase the sample size and to apply suitable statistical tests, in order to ensure that this methodology can easily be used in the current practice of forensic anthropology.

Key words: Forensic Science, histomorphology, adults, age at death, clavicle

An analysis of the utility of maxillary shape in determining the ancestral affiliation of fetal and neonatal individuals using a 3D geometric morphometric approach

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The mid-face is a critical region of the skull for assessing ancestry or populational affiliation, both in *H. sapiens* and across genus *Homo*. While adult morphologies are well documented, the ontogenetic trajectories that lead to these adult patterns are not fully understood. Many mid-facial traits which vary in frequency between populations are presumed to develop prenatally. While limited qualitative analysis has been done to test this hypothesis, only one study has taken a 3D geometric morphometric approach to studying prenatal maxillary ontogeny, and that study was limited to one population (Japanese). This research project seeks to augment our understanding of fetal maxillary growth patterns, most especially in terms of intraspecific variation within extant *H. sapiens*. We tested the hypothesis that fetal maxillary dimensions can accurately predict ancestry (in a sample of Euro-American, African-American, and "Mixed Ancestry" individuals from osteological collections). An Immersion Corp. Microscribe was used to collect 3D coordinate landmark data on the right maxillae of fetal and neonatal individuals (n=102). The data were analyzed using the programs Morphologika and MorphoJ. Generalized Procrustes analysis (GPA) revealed that shape differences were seen mainly in the lateral wall of the piriform aperture, the anterior nasal spine, and the anterior alveolar region. When a canonical variates analysis (CVA) was run, specimens did not cluster distinctly by age, but the Euro-Americans and African-Americans did cluster by population with only modest overlap. A discriminant function analysis (DFA) showed statistically significant differences in the average maxillary shapes when comparing Euro-Americans and African-Americans, and between Euro-Americans and individuals of "Mixed Ancestry". The DFA was also fairly successful at assigning individuals to the correct ancestry categories; for example, in a comparison of African-Americans and Euro-Americans, 88% of Euro -Americans were correctly classified and 80% of African-Americans were correctly classified (the comparisons of Euro-Americans and African-Americans with "Mixed Ancestry" produced even higher accuracy in classifying individuals). These results suggest that populational variation in maxillary morphology develops very early. Maxillary dimensions may therefore be useful in determining ancestry of unidentified fetal and neonatal remains.

Key words: mid-face, ontogeny, populational variation, ancestry

Age estimation of non-adult human skeletal remains: testing regression formulas from measurements of the long bones

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Age at death estimation is of paramount importance in the identification of human skeletal remains in a forensic context. Age in non-adults can be estimated from the length of the long bones and few regression methods have been proposed. However, their accuracy has not been systematically tested. This study intends to test the accuracy of several regression formulas for age estimation in non-adult skeletons from measurements of long bones. The sample is comprised of 184 individuals of known sex with ages ranging from 0 to 12 years. Data were collected from three documented human skeletal collections (Lisbon, Spitalfields and St.Bride's). The maximum diaphyseal length of six long bones (humerus, radius, ulna, femur, tibia and fibula) was measured. Age was estimated as proposed by Rissech *et al.*, (2008, 2011, 2012) and Facchini and Veschi (2004), then it was compared to known chronological age and the mean difference (MD) was calculated. Results were broken down by age group (total sample, <2 years and ≥2 years) and by sex. When applying the formulae proposed by Facchini and Veschi's formulae, the MD is 0.02 years (total sample), 0.04 years (<2years) and 0.01 years (≥2 years) when the sexes are combined. When applying the formulae proposed by Rissech *et al.*, the MD is -0.55 years (total sample), -0.84 years (<2years) and 0.29 years (≥2years) when the sexes are combined. Sex differences in accuracy are negligible. The formulae that gives the best results is that of Facchini and Veschi (2004). Considering that the sample is comprised of children who were born and died over 50 years ago and that there has been a very pronounced secular increase in body size in Portuguese children since the 1970s, the regression formulae tested here are unlikely to be useful in a modern Portuguese medico-legal context. Consequently, these formulae will not reflect the current growth status of children in most developed nations.

Key words: growth, length, diaphysis

Buried corpses decay: a process with many question marks

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Understanding the variability of the cadaveric decomposition process is critical in forensic cases, being the basis for post mortem interval (PMI) estimation, and relevant in funeral management. With this presentation we contribute to the understanding of the patterns of bone degradation and decomposition of buried corpses; appreciate their relationship with PMI; evaluate the influence of taphonomic factors in the course of the decomposition process, and how these influence the estimation of PMI. Through the principles of Taphonomy, we analysed the processes of decomposition and skeletonization; skeletal preservation; the effect of environmental, individual, and anthropogenic variables on these processes; and the possible relationship with PMI, in 199 cases from public cemeteries. The study revealed a large variability in the course of the decomposition process. The formation of adipocere was often observed, being its evolution highly variable. The decomposition and subsequent skeletonization showed dependence with PMI. However, since this relation is quite variable, it is not possible to predict the PMI based on the state of decomposition. The sample reflects the mortality of adult Portuguese population, making age a variable with bias, which complicated the analysis of bone preservation as a function of age and sex. The type and characteristics of the burials in two cemeteries are propitious to adipocere formation. Still, the results do not explain clearly the role of clothing and burial characteristics in the course of the decomposition process. These results are useful for the management of Portuguese cemeteries, and for routine cases of forensic anthropology.

Key words: cadaveric decomposition, skeletonization, bone degradation, post mortem interval (PMI), Taphonomy

Is there a fase 7 in pubic symphysis? A test using a Portuguese male forensic sample

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The estimation of age at death is, even today, one of the most problematic issues in forensic anthropology casework, despite all the recent advances. When an older unknown victim is involved, the use of morphological methods in age estimation seems even more problematic. Despite of some studies arguing the difficulty of accessing age after 40 years old, Hartnett (2010) points out the existence of a fase 7 when estimating age at death using the pubic symphysis. 61 male pubic symphysis collected during forensic autopsies were used to evaluate the existence of a fase 7 in the Portuguese population. They were first categorized according to Hartnett's descriptions and then they were grouped according to similarities of their morphological characteristics, in order to create useful descriptions to distinguish between a fase 6 and a fase 7. The areas described were: general aspect of pubic symphysis, ventral face, dorsal face, symphyseal face, symphyseal rim, the attachment of the gracilis muscles, the attachments of the adductor muscles, the pubic crest and the pubic tubercle. This study shows that a fase 7 may be easily recognizable in the Portuguese male population. Both mean age at death and age intervals are very similar between Portuguese and American samples and there are only minor differences in the morphological changes of the pubic symphysis between both samples. This preliminary analysis shows that the Hartnett's method is suitable in the forensic estimation of age, despite of some minor differences, which can be overcome through knowledge of the interpopulational differences.

Key words: Forensic Anthropology, age at death, Hartnett's method

Sexual diagnose of the first cervical vertebra: morphometric analysis

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The sex diagnosis is one of the four parameters of the biological profile. This consists in the estimation of sex dimorphism and robustness present in the human skeleton manifested after puberty. This study involves the development of a statistical methodology from the macroscopic and metric evaluation of the dimorphic robustness of the first cervical vertebra; with the intention of define their gender as a probability. The investigation had cooperation from the Department of Life Sciences (FCTUC), with the provision of two identified skeletal collections, the Skeletons Identified Collection from the Conchada Cemetery, 20st century (Training Collection) and the skeletons Identified collection from the Cemetery of Santarém dating from mid-21st century (Test Collection). We measured a total of 188 vertebrae in the collection of training, 99 male and 89 female, and 54 vertebrae in the test collection (29 male and 25 female). The first cervical vertebra proved to be a dimorphic bone with acceptable grading standards, with probabilities of 89,4% for males and 88,7% for females. These values were obtained through the development of a logistic regression function. Four main variables were considered the most dimorphic ones and with better precision values (DTM, DmFTA, LMFSD and DFSM).

Key words: Atlas, vertebrae, sex determination, sexual dimorphism, Forensic Anthropology

A quite unusual case of a cremated body from a house fire

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We here present a first approach to a quite atypical case of a cremated body found in the context of a house fire. A woman was caught by a fire in her kitchen and died in the consequence of it. Her body was destroyed in a very asymmetry way. While the trunk was completely reduced to bone fragments, the lower limbs were preserved with both soft tissues and skin, which displayed severe burns. The skull was not skeletonized and maintained some hair. We here discuss some hypotheses to explain the progress of the fire, namely to understand why the fire stop on the upper part of the lower limbs while both ribs and vertebrae were reduced to fragments, highlighting the contribution of forensic anthropology to this atypical case.

Key words: Cremains, Forensic Anthropology

Genetic diversity of Linear Pottery Culture (LBK) in the light of ancient DNA analysis of LBK individuals from Poland

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A lot has been written about Linear Pottery Culture (LBK) genetics, and its population currently has one of the largest paleogenetic datasets available. That is why it was chosen for the first research project conducted by our team in newly open ancient DNA Laboratory in Poznań. We decided to analyze and compare the genetic diversity between and within LBK populations after complementing available ancient DNA (aDNA) with the data obtained by us for LBK individuals found in Poland. Based on available literature, eleven LBK individuals were chosen and localized (in different museums around Poland), from which eight were sampled for aDNA. Mitochondrial HVS I and chosen coding region markers were than amplified, cloned and sequenced. After rejecting samples that carried obvious contamination, a small dataset was obtained and used for downstream statistic analyses. The acquired mitochondrial DNA (mtDNA) haplotypes were added to previously LBK data obtained by different researchers. Than the whole dataset were divided into sub-populations representing archaeologically recognized settlement zones (Eastern and Central) and compared via population statistics. The results, while being so far inconclusive themselves, enrich our knowledge about genetics of Early Neolithic populations of Central Europe. They also are helping to once again address the questions about neolithic transition processes in the Europe.

Key words: Archaeogenetics, Biomolecular Archaeology, Neolithic transition, Paleogenetics, Phylogeography

Sex estimation using the second cervical vertebra: a metric analysis in a Portuguese sample

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Biological sex estimation is one of the main questions concerning construction of a biological profile of an unknown deceased person. In cases of corpses in an advanced state of decomposition, skeletonized or severely mutilated, bone analysis may provide the only way to access biological sex. The human skeleton areas with greater sexual dimorphism (pelvis and skull) are often badly preserved and/or fragmented or may not even be present in some cases. For that reason, it is necessary to develop sex estimation methods based on bones taken as less dimorphic. In this study, 13 dimensions of the second cervical vertebra were measured in order to verify the existence of sexual differences. As a training sample, 190 individuals from the Identified Skeletal Collection of the University of Coimbra were used, whereas as a test sample, 47 individuals from the 21st Century Identified Skeletal Collection were analyzed. Logistic regression of the measurements was carried out and an accuracy of 89.7% and 86.7% was attained, respectively in training sample and the test sample. The results of this study indicate that the second cervical vertebra enables sex estimation with a percentage of assertiveness similar to other elements of the skeleton. We recommend that, in order to confirm its reliability in forensic context, this method should be tested in other Portuguese modern and/or forensically relevant samples.

Key words: Forensic Anthropology, second cervical vertebra, sex estimation, sexual dimorphism, logistic regression

Biosocial Anthropology and neglected tropical diseases

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This paper reflects on conflicts that have emerged in the course of doing anthropological research alongside colleagues seeking to control the spread of neglected tropical diseases in sub-Saharan Africa. Drawing upon fieldwork undertaken at numerous locations in Uganda and Tanzania since 2005, the paper analyses responses to our research on three tropical diseases: schistosomiasis, lymphatic filariasis and soil-transmitted helminths. This research suggests that current strategies to distribute drugs free of charge to adults and children living in endemic areas is less effective than that indicated in the biomedical literature and, at several sites, has failed. The process of researching and writing up field research has elicited a range of responses from parasitologists, epidemiologists, vector biologists and public health specialists involved in the implementation and/or monitoring of the control programmes. This has included attempts to restrict access to field sites, to contain the dissemination of findings, to re-do local studies in such a way as to suggest that drug coverage is higher than it is, to hold back information suggesting rates of re-infection are high in the aftermath of treatment, the exertion of moral pressure to set aside information that may threaten funding and livelihoods, and misrepresentation of our research in refereed medical journals in an effort to discredit it. The paper highlights the challenges of developing a biosocial perspective and 'speaking truth to power' in a context where control programmes are primarily funded by international organisations such as the Gates Foundation, USAID, and the UK DfID, and it notes the benefits of doing so as well as the counter-productive consequences.

Fluctuating asymmetry in dental non-metric traits: analysis of sex differences in the Coimbra late 19th/early 20th century population

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The dentition of 600 Portuguese individuals (300 of each sex) was scored for dental and mandibular morphology. This sample is composed of 600 identified specimens from 7 to 97 years at death, mainly from Coimbra. The two sides of the dentition were compared, determining the proportion and type of asymmetry. Fluctuating asymmetry (FA) was the only type expected. Directional asymmetry and antisymmetry were accordingly dismissed. FA is most likely related to developmental stress (DS). Therefore, FA's distribution may indicate differential exposure to DS. The two sexes were compared and differences expected to be small and random, due to exposure to similar environments. When data for all traits are combined, females revealed more asymmetry than males in: overall FA (F: 10.0%, 831/8315; M: 8.6%, 754/8744; z-ratio = 3.083; P = 0.002); FA excluding bilateral absences (F: 47.4%, 798/1683; M: 41.6%, 724/1741; z-ratio = 3.432; P = 0.0006); and FA excluding bilateral absences and traits with $n < 40$ (F: 38.5%, 437/1134; M: 33.6%, 407/1212; z-ratio = 2.499; P = 0.0125). FA related to odontogeny timings suggest early gender role definition plays a part in these differences. Correlation between age at death and FA is discussed, to explore the hypothesis that males died earlier when exposed to greater DS, since this would bias the results, found mainly in adults. Our results suggest turn of the 19th century Portuguese women could be socially and culturally subjected to poorer health and nutrition conditions than men.

Key words: Human Ecology, gender inequality, early contemporary Portugal

Cancer mortality in Portugal: analyzing deaths and associated risk factors within a geographical view

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Portugal has a modern epidemiological profile, where cancer diseases play an increasing importance as causes of mortality and morbidity. However, geographical analyses of deaths due to specific cancers show different mortality patterns; these spatial variations in death, and in health, result from differences in biological, community and societal factors. This study aims to analyse the geographical variations of death by specific cancers in mainland Portugal and its association with social and environmental factors at NUT III level. We observed deaths occurred between 2007 and 2009 caused by 14 types of cancers in 28 sub regions (NUT's III), and identified risk areas for specific cancers. The statistical association between cancers and environmental factors was screened using multivariate statistics. Our results show that cancers are a group of heterogeneous and discriminatory diseases which can be associated to risk factors, the latter varying with the type of cancer. In our multivariate models, we found significant associations between the increased risk of death and socioeconomic, cultural, behaviour and environmental characteristics, assessed by composite indexes of development and deprivation. We observed negative correlations between the developing indicators and all cancers except for both lung and oesophagus. The association between some cancers and risk factors provides, on one hand, aetiological clues that allowed the search for causal hypotheses; on the other hand, this association underlies geographical clusters of regions, allowing the establishment of a spatial typology. This emergent typology can (and should) be used in prevention strategies that seek a reduction in cancer incidence and mortality.

Key words: cancers, geographical variations, risk factors, epidemiological profile

Understanding the changes in suicide rates in Portugal between 1991 and 2011

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Suicide mortality rates at population level can vary quite considerably across time and space. Limited economic resources and residing in areas with high income inequality are some of the social factors that can influence this variation. The main goal of the present study was to analyze the distribution of deaths caused by suicide within Portuguese main sub-regions *NUT's III* and municipalities, and their correlation to social and economic inequalities. Information on deaths and its causes were compiled from computerized database of *Instituto Nacional de Estatística* (*INE*) for the period of 1991-2011, as well as social and economic development indicators. Data were analyzed by gender and age, in ten–year periods. Correlation analysis was performed in order to determine a statistic association between deaths by suicide and socioeconomic factors using the *SPSS 20* software. Throughout 1991–2011, a total of 16497 suicides were registered in mainland Portugal. The Alentejo was the sub-region with the highest number of suicides per 100 000 inhabitants in the country. More than 50% of deaths were caused by men and women aged 65 and more years. About 76% of all suicides were caused by men. Unemployment, illiteracy and low income, as well as living in rural and less populated areas were associated with higher mortality rates. Overall, the association between suicide deaths and some socio-demographic factors provides important clues that can and should be used in prevention strategies that seek a reduction in the mortality caused by intentional auto-inflicted injuries.

Key words: suicide rates, socio-demographic variables, Portugal's municipalities

Breakfast consumption and overweight in Portuguese children

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Lifestyle-related risk factors, such as skipping breakfast, tend to increase overweight risk. Thus, identifying subgroups with greater chance of displaying those behaviors may help in the planning of preventive programs. Assess the association between skipping breakfast and overweight. Cross-sectional study including nationwide representative sample of Portuguese children living in the region of mainland Portugal districts (50.6% girls; n=16,746). Parents answered a questionnaire about family characteristics and children's eating habits. Breakfast consumption was ascertained by the question "Does your child eat breakfast regularly?" (yes/no). Weight and height were measured by standard procedures to calculate body mass index, classified according International Obesity Task Force's cut-off points. Analyses considered three age groups: 3-5, 6-9, and 10-11 years-old. Chi-square test and multivariate logistic regression models were used to estimate the association between weight status and breakfast consumption, controlled by child sex and parent's obesity. Overweight prevalence varied across age groups (23.0%, 31.0%, 28.0%, respectively, p<0.01), as well as skipping breakfast prevalence (2.9%, 3.2%, 5.5%, respectively, p<0.01). There was higher prevalence of overweight among children who usually skipped breakfast, compared to those who regularly had it (3-5 years-old: 30.0 *vs* 22.0%, p=0.03; 6-9 years-old: 42.0 *vs* 30.0%, p<0.01), although this association was not significant for 10-11 years old children (p=0.13). In multivariate logistic regression models, the chance of overweight was higher only for 6-9 years-old children (OR=1.5, 95%CI=1.2, 2.0) that usually skipped breakfast. Thus, among Portuguese schoolchildren from 6-9 years old, skipping breakfast was associated with overweight, independently of child sex and parent's weight status.

Key words: skipping breakfast, weight status, schoolchildren, preschool children

Secular trends in height, weight and BMI among 19-year old Polish men: 6 national surveys from 1965 till 2009/10

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The aim of this analysis was to examine the changes in body height, weight and BMI of nationally representative samples of young adult Polish males between 1965 and 2010, in the context of the socio-economical history of Poland. Data were taken from six national surveys of 19-year-old Polish men (conscripts) from cohorts 1965, 1976, 1986, 1995, 2001 and 2010 (successive birth cohorts: 1946, 1957, 1976, 1982 and 1990/91). The mean body height of conscripts against general population increased throughout the period of 45 years from 175 cm in 1965 to 178.3 cm in 2010. This stature-increasing effect proves continual increase of individual's growth potential, and hence, indirectly, gradual improvement of living conditions of children and youth. However, the average of body height gain per decade declined from 2.4 cm in 1965-1976 to 0.8 cm in 1995-2001 and again increased to 1.0 cm in the last period. The average body weight increased from 63.2 kg in 1965 to 73.1 kg in 2010 and BMI rose from 21.73 to 22.94. The tempo of increase varied in different periods: between 1965 and 1986, an increase of about 0.12 units was observed; in 1986-1995 there was no increase, whereas the period of 2001-2010 witnessed a significant increase (0.76 BMI units). The trend within the whole population, though slowing down, remained continually positive and was a steady process, with temporal breakdowns, set-backs or re-growths. No significant traces of socio-economical crises of the late 60-ties, the turn of the 70-ties and the 80-ties, nor of the transformation shock of the 90-ties were observed. Therefore, we conclude that, irrespective of the depth of those crises in view of the macro-economical statistic, strong and effective mechanism protective for the living conditions of the children and youth have been operating within the population. The most important of them were probably various social transfer and protective role of the family.

Key words: secular changes, physical developments, socio-economical crises

Intensity of aging males' symptoms, life satisfaction and socioeconomic factors in Polish adult men

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Social differences in the successful aging, being an important issue of public health of contemporary aging societies, have not been comprehensively studied. The aim of this study was to evaluate whether age, educational level and marital status significantly differentiated the intensity of andropausal symptoms (AS) and life satisfaction (LS). The participants of this study were 355 men with 35-86 years of age (mean age: 57.8±11.4y), healthy inhabitants of the city of Wroclaw, Poland. The data on AS were obtained using *The Aging Males' Symptoms' Rating Scale*. *The Self-Anchoring Self-Esteem Scale* was used to assess LS. The educational level (1: university, 2: secondary school, 3: primary school or trade school) constituted a marker of social status in Poland. Marital status was defined by two categories: males living with partners (married or concubinage) and single (never married, divorced or widowed). All examined andropausal symptoms increased with age (p<0.001). The results of a variance analysis revealed that age and educational level were two independent determinants of intensity of aging males' symptoms. Well educated Polish men in all age groups declared fewer aging symptoms then their less educated age-matched peers. Marital status had no relation to the aging process among this group. Life satisfaction of Polish men was strongly dependent on the severity of the aging process (r_p=0.36, p≤0.001). The major factor influencing the life satisfaction in Polish men was intensity of aging symptoms. This analysis indicates that age and educational level are a strong determinant of intensity of aging symptoms, which are the main factor influencing the life satisfaction of men.

Key words: aging male, educational level, marital status, life satisfaction

Does television make children unhealthy? Yes

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Screen-viewing time has been associated with higher levels of adult obesity, type 2 diabetes, all-cause mortality, and cardiovascular events. Among children, screen-viewing time is associated with increased risk of obesity, unhealthy dietary behaviors, poor mental well-being, and higher levels of cardiovascular risk factors. Screen-viewing patterns moderately track from childhood to adulthood, so reducing youth screen-viewing time is important for lifetime disease prevention. The aim of this study was to examine associations between television viewing, obesity and cardiovascular risk markers in children. The sample comprises 17509 children aged 2-13 years who participated in the 2009/2010 Portuguese Prevalence Study of Obesity in Childhood. Parents filled out a questionnaire with child television time and other family characteristics. Height, weight, skinfolds and blood pressure were collected by trained fieldworkers. Body Mass Index (height/weight^2) was computed. Watching television for more than 2 hours/day (compared to less than 1 hour/day) was associated with higher age- and sex-specific BMI standard deviation score and sum of skinfolds. TV viewing was positively associated with clustered cardiovascular risk score, Diastolic Blood Pressure (DBP) and Systolic Blood Pressure (SBP) after adjustment for all covariates. Television viewing was consistently associated with adiposity and cardiovascular risk markers. These results require a great attention for public health strategies in promoting a reduction in television time among children.

Key words: child, obesity, television

Nutritional status and body dissatisfaction among the female students of the University of Coimbra, Portugal

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There is a consensus that social factors send powerful messages defining physical attributes undesirable in contemporary society and the enormous cultural value of thinness often takes precedent in relation to health. This cross sectional study aims to understand the prevalence of body dissatisfaction and its association with the body mass index (BMI) in a random representative sample of 252 (17-29 years) female university students of Coimbra. Anthropometric measurements of weight and height following standard procedures were collected in order to calculate BMI (kg/m^2), classified according World Health Organization cut-offs. Figure Rating Scale was applied to assess body dissatisfaction, considering the discrepancy between the silhouette chosen as representative of the own body and the one desired, which was taken as measure of body dissatisfaction. Chi-square test was used to verify if body dissatisfaction (i.e., the desire to have a smaller silhouette) is associated with BMI (considering whether or not overweight). It was found that 94.1% of the students with overweight or obesity and 39% of the normal or underweight participants want to have a smaller body ($p < 0.01$). As expected, body dissatisfaction is associated with the highest body mass index considered, related to the perception of being away from that ideal. However, the expressed desire to be thinner from 39% of the other participants indicates the societal pressure for thinness. Considering the effect of body image on woman's eating habits, influencing food intake, it is plausible to consider body dissatisfaction as an important factor on public health nutrition in the feminine population.

Key words: body image, figure rating scale, body mass index, thin ideal

Overweight and hypertension in Portuguese children

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Children's primary hypertension exhibits strong correlations with various factors among which overweight and obesity assumes a considerable role. High prevalence of overweight/obesity has been observed in Portuguese children. The aim of this study was to examine the association between overweight and obesity with current BP in school children aged three to ten years old and explorer the relation with socioeconomic factors and life style. A cross sectional study was conducted during 2009. Height, weight, waist circumference and BP were measured. A total of 2320 children were measured. Overweight and obesity was defined according Cole et al. (2000) BMI cutoff points. The revised BP values proposed by Task Force on Blood Pressure Control in Children were used to define prehypertension and hypertension. Prehypertension was defined as systolic blood pressure (SBP) and/or diastolic blood pressure (DBP) ≥90th and <95th percentile and hypertension was defined as SBP and/or DBP ≥95th percentile for sex, age and height. Two categories of BP were established, normal (NBP) and prehypertension+hypertension (PHH). The prevalence of PHH was 9.2%. The averages were 93.3±11.4 mmHg for SBP and 57.9±8.4 mmHg for DBP. The frequencies of children´s BP category (NBP and PHH) were significantly different for: children´s BMI (PHH: 8.1% thin/normal, 12.0% overweight+obesity), children´s age (PHH: 14.4% for ≤5y.old, 7.2% for ≥6 y.old), father's educations (PHH: 12.4% for ≤9years, 9.7% for 10-12 years, 5.3% for ≥university), mother's education (PHH: 13.0% for ≤9 years, 10.6% for 10-12 years, 6.0% for ≥university), degree of urbanization of the residence (PHH: 7.2% urban, 14.2% semi-urban, 7.5% rural) and sports activity besides school (PHH: 6.7% with and 11.9% without sport activity). Results suggest that early detection and interventions to promote health and healthy lifestyles should be developed to reduce the PHH and overweight in children and the risk factors for high BP in adult.

Key words: blood pressure, overweight/obesity, childhood

Association between proximity of fast-food restaurants in residential area and childhood obesity in Coimbra

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The environment has been identified as a potential source of influence on eating behaviors and thus, risk of obesity. This study examines the association between proximity of fast-food restaurants (FFR) in residential area (RA) and body mass index (BMI) z-score of children. This cross-sectional study included 847 children (6-10 years; 52.2% girls) and 182 FFR from Coimbra, Portugal. FFR includes all establishments which sell food quickly prepared, highly processed, with low nutritional value, such as snack-bars and franchising chains. Obesity was defined using International Obesity Task Force cut-offs, and BMI z-scores recommended by World Health Organization was calculated. Parents filled a questionnaire, in which it was asked the street where they live. Both, children (using postcode) and FFR (using GPS records) were geo-referenced and introduced in ArcGIS software. This program was used to create Euclidian buffers (250m) around each child's residence for to define RA, and to calculate Euclidian distances (straight-line) between children´s homes and FFR. Simple analysis of variance was used. Obesity in our sample was 29.8% (17.8% girls). Statistically significant association was found between BMI z-scores and the proximity of FFR in the RA for the parish of Sé Nova ($p<0.05$), but this association was not found for the whole city. This work showed that proximity of FFR to the children's residence cannot be thought as a single promoter factor of obesity. So, in order to implement an intervention to prevent childhood obesity, we must take into account the particularly characteristics of each parish.

Key words: BMI z-scores, fast food restaurant, proximity

Suicide and socioeconomic inequalities in Coimbra district between 2000 and 2004

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In Portugal, in the last 20 years, suicide rates showed a significant inter-regional variation. The Center region was, following Alentejo and Algarve, the third area of mainland Portugal with the highest rate of suicide. The present study investigated, across the 17 municipalities of Coimbra district which is one of the major geographic regions located in central Portugal, the suicide rate throughout 2000-2004 and its association with social and economic changes. A total of 197 suicides (158 men and 39 women) were taken from the *Direcção Geral de Saúde* database, and analyzed in 10 - year age groups. Additional information concerning social, economic and demographic variables was obtained from *Instituto Nacional de Estatística* and *Comissão de Coordenação e Desenvolvimento Regional do Centro*. A correlation method (*Pearson's r*) was used to determine the statistical association between suicide rates and several socio-demographic variables, including the proportion of older people in the population, income *per capita*, education level, both health and social security level, employment, and cultural activity. The municipalities with low income and poor socioeconomic development showed the highest suicide rates. Age and gender had different contributions to the overall statistics of suicide across the 17 municipalities, for most of them, the older group (65 and older) had the highest contribution to the suicide rate. Hanging was the most frequent method used. This research suggested that the nature of social environment contribute significantly to the number of deaths by suicide in Coimbra district.

Key words: suicide rates, socio-demographic variables, Coimbra's municipalities

Green spaces influence on physical activity of the older population from Coimbra

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Currently, 18% of the European Union (EU 27) population is over 65 years old. This percentage is estimated to increase up to 30% by 2060. This ageing in developed countries brings new problems, such as expenses with health of the elderly. Physical activity, like walking, prevents or attenuates health problems on the older population. Several studies related the amount of physical activity with the presence of green spaces in urban environments. Yet, it is not known how the availability of green areas and spaces helps motor activity in those people. We hypothesize that the presence of green areas allows for increased physical activity thus decreasing health complications. In this study, we associate physical activity of the elderly with the availability and use of green areas in Coimbra. We will investigate the frequency of use of green spaces and their distance to the users' homes. The data collection will be performed from March to May, 2013, during sunlight, all week, whenever there is good weather. The investigator will interview seniors (>65 years old) at parks and other green spaces in Coimbra. The relation between seniors' physical activity and the presence of green spaces nearby will then be statistically analyzed. We expect that the majority of the people frequenting green parks also engage in other physical activities, like gardening. The conditions of the parks and not the distance to users' homes might be the main factor influencing the visits.

Key words: ageing, urban parks, health

Social class-specific secular trends in height among 19-year-old Polish men: national surveys from 1965 till 2010

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Height-for-age is one of characteristics of physical growth which, although in part conditioned genetically, is also sensitive to changes and/or inequalities of living standards in a population, especially to the adequacy of nutrition and health care. A more discerning method of analysis consists in examining group-specific trends, i.e. in tracing secular trends within each of several social strata, or socio-occupational groups, considered separately. The aim of our analyses was to examine the nature of differences in stature between social class-specific, defined in each generation by the same group of markers of social position. Massive data collected in the course of five national surveys of 19-year-old Polish military conscripts, carried out in 1965, 1986, 1995, 2001 and 2010 were used. The sampling method yielded a 10% systematically selected national sample representing all social strata and all regions in the country, because reporting for registration and examination at the exact specified data was compulsory for all 19-year-old males. In addition to taking height measurements at the time of examination, each subject was asked about the socioeconomic background of their family, including parental education, and his place of residence. During period 1965-2001 there has been a clear tendency: the sons of well educated parents from the large cities were the tallest of all the separate social groups. The social gradients in stature between the extreme groups (located at the top and bottom of the social ladder) have a tendency to diminish. In 2010, differences in stature between each analyzed social groups tended to diminish, caused by higher increase in the group lowest on the social scale. Our data imply that there has been still a tendency for social class inequalities in living standards. In the last decade, improvement in living standards in the group lowest on the social scale is observed.

Key words: social inequality, physical development, Polish conscripts

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The origin of *Homo.* What are we looking for?

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This talk will consider the problems of identifying the origins of any genus and the particular challenges involved in identifying the origins of the genus *Homo*. It will consider how a genus should be defined and why genera matter. I will review the history of ideas about the nature of the genus *Homo*, and for reasons that will become apparent I will take 1964 as the watershed and consider in more detail how ideas have changed about the genus *Homo* since 1964. I shall consider the various factors that confound attempts to use the fossil record to reconstruct phylogenetic relationships and functional capacities will review the various ways we might be able to do a better job of phylogeny reconstruction and functional analysis. Finally, I will consider the criteria we should apply to the fossil record for recognizing genera and review ways we might be able to improve the chances of identifying homoplasy so that shared morphology can be more confidently assumed to be evidence of shared evolutionary history (i.e., that it is a homology and not a homoplasy).

Pro-social behavior across cultures: cooperation between university students is affected by cultural and "power" traits

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Human cooperation has been an evolutionary puzzle since we cooperate, to a large extent, with genetically unrelated individuals in unique and anonymous situations. Previous works have shown differences in cooperation games in different societies but is this propensity universal or variable with culture and other socio-economic factors? In this study was used an online program simulating two anonymous games – a dictator and an ultimatum - were each player could receive a token. Both situations were administered across 229 college students in Coimbra from three Portuguese-speaking countries (149 from Portugal; 64 from Brazil; and 26 from Cape Verde) and therefore with different cultural backgrounds but with the same educational level. As expect, the subjects increased the value of their offer from the dictator game to the ultimatum game, since in the last case there was a risk of retaliation of the proposal. It was found that variations in cooperation were a result of the sociocultural context, especially political power traits. Places where law administrations and functioning of institutions tend to be less efficient and structured show higher offers in both games, which can mean that this kind of societies pushes people to become more social activists struggling to resolve numerous social problems. In addition, it was found that cultural traits can be responsible for variations over the offers in the ultimatum game. These results suggest that pro-social behavior are marked by norms and institutions that sustain cooperation and reflects customs and values that have evolved culturally over human history in different societies.

Key words: human cooperation, dictator, ultimatum, culture, political power

Microwear analysis of pig (Suoidea) incisors: potential use for the reconstruction of the environment of fossil hominins

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The study of dental microwear features in extant animal taxa and the comparison with fossil relatives have yielded much of information about diet, ecological adaptation, mastication biomechanics and evolutionary trends of many species. Most research was carried out on modern and fossil primates, including humans, but also on other important groups. Considering their relevant role in modern and past ecological communities, surprisingly little effort was done to understand microwear patterns on suids, even though there is work on microwear in an archaeological context on pig domestication. There is, however, a great potential for the study of the suids which were common elements in the environments of the early hominids in East Africa. The most typical adaptation of the Suoidea (pigs and peccaries) is their rooting behaviour, providing access to subsurface food, including roots, rhizomes and small animals, predominantly earthworms. Depending on their preferences, different species have different rooting styles, using their incisors to extract the food from the soil. In order to characterize the different rooting styles, a methodology for microwear studies on incisors is being developed, using five extant species from the superfamily Suoidea: *Sus scrofa* (Iberian Peninsula), *Potamochoerus porcus* (West Africa), *Phacochoerus* sp. (Sub-Saharan Africa), *Babyrousa* sp. (Indonesia) and *Tayassu pecari* (South-and-Central America). The methodology and results will be applied to fossil species and will contribute to a better understanding of the evolution and ecology of suids like *Nyanzachoerus*, *Notochoerus*, *Metridiochoerus* and *Kolpochoerus*, which responded to the same environmental changes that shaped human evolution.

Key words: digging behavior, diet, ecological community, soil

Correlations in the hominoid oral anatomy and their significance for human evolution

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This study identifies novel anatomical correlations within and across the traditional ideas of modularity and integration of the skull. Although facial anatomy and dentition have been the subject of many individual analyses, metric treatment of both upper and lower jaws has not been so thoroughly performed. A holistic approach to cranial and mandibular morphology acts as a window into the critical period of human evolution between a massive shift to bipedalism and the later brain expansion in *Homo*. Key evolutionary changes have been identified in the skull and its individual elements but their interactions have yet to be fully appreciated. Both 3D and 2D measurements were taken on the crania and mandibles of gorillas, chimpanzees, and modern humans, held at the University of Cambridge. This paper presents the results of the inter-specific comparisons to provide an insight into what defines mouth shape across hominoids. The hominoid data also serves as a comparative framework for the analysis and interpretation of australopithecine fossil specimens examined at the University of Witwatersrand and Ditsong Natural History Museum in South Africa. From the preliminary analysis of 145 craniofacial and mandibular variables, 13 showed significant differences between hominoid species and became the focus for further investigation. They include three on the midline of the face, three on the maxilla, two on the mandible, three on the palate and two related to the zygomatic arch. Taken together, they bring a new understanding of the distinctive features of the mouth and its adaptive significance.

Key words: Palaeoanthropology, craniofacial morphometrics, dentition, primates

Morphological variation at the mandibular symphysis in *Homo*: a preliminary 3-D geometric morphometric analysis

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The chin is considered a *Homo sapiens* autapomorphy, but despite extensive literature describing the anatomical features comprising the anterior mandibular symphysis, the timing of their appearance throughout *Homo* evolution is still poorly understood, particularly given the incipient chins seen on some Neandertals (*e.g.*, Zafarraya). This study tests the hypothesis that five key features of the chin (mental fossae, incurvatio mandibulae, superior mental trigone, tuber symphyseos, and lateral tubercles) will significantly differentiate adult *H. sapiens* (n=10) from casts of both *Homo heidelbergensis* (n=3) and *Homo neanderthalensis* (n=9). Three-dimensional mandibular surface renderings were recorded with a NextEngine Scanner, and a sliding semilandmark grid was placed over the anterior symphyseal surface of each specimen and converted to shape coordinates via generalized Procrustes analysis which then underwent principal components analysis. The shape variation represented by each principal component (PC) was assessed via visualization of 3-D warp grids. Tukey's HSD test confirms that *H. sapiens* separate from both *H. neanderthalensis* and *H. heidelbergensis* along PC1; however, along PC2, *H. sapiens* and *H. neanderthalensis* group together, but separately from *H. heidelbergensis*. While warp grids for PC1 emphasize the topography of the chin itself, PC2 emphasizes the incurvatio mandibulae, highlighting the differences that have long been noted regarding the lack of topography on the *H. heidelbergensis* symphysis compared to both *H. sapiens* and some Neandertals. Given the importance of the chin in defining *H. sapiens*, this research, demonstrating overlap in overall anterior symphyseal shape between *H. sapiens* and Neandertals, raises questions about the distinctiveness of the human chin.

Key words: chin, mentum osseum, Paleoanthropology, Pleistocene *Homo*, autapomorphy

Portuguese dental microevolution: a study on Neolithic and Modern samples using an alternative morphometric analysis

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Microevolution has been described as small-scale changes, happening generation by generation, in gene content and frequency within natural populations. We have analysed micro-changes in the morphology of first upper molars (M^1) in two Portuguese samples: one from the Late Neolithic (4130±90 BP; N=54) and another from the early 20th century (N=50). Instead of the traditional buccolingual/mesiodistal method of measuring morphometric traits, we used the occlusal polygon method which is based on a polygon created by linking the four molar cusp apices using digital analysis. Some authors have identified different evolutionary trends in Neanderthals and modern humans with this method. Our objective was to assess the existence of changes in the occlusal polygon area, and thus M^1 general morphology. This method allows us to evaluate both tooth size and relative cusp position in the occlusal plane. Contrary to the tooth size reduction commonly found from the past 10 thousand years in studies that use buccolingual/mesiodistal measurements, no statistically significant change of the total occlusal area of the crown was observed between these samples. Nevertheless, we report an increase of 7.45% (n/N) in the size of the occlusal polygon, and hence 9.38% (n/N) in its relative area, from 27.30% (n/N) of the total crown area to 30.30% (n/N) over this time span. This implies that microevolutionary changes among Portuguese populations led to changes in the positions of M^1 cusps, since their apices have moved away from the centre of the crown to a more peripheral position. This apparent increasing trend contrasts with the one reported in studies of both Neanderthals and modern humans.

Key words: occlusal polygon method, morphometrics, evolutionary trend, cusps, molars

Landmarking in paleoneurology: comparing physical and laser scan endocasts

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Paleoneurology studies the endocranial variation in fossil species through the analysis of endocasts. Currently, most morphometric approaches are based on geometrical models and multivariate statistics. Geometrical modelling is based on landmarks, namely anatomical points represented by Euclidean coordinates. Reliability of landmarks is essential to a meaningful analysis. Landmarks must be consistent and biologically significant. Endocasts supply scarce geometrical references, and identification of the anatomical regions can be difficult. Landmarking depends upon factors including the experience of the anatomist and the possibility to handle the specimens. Modern morphometrics largely relies on digital anatomy, which introduces further problems, as the different perception of the anatomical elements. We compared physical and digital endocasts from living hominoids to evaluate the uncertainty associated with the location of major cortical references, and how this can be influenced by the two different data sources. Nineteen brain landmarks were collected ten times each from either physical and laser scanned endocasts from seven species (*Homo sapiens*, *Pan troglodytes*, *Pan paniscus*, *Gorilla gorilla*, *Pongo pygmaeus, Hylobates moloch* and *Symphalangus syndactylus*), by using a Microscribe and Landmark Editor, respectively. Error analyses were computed to assess the reliability of each landmark. According to our results, cortical landmarks are reliable for most inter-specific analyses. The parietal landmarks are the less consistent, although the error is not excessive after a proper training. Digital and physical landmarking give similar results, but with different degree of uncertainty depending upon the anatomical region and endocast-specific traits which can influence the perception of the geometrical features.

Key words: endocranium, error assessment, surface scan, geometric morphometrics

Insights from the wild capuchin monkeys using stone tools

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The use of stones as hammers and anvils has been considered a behaviour characterizing our ancestors and the Western chimpanzees, and often chimpanzees have been used to model early human evolution. I will illustrate the results of observational and experimental studies carried out by the EthoCebus project on wild bearded capuchin monkeys (*Sapajus libidinosus*) living in Fazenda Boa Vista (FBV, Piauí, Brazil). This population, in contrast with the vast majority of capuchin populations, uses stone hammers and anvils to crack open very resistant nuts and access their nutritious kernels. They routinely use tools throughout the year and to this purpose they use proportionally heavy stones in relation to their body mass. In FBV stones suited as hammers (in terms of material and mass) are rare. Therefore, stones should be found and transported to the anvil; several experiments demonstrated that capuchins are very selective in their choice of stones, nuts, and anvil sites. In other words, capuchins' tool use behaviour is characterized by great skills and frequent decision making. Since our findings indicate that capuchins' performance has many analogies with that of chimpanzees they challenge the notions that selectivity, transport and physical skill in tool use are characteristic only of humans, human ancestors, and great apes. Furthermore, they contradict widespread assumptions, such as the one according to which tool use is a strategy prompted by food scarcity. Stone tool use by capuchin monkeys opens up a new reference point for thinking about tool use across species and across evolutionary time.

Vertebrate consumption by wild bearded capuchin monkeys (*Sapajus libidinosus*) from Fazenda Boa Vista (Piauí, Brazil)

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Among New World primates, capuchin monkeys are the most generalist feeders. In the last decades, vertebrate consumption by different species of capuchins has received increasing attention, considering the hypothesis that it may represent an alternative or complementary nutritional resource to fruits, or even invertebrates. For this study, vertebrate consumption (mammals, reptiles, avian prey) by two wild groups of bearded capuchins monkeys (*Sapajus libidinosus*) living in Fazenda Boa Vista (FBV, Piauí, Brazil) was recorded over the course of 48 months (5798 observation hours: May 2006 to December 2010) through scan sampling and "all occurrences" methods. Field data were examined across sexes and age classes, as well as between the dry and the wet seasons, considering individual events (type I) and dyadic or polyadic events (type II). Results showed that vertebrate consumption events at FBV were rare (n = 280). Males engaged in more events than females, which may be due to sexual dimorphism, dominance interactions or sexual differences in nutritional demands. Adults and juveniles performed most events of both types, and infants' performance in type II events was probably influenced by the social context. Reptiles were the most consumed prey, and the monkeys frequently ate the internal organs. Consumption occurred mainly in the wet season, when food is abundant. Therefore, the predatory activity of capuchin monkeys at this site appears to be opportunistic and possibly dependent on vertebrate prey abundance, rather than a food alternative during periods of low fruit availability.

Key words: predatory activity, capuchin monkeys, primate behaviour, feeding ecology, Fazenda Boa Vista

Effect of kinship on intra-group social dynamics in two sympatric colobus monkeys

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The African colobine *Piliocolobus badius temminckii* (Temminck's red colobus) and *Colobus polykomos* (western black-and-white colobus), exhibit contrasting social systems: *P. b. temminckii* live in large multi-male/multi-female groups with female-biased dispersal. *C. polykomos'* groups are much smaller with one to three adult males and dispersal can be mediated by both sexes. We investigated the influence of kinship on intra-group social dynamics of these two sympatric colobus monkeys. Focal and *Ad libitum* data were collected for a social group of each species in Cantanhez Forest National Park, Guinea-Bissau, between October 2008 and June 2009. Intra-group pairwise relatedness was estimated using faecal DNA from nine *C. polykomos* individuals and 15 *P. b. temminckii* individuals genotyped for 15 microsatellite loci. If kinship is to be determinant shaping these groups' social dynamics we should expect individuals to direct their affiliative interactions to their related counterparts. However, although we could not exclude kinship as an important factor determining the *C. polykomos* focal group's social interactions, that was not the case for *P. b. temminckii*. Our results showed that, grooming was very frequent among unrelated *P. b. temminckii* females and rare among related males. By combining analysis on the time budgets, social interactions and relatedness we show that the intra-group behavioural patterns in the *P. b. temminckii* group is different from other red colobus studied, suggesting that anthropogenic and/or ecological factors, more than kinship, may be important shaping this groups' social bonding.

Key words: non-invasive sampling, relatedness, time-budgets, social behaviour, Guinea Bissau

The first technologies and the role of social learning in mastering simple tool use: a chimpanzee (*Pan troglodytes*) approach to Human Evolution

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Current research inspired by strategic modeling, in which data on extant primate species are used to derive general principles, focuses on processes that may have influenced the evolution of the first technologies and on the role of social learning during the mastering of early tool use. With the aim of understanding the mechanisms involved in learning stone tool use, we investigated the individual processes of observation during the customary nut-cracking behavior, performed at an "outdoor laboratory", by the chimpanzees of Bossou, Guinea, West Africa (*Pan troglodytes verus*). At data collecting time, between December 2008 and February 2009, the group was composed by 13 subjects (6 males and 7 females). Previous studies focused on the individuals observing this stone tool use ("observer") and on the target tool-users ("observed"). For the first time, we focused also on the other available individuals that could be targets of observation, and on trying to detangle which variables affect this selection. We have analyzed and codified videos on chimpanzee activities recorded by two cameras. During 47 experimental sessions, we recorded 121 episodes of observation. Following previous results, we found that the youngest subjects (infant, juvenile) preferentially observe individuals with whom they share direct kinship. However, oldest individuals (sub-adults, adults) seem to select the most efficient individuals as their targets of observation. Immediately after these 121 episodes of observation, the observers performed 24 nut-cracking attempts. Subjects observing more efficient individuals and making longer episodes of observation, show the highest levels of efficiency, when performing nut-cracking behaviour.

Key words: Human Evolution, chimpanzee, tool use, nut-cracking, social learning

Environmental enrichment in captive group of chimpanzees and its role on the re-socialization process: a case study

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As highly social and intelligent beings, primates require a great level of social and environmental stimuli. By improving the complexity of the environment their behavioural repertoire and activity budget should became as close as possible to what observed with their wild conspecifics. The present study consists in the introduction of two different types of foraging devices in a social group of captive chimpanzees (N=8) in Mona Foundation, Spain: an artificial termite mound and a hosepipe, after a base-line period. Termite mound could be used by more than one individual at the same time (social context), while the hosepipes only be used individually. Changes, activity budget and level of association were assessed the group (Scan Sampling), but especially on the newest member (Focal), who had presented some significant behavioural variation as well as abnormal behaviours (hair pulling). Our main objective was to decrease such abnormal behaviours and increase social behaviours in the activity budget. Our hypotheses were confirmed as the enrichment with a social component did enhance social interactions (affilitive interactions and grooming in the entire group) during both types of enrichment and decreased inactivity and abnormal behaviours, especially during termite mound period (self-inflicted behaviours in Africa; stereotypic and non-stereotypic behaviours in the group). Summarizing, both enrichment devices had a positive influence on chimpanzees' behaviours. Creating bigger variety and opportunity of use is important, considering that enrichment strategies should depend on the group and the individual personalities giving them freedom of choice. Improving social interactions is important to reduce abnormal behaviours.

Key words: environmental enrichment, *Pan troglodytes*, re-socialization, abnormal behaviours

Time-activity budget of the western lowland gorillas (*Gorilla gorilla gorilla*)

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The way in which individuals allocate time to their daily activities has important consequences for survival and reproduction. Most studies of activity budgets have shown that the time spent in different activities can vary both diurnally and seasonally within groups. Gorillas follow daily regular activity patterns. After feeding (9am/ 10am), gorillas move and rest. When temperatures rise, as in most species, gorillas rest, socialize and digest their meals (10am/14pm). Later, they resume feeding and before the sunset they move to their night sleeping sites (17pm/18pm). We aimed to describe and analyse the social behaviour of the gorilla colony living in the Lisbon Zoo by assessing the time-budget of each individual. We assumed that if individual time-budgets were not very different from the ones exhibited by gorillas in the wild, such similarity might be interpreted as a sign of somehow solid and stable psychological and emotional well-being. The colony was composed of four adult individuals (one male and three females). Ad libitum, focal and scan samples were used and the observation day period was divided in two time-blocks as behaviour changes throughout the day. Results were analyzed using non-parametric statistics due to data features (e.g. non-normal distribution). "Inactivity" was the behavioural pattern where most individuals spent their time. The remaining time was occupied in "feeding", with very little time spent "moving". In the morning, "feeding" accounted for more than 14% of the total time budgets of all the colony members (Ulka, Backi, Anguka and Nazibu). In the afternoon, time spent on "feeding" was below 14% for all individuals. However, "moving" was not considerably different between the two time-block observation periods. The time spent "resting" also decreased during afternoon.

Key words: Primatology, nonhuman primates, social interactions

Environmental enrichment for captive primates: a research for primate welfare at Maia's Zoo

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Many varieties of EE are now a standard routine worldwide in recovery centres, zoos and laboratories, as public opinion demand better conditions for animals and law stipulate its practice. The aim of this study is to test if individuals of three non-human primate species at Maia's Zoo [gibbons (N=2), mona monkeys (N=2) and brown lemurs (N=2)] need EE (evaluating inactivity and abnormal behaviours occurrence) and if the devices implemented reduce boredom and apathy, symptoms that captive animals are more prom to. The apparatus here presented acts as a cognitive stimulus and feeding enrichment. Also, to prove its applicability the type of enrichment device chosen must be simple and inexpensive to build. With this in mind, the feeding device in this experiment consisted of food-filed small pieces of bamboo canes and a wire box filled with fruits and straw. We predict that foraging behaviour will increase in all three species as inactivity and locomotor behaviour decrease. Gibbons are expected to interact more with those devices, followed by monas monkeys and lemurs. Stereotypic behaviour should also become moderate. Grooming and affiliative behaviours should increase in both enriched situation. Observations are still ongoing. However, is already clear that the effect of an enriching foraging strategy depends on the species and its individual's personalities, important aspects which should be taken into account when designed and maintained EE programs. EE technique was to be projected according to the desired effect and we must ensure the "freedom of choice" in a successful enrichment's planning.

Key Words: feeding apparatus, behaviour opportunity, captivity, individuality

The vertebral column of three hominoid species (*Homo sapiens*, *Pan troglodytes* and *Hylobates lar*): a preliminary shape analysis

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The vertebral column forms the structural core of the vertebrate body, being composed by various segments termed vertebrae. It plays a fundamental role in posture and locomotion. *H. lar*, *P. troglodytes* and *H. sapiens* are hominoids with different locomotor repertoires and adaptations. The white-handed gibbon is mostly a brachiator and the common chimpanzee is a knuckle-walker. Both species display occasional bipedal behaviour. Humans are primarily bipedal. Chimpanzees and humans are morphologically and genetically very close. As such, we intended to test hypotheses on the role of homoplasy (namely locomotor behaviour) in the evolution of the vertebral column in these extant hominoids. Comparison of vertebral column in the three hominoids was executed within a geometric morphometrics framework. Three-dimensional vertebral landmarks were taken (from C3 vertebra through L5). Landmark coordinates were subjected to a generalized Procrustes analysis and subsequently to principal components and cluster analyses. Results suggest a modification in the shape (they become more "lumbarized") and size (there is an increment of vertebral body size) of the last thoracic vertebrae in *Homo* and *Hylobates* – hinting an association between locomotor behaviour and the shape of the vertebrae.

Key words: hominoids, vertebrae, locomotor behaviour, geometric morphometrics

Chimpanzees' intergroup aggression as reference model for the understanding of the evolution of violence

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In last decades, the origin of aggression has represented one of the main themes of human evolution, with various evidences suggesting a distant evolutionary history. Evolutionary psychology advocates that human aggression is a product of a long evolutionary process, starting from the premise that all human behaviour has, as its fundamental basis, the existence of internal mechanisms resulting from selective forces over time. Simultaneously, the incorporation of evolutionary theory in studying non-human primates (NHPs) enabled to interpret their behaviour as a trace subject to selective pressure. Thereby, the evolutionary proximity human-chimpanzee, sharing a common ancestor about 7Mya, justifies the use of behavioural studies of these NHPs for studying human evolutionary path. Several studies have shown chimpanzees as one of the most aggressive NHPs species, with intergroup interactions displaying the highest levels of hostility/agonistic behaviours and where violent physical attacks by male groups, while patrolling border territory, against isolated members (males/females/juveniles/offspring) of neighbouring communities, occur with some frequency. The chimpanzees' intergroup aggression is suggested to be an adaptive strategy adopted in certain environmental conditions; therefore, aggression itself is not an inevitable/"fixed" behaviour. These studies may prove relevant to construct reference models for the understanding of the evolutionary path of human aggression; therefore, contribute to understand the key factors for displaying aggressiveness. From an extensive literature search, and an analytical confrontation between theories/hypotheses formulated from behavioural data, the present master thesis project aims to provide an explicit theoretical framework about the relevance of studying chimpanzees' intergroup aggression and what it can offer for understanding the evolution of human violence.

Key words: *Pan troglodytes*, intergroup social relations, agonistic behavior, Human Evolution

African non-human primates in Europe in the Age of Discovery: their importation, use and role

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The current work presents the results of a review of the European literary sources of the Age of discovery, which contain reports on African non-human primates. Specifically, we examine reports of trade, importation and presence of these primates in Renaissance European courts. In this research we also investigate Renaissance European iconographic sources showing primate depictions. Recent evidence proves that in all the phases of the European expansion in the 15th and 16th centuries, primates were a constant presence and very sought after animals. Many literary sources of this age indicate that monkeys were among the most common animals brought back to Europe and a frequently offered gift to Europeans by local African rulers. The colored sub-Saharan African monkeys were new to European courts and quickly became appreciated as pets. They represented an authentic status symbol that underscored their owners' influence and social position. They were also used as gifts in diplomatic embassies. Among the specie that reached Europe (dead or alive) during the 15th and 16th centuries we can found: *Macaca sylvanus*, *Chlorocebus sabeus*, *Papio papio*, *Papio hamadryas*, *Papio* sp., *Cercopithecus diana* vel *roloway*, *Cercopithecus petaurista*, *Mandrillus leucocephalus*, *Pan troglodytes verus*, *Erythrocebus patas* and probably *Cercocebus atys*. Some of these species were also mentioned and described in the naturalistic works of the 15th century, such as those of the Swiss Conrad Gesner and the Italian Ulisse Aldrovandi. Until now was impossible to estimate the quantity of monkeys brought back to Europe. The trade on African primate populations seems to have not led to a rapid local extinction in sub-Saharan West Africa (as did happen with other mammals such as elephants and monk seals), nevertheless their populations is likely very reduced today in comparison with the abundance reported in the pre-colonial period by almost all of the European travelers.

Key words: History of Primatology, Catarrhini, trade, pets, 15th and 16th centuries

Perspectives of population genetics for primate survival in Guinea-Bissau: progress and prospects

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The Human Genome Project was presented in its final form 10 years ago, and some authors claim, categorically, that biology has changed forever. It opened up a box of complexity and new genetic directions arose. One example of that myriad of applications can be the use of noninvasive genetic techniques into primate conservation. My talk will be based around the topic of conservation genetics, with a particular focus in endangered primates of Guinea-Bissau. First, I will review the current state-of-the-art in terms of how genetic data can be integrated (and translated) into primate conservation action. Second, I will revisit the West African chimpanzee phylogeography by assessing the genetic diversity and structure of the chimpanzees in Guinea-Bissau and in the Nimba region (Republic of Guinea). Finally, I will demonstrate how DNA barcoding can be a valuable tool to determine the bushmeat trade in Bissau markets.

Does anthropogenic hunting influence dispersal strategies in primate species? A comparative study in Guinea baboons (*Papio papio*)

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Hunting practices can induce changes in dispersal behaviour via group density variation across space or by inducing defensive behavioural responses. Such conditional-dependent dispersal patterns have been scarcely investigated for primate species. We compared two populations of Guinea baboons (*Papio papio*) subject to different levels of human pressure to test for changes in the composition of social units and in the dispersal behaviour. In Guinea-Bissau (GB), baboons have been heavily hunted and suffered a range contraction. In Senegal (SEN), baboons have increased in numbers and harvesting is not significantly affecting the population. By using a molecular sex determination protocol and thirteen microsatellite *loci*, we investigated differences in the proportion of males and females and the mean pairwise relatedness within social units. Furthermore, we compared sex-specific patterns of gene flow. The final dataset included 149 genotypes of different individuals for the GB population (55 males and 89 females, quality index > 0.55, averaging 0.87 across loci), which were collected from 17 social units in three sampling locations in southern GB distanced at a maximum of 150 km. For the SEN population, 165 genotypes (97 males and 68 females, quality index > 0.50, mean 0.86 across loci) were collected from five sampling units within Parc National du Niokolo Koba, distanced at a maximum of 66 km. In GB we found a pattern of lower ratio of males within social units and social units with un-related individuals. The clear female-biased dispersal pattern displayed in SEN was attenuated in GB, where, in the same geographical scale of 66 km, both sexes disperse. Considering all samples collected within GB, the origin of dispersing males in one sampling location, when compared with females, was predominantly from a genetically differentiated population, resulting in the formation of a contact zone. For SEN males, philopatry could be a means to avoid competition with conspecifics and aggressive encounters, while in GB male dispersal could result from higher hunting-mortality risk or as a means to increase reproductive outcome.

Key words: *Papio*, sex-biased dispersal, condition-dependent dispersal, poaching, contact zone

Haplotype analysis of common HFE mutations in the Portuguese population

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Hereditary Haemochromatosis (HH; MIM# 235200), an autosomal recessive disorder caused by increased iron absorption, is one of the most common genetic diseases among individuals of European origin. In the Portuguese population, haemochromatosis HFE gene mutations were found at frequencies (average) of 0.033 for C282Y and 0.17 for H63D. However, the associated haplotypes using intragenic polymorphisms remain to be established. The main objective of this study was to investigate the haplotype background associated with C282Y, H63D and S65C mutations in the Portuguese population, using HFE intragenic polymorphisms. Three internal HFE SNPs IVS2(+4)T/C, IVS4(-44)T/C and IVS5(-47)G/A were analysed in a total of 150 samples: homozygous C282Y (n=12) and H63D (n=19); heterozygous C282Y (n=18), H63D (n=34) and S65C (n=6); compound heterozygous C282Y/H63D (n=17) and S65C/H63D (n=3); subjects without HFE mutations (n=41). SNPs were genotyped by PCR-RFLP using RsaI, HaeIII and NlaIV, respectively. Digested products were resolved in 2% agarose gels. Haplotypes were established unambiguously in homozygous subjects or derived through the PLINK software. Chromosomes C282Y (n=59), H63D (n=92) and S65C (n=9) were found associated exclusively with haplotypes TTG, CTA and CCA, respectively. In non-mutant chromosomes, five of the eight possible haplotypes were found: TTG (53.3%), TTA (23.5%), CTA (9.8%), CCA (7.1%) and CTG (6.3%). The mutation associated haplotypes in the Portuguese population, C282Y:TTG, H63D:CTA and S65C:CCA, are the same that have been reported in other European populations, suggesting a single origin for each HFE mutation. Regarding normal chromosomes, the most common haplotypes reported for other European populations were found.

Key words: C282Y, H63D, S65C, Portugal

Screening for melanocortin-4 receptor mutations in a cohort of Portuguese children with severe obesity

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The melanocortin-4 receptor (*MC4R*) gene, located in the chromosome 18q21.3, is critically involved in regulating energy balance. It is the most common cause of monogenic obesity and could be a first step to unravel genetic causes of obesity. The main goal of this study was to screen for *MC4R* gene mutations in a sample of Portuguese children with severe obesity. A total of 32 severely obese children from Portuguese origin, with a body mass index (BMI) $\geq 99^{th}$ (ranging 6-10 years-old), were studied. The promoter and the entire coding region of *MC4R* gene were analysed by direct sequencing. Pregap4 software was used to compare the sequence obtained with the *MC4R* gene normal sequence. Two *MC4R* gene mutations were found at heterozygous state: the previously described 5′UTR single nucleotide polymorphism -178A>C (rs34114122), identified in a girl with a BMI Z-score= 2.51; and the common missense mutation 307G>A (Val103Ile, rs2229616) in the *MC4R* gene coding region, identified in a boy with a BMI Z-score= 2.60. The frequency obtained for the Val103Ile missense mutation in our study was 3.1%, a value similar to the frequency observed in other European populations (ranging 1 to 5%). No other pathogenic *MC4R* gene mutations were detected in our study sample. These results suggest that pathogenic mutations in the *MC4R* gene might not be a common cause of severe obesity in Portuguese children.

Key words: *MC4R* gene, obesity, Portuguese children, Val103Ile, rs34114122

Mitochondrial DNA and genetic origin of Cabo Verde population - preliminary results

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Mitochondrial DNA analysis found an important role in population genetics. Features that increase the vested interest of mitochondrial DNA (mtDNA) are the high copy number per cell, maternal inheritance, absence of recombination, and high mutation rate. Due to higher overall mutation rate, mtDNA control region is comparatively enriched in sequence variation and therefore its analysis is important to establish haplotypes and haplogroups. Haplogroup assignment became noteworthy to clarify the origin and evolution of a population. As well as occurs all over Europe, in Portugal, and particularly in Lisboa, immigrant populations are increasing. The Instituto Nacional de Medicina Legal e Ciências Forenses is carrying out a comprehensive genetic study with the aim of portray the genetic diversity of the immigrants who live in Lisboa. Within that objective we study a sample of 103 individuals of Cabo Verde immigrant population, living in Lisboa, and classify all haplotypes into haplogroups. MtDNA control region was amplified using two pairs of primers L15997/H016 and L16555/ H599. The cycle sequencing was performed using the ABI Prism® BigDye® Terminator v.3.1 Cycle Sequence Kit (Applied Biosystems, Foster City, CA) and BetterBuffer (Microzone Limited, Sussek, UK). Analysis was done with ABI DNA Sequencing Analysis V5.2 and SeqScape v2.5. The obtained haplotypes were compared with the Cambridge Reference Sequence (CRS) and typed following the nomenclature of the International Union of Pure and Applied Chemistry (IUPAC). Haplogroups were determined on the mtDNAmanager. Preliminary results showed great variability, with high frequency of unique haplotypes and significant values of nucleotide and sequence diversity. The majority of mtDNA sequences were included into specific African mtDNA haplogroups and a minority of mtDNA lineages belongs to West Eurasian haplogroups, which seems to be in line with the historical version of the archipelago colonization with Portuguese male individuals, mobilized from the metropolis for the ex-colony, and African female slaves.

Key words: mtDNA, population genetics, Cabo Verde

Polymorphic variants influencing fetal hemoglobin (HbF) levels in healthy Portuguese subjects

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Common forms of hereditary persistence of fetal hemoglobin (HPFH) (HbF levels 2-30%) typically result from polymorphisms in the fetal globin genes (*HBG1* and *HBG2*) or along the beta-globin cluster. Recent genetic association studies found other loci involved in HbF expression, including polymorphisms in the *BCL11A* gene (chr. 2p) and *HBS1L-MYB* (HMIP) intergenic region (chr. 6p), in patients with β-globin disorders (sickle cell disease and β-thalassemia) originated from different populations. The main objective of this work was to evaluate whether genetic variability in loci *BCL11A*, *HMIP* and *HBG2* (XmnI) is involved in common forms of HPFH. Sixty subjects of Portuguese origin, with normal hematological parameters and HbF levels 0.2-7.4%, aged 2-61 years, were recruited for the study. Informed consent was provided by all the participants. HbF levels were determined by HPLC (Variant^2-Bio-Rad) and log transformed. Five single nucleotide polymorphisms (SNPs) (rs11886868, rs766432, rs9399137, rs6934903 and rs7482144) were genotyped by PCR-RFLP or TaqMan assays. Statistical analysis was performed by using the PLINK software. Allele frequencies, Hardy-Weinberg p-values and association results between SNPs and HbF were estimated for all the polymorphisms. Linear regression models used to test the association between SNPs and HbF levels showed statistical significance for *BCL11A* SNPs rs11886868 ($p=7.3 \times 10^{-5}$) and rs766432 (p=0.002). No significant interactions with HbF levels (p>0.05) were observed for *HMIP* (rs9399137, rs6934903) and XmnI (rs7482144) polymorphisms. Results suggest that the increase of HbF levels in Portuguese individuals with common forms of HPFH is associated with *BCL11A* polymorphisms, but not with *HMIP* or *HBG2* (XmnI) *loci*.

Key words: HbF, HPFH, BCL11A, HMIP, XMNI

Late Neolithic/Chalcolithic in Portugal: preliminary results from ancient DNA analysis

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The use of ancient DNA techniques allows us to answer questions that osteological methods cannot always satisfactorily respond, for instance the sexual diagnosis in non-adult human or very fragmented remains, or the resolution of population migration patterns. The main goal of this study is the genetic characterization of populations from the late Neolithic/Chalcolithic from mainland Portugal, in order to answer several questions such as the process of Neolithization in this region of Europe or the existence of kinship in collective burials from this time frame. Thirty samples, corresponding to 30 individuals from 3 different archaeological sites, Hypogeum of São Paulo II, Perdigões complex – sepulcher 2 and fossa 11, and Dolmen of Ansião, were subjected to DNA extraction through two distinct methods: phenol-chloroform method and a silica based method. From these 30 individuals, partial or complete amplification of the HVR-I region of the mitochondrial DNA was possible for 16 samples and HVR-I sequences were obtained for 15 individuals so far. Based on the HVR-I mutated positions and PCR-RFLP analysis of coding region sites, it was possible to narrow the mitochondrial haplogroups of 8 of the samples, yielding results similar to those obtained in previous studies, with most of the samples belonging to haplogroups H or U. Seven samples were identified as males and one as female according to the amplification of the SRY and Amelogenin genes. All of the results and resulting conclusions are preliminary, as the study is still ongoing and more samples will be analysed in the future.

Key words: mitochondrial haplogroups, HVR-I, Paleogenetics, sexual determination

Raising the dead: clinical interpretation in Palaeopathology

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Palaeopathology is an objective scientific analytical discipline. The source material is the corporeal remains of past peoples, and its remit is to examine and describe pathological lesions in this material and to propose a diagnosis of disease in these peoples. This end-point of remit does not, per se, promote the understanding of the clinical presentation of disease in past peoples. It does not humanise the raw pathological data, and, therefore, does not put "flesh and blood" on the remains of past peoples. Palaeopathology, as a discipline, is not fulfilled unless it proceeds to an understanding of illness, as defined by patient symptoms and physical signs. Therefore, it should be regarded as an extension of investigative clinical medicine into earlier societies. The procedures in palaeopathological practice are the same, intellectually, as those in clinical practice, albeit reversed in analytical order. As palaeopathologists we should strive to understand the suffering, physical and psychological, inherent in our diagnoses, and the social implications of the illness. This can only be done by reference to recent clinical experience and written records of recent centuries. This presentation seeks to demonstrate, using specific archaeological specimens, how we may interpret and elucidate the illness and suffering of humankind in antiquity, and so bring to life our forebears.

Headaches from the past: Cranial lesions in Middle Neolithic at the tomb cave of Lugar do Canto (Portugal)

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Lugar do Canto (Alcanede, Santarém) is a collective tomb within a natural cave. It was discovered in July of 1975 by the land owner during the construction of a water cistern. Some months later, G. Zbyszweski and O. V. Ferreira, from the Geological Services of Portugal, in collaboration with M. Leitão, C. North and J. Norton conducted the excavation and recovery of different archaeological and anthropological deposits scattered by several chambers of the cave. The results were later published (Leitão *et al.,* 1987), including a chapter summarizing the study of the collection of human remains conducted by one of us (SR) between 1979 and 1980 for a MS in Anthropology. In the following years this collection was scattered, with a portion of it being sent to the Smithsonian Institute in Washington D.C. (USA), other part kept at the the Geology Museum (although under the wrong name) and with M. Leitão at his house. Later on, due to J. L. Cardoso commitment, a part of M. Leitão's collection was deposited at the National Museum for Archaeology, and other part is under his personal care. Presently, all the above portions of Lugar do Canto human osteological collection are under revision. This first analysis estimated a minimal number of 48 individuals of both sexes and from several age groups. Among the cranial remains, several lesions were detected. These include cases of trepanations, fractures and other types that will be present and discuss in the present work.

Key words: Lugar do Canto, Neolithic, trepanation, depressed cranial fractures, trauma

Funus acerbum: a reflection about child burials from roman provinces

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The death of a child among Romans provoked a mixed reaction: despite being a frequent and expected phenomenon, it was nonetheless perceived as *mors imatura*, leading to a wide range of procedures within the *funus acerbum*. This work aims to present and analyse specific funerary practices given to children, in particular babies and infants, during the Roman times. Based on examples mainly gathered in *Hispania* but also from other areas of the Roman Empire (dated from the first to the third centuries A. D.), factors which may have influenced the funerary rituals applied to infants will be considered. The data presented includes seven individuals from *Augusta Emerita* (Mérida, Spain) and one from *Salacia* (Alcácer do Sal, Portugal) aged less than four years old and cases from a survey made in bibliography concerning funerary areas of others roman cities located on the current countries of Spain, Portugal, France, Italy and United Kingdom. The way Roman society perceived the loss of those individuals was affected by their age at death. Moreover, the funerary investment and mourning were inversely proportional to their life's duration. Historical, archaeological and anthropological sources revealed particularities on the body treatment (inhumation *versus* cremation), burial location and grave characteristics of those who died at birth or after a few months. On the other hand, older children were normally given burial rituals similar to those of adults (determined by factors such as social-economic status and/or the cause of death) although they can show singularities in terms of grave furniture, namely, baby bottles, toys, miniatures or objects with prophylactic and symbolic value. This study contributed to a more comprehensive understanding about child funerary rituals during the Imperial Age.

Key words: *mors immature*, Roman funerary practices, infant burial, *Hispania*

Bioarchaeology of dental calculus: plant consumption in Medieval Lithuania

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Dental calculus is often omitted from bioarchaeological research. The first goal of the present study was the extraction and analysis of microfossils entrapped in human dental calculus from two Lithuanian archaeological skeletal collections. Distinctive microfossil (starch and phytolith) morphological characteristics have been used to identify the use of different plant types and to make the palaeodietary reconstruction of medieval urban population. The second goal was the statistical comparison of dental calculus indices between four different medieval populations. Differences in dental calculus' amounts, between dental arcades, sexes, age groups and population groups were expected. Lithuanian Medieval and Post Medieval dental calculus samples from various geographic locations and presumably different social background (urban and rural) were isolated from teeth and analyzed. Extraction of microfossils was carried using established methods by pulverizing calculus samples or dissolving them in 10% hydrochloric acid. Then samples were centrifuged, rinsed in distilled water and subsequently centrifuged. The remaining samples were mounted on microscope slides in glycerol/water solution and examined under a light microscope in cross polarized light. Statistical comparison of dental calculus indices was done using Mann- Whitney U test. Although not all of the samples resulted in microfossil recovery, the majority of them produced starch grains consistent with wheat, barley, millet, legumes and other possibly diagnostic grains. Some grains are modified and could be attributed to different past cooking practices.Statistical analysis revealed differences in amount of calculus deposits between dental arcades and different populations.This type of analysis produced direct evidence and insight into the dietary preferences of medieval individuals.

Key words: plant consumption, starch analysis, dietary reconstruction

Possible simultaneous occurrence of ankylosing spondylitis and diffuse idiopathic skeletal hyperostosis at the medieval necropolis (12th-13th centuries AD) of Palat del Rey, León, Spain

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A possible simultaneous occurrence of Ankylosing spondylitis (AS) and Diffuse idiopathic skeletal hyperostosis (DISH) is reported. The studies have been exclusively based solely on macroscopic examination and radiological analysis of both spinals, due to the absence of other parts of the skeleton. Solely one of the individuals is preserved skull, hip and sacrum. The excavation was not performed in its entirety and part of the individuals remain buried in the archaeological site. Both diseases have similar aspect but different etiologies that affect the axial skeleton and peripheral entheses. AS is a non-infection, inflammatory disease whilst DISH is related to obesity, type II diabetes, and probably with a multisystem hormonal disorder. AS and DISH are more common in men than in women. Nevertheless, AS usually starts between the 2nd and 3rd decades of life, and DISH is found in individuals around the age of 40 years. The aim of this work is to establish a differential diagnosis as accurate as possible between AS and DISH, and to try to establish a relationship between these diseases and life habits. Both diseases are observed on two women. One of them died with about 35-40 years old (Lovejoy et al., 1985; Brothwell, 1981; Meindl and Lovejoy, 1985; Buikstra and Ubelaker, 1994; Ubelaker, 2007), and the other one died at about 40-50 years old. In this case the age has been estimated from changes suffered by the *annulus fibrosus*'s vertebrae with age (Reverte, 1999). The two women were found at the medieval archaeological site (XII-XIII AD), specifically in the necropolis located inside the church Palat del Rey (León, Spain).

Key words: Ankylosing spondylitis, Diffuse idiopathic skeletal hyperostosis, medieval archaeological

Dental wear in a medieval Portuguese skeletal sample and its relation with dietary habits

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The study of dental wear in archeological populations is of great value when the intention is to realize how the human past populations lived. The aim of this study is to analyze the pattern of dental wear (attrition and abrasion) presented by the individuals belonging to the medieval population of São João de Almedina (Coimbra, Portugal). The sample is composed by 58 adult dentitions (28 males, 20 females and 10 individuals of unknown sex). Occlusal tooth wear was recorded according to the eight-stage method developed by Smith (1984), whereas approximal attrition was scored following Hillson (2001). The preliminary analysis points to an occlusal wear average of 3, 85, which indicates a medium wear with great exposition of dentine. The mesial and distal attrition rates are low, being mostly of grade 1. These results will be interpreted in terms of the biological, socioeconomic and behavioral conditions (type of food ingested, food preparation techniques, among others) prevailing at the medieval times, using information from other wear studies and historic data. Besides, dental wear will be compared with that recorded by Wasterlain (2006) for the population of Coimbra in the late 19th and early 20th centuries, using the same methodology. This comparison is aimed to infer about how dental wear has evolved from a pre- to a post-industrial population. Finally, an unusual pattern of dental wear was observed in the anterior teeth of two indivuals, possibly corresponding to abrasion. The first case affects the buccal side of the central incisors of 55-65 year-old male, whereas the second one respects to the distal side of the upper lateral incisors of one male whose age-at-death ranges between 45 and 60 years. Both cases present a sulcus on the enamel, parallel to and right above the gum line that seems related to non-dietary abrasion due to a personal habit or activity.

Key words: dental pathology, tooth wear, Coimbra, Portugal

Oral pathologies in San Pablo medieval population (Burgos, Spain)

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This paper shows a detailed study of oral pathologies in a sample from the medieval monastery of San Pablo (Burgos, Spain). Presence or absence and type of dental caries, calculus, periodontal disease, abscesses and dental wear have been recorded in 71 individuals of both sexes and all groups of ages at death. To do that, an especial database was created, in which the type and gravity of each disease were recorded. Of those 71 individuals 29 are adults (9 females, 20 males) and 42 are subadults. Four different age groups were established based on permanent molar eruption, what allow us to determine different development status. The first group is based on the non-eruption of M1, the second one on the eruption of M1 but not M2, the third group is based on the eruption of M2 and the last group has M3 totally developed. Sex estimation was done on the basis of non-metric pelvis traits. No attempt of sexing immature skeletons was carried out. The relation between dental pathologies' frequencies and age as well as sex was explored by chi-square tests. Dental calculus was found to be the most common disease and its frequency increases with age. Alveolar bone loss, caused by periodontal disease, is the less frequent disease. Caries is highly prevalent in all groups. Taking into account all these data together, a hypothesis of an abrasive diet, rich in sugar and other carbohydrates, is supported. Moreover, an inverse relationship between caries and attrition has been found. Different hypotheses will be explored in order to explain this last assumption.

Key words: Dental Paleopathology, Middle Age-Renaissance, nutritional and health status

Living through death: a multidisciplinary approach to the analysis of anthropological field reports from primary inhumation archaeological sites (Portugal)

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The ritualization of death offers an overview on cultural and social belonging of individuals. The access to these elements is many times revealed in funerary archaeological sites where it is also possible to recover biological data from the deceased. At a first glance it may seem that biological and cultural dimensions are detached, however, in funerary contexts, more often then not, they are intertwined. In this sense, a more thorough picture on past populations may result from combining biological and cultural data. To achieve this goal, it is crucial to adopt a multidisciplinary approach.

Supported by the bioarchaeological theoretical approach and field anthropology ("Anthropologie de terrain") methodology, it is possible to take full advantage of the information held in funerary contexts. Information regarding 464 individuals found in primary inhumation was analyzed from anthropological field reports, produced between 1994 and 2007, archived at the Paleodemography and Paleopathology Laboratory (University of Coimbra). Information regarding conservation, funerary anthropology, paleodemography and paleopathology was analyzed. Results show that these reports present important inconsistencies concerning the data they assemble, despite that, it is possible to reveal that: most reports are from Medieval (30.3%) and Modern (24.2%) periods; culturally, Christian burial gestures are the most common; paleodemographic data present an asymmetric distribution of sexes (34.7% males) and age at death (45.68% adults); osteoarthrosis (41.6%) and enthesopathies (60.7%) are the most frequent reported pathologies. With this work, we aim to uncover some of the biological and cultural aspects of the past, and we further propose a reflection on the current approach to primary inhumation archaeological sites.

Key words: Past populations Anthropology, Bioarchaeology, field Anthropology, Archaeology, Funerary Anthropology

Skeletal growth pattern in a Portuguese sample

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Growth is a continuum process that implies a progressive incremental change in size and morphology. The final growth outcome is the result of a complex interaction between genetic and environmental factors. Development of sexual dimorphism among both different skeleton parts and distinct populations can help us to understand how these factors interact. For this reason this work has two main goals. First, sexual differences in the post cranial long bones growth patterns are established in a Portuguese sample. Second, development of sexual dimorphism in this population is compared with that in an English one previously published by Humphrey (1998). The Portuguese sample was derived from the collections housed in the Bocage Museum (National Museum of Natural History, Lisbon, Portugal) and in the Department of Life Sciences at Coimbra University (Coimbra, Portugal). Both collections are formed by Portuguese people who lived in the 19th and 20th centuries with similar socioeconomic indicators, living conditions and causes of death. For this reason, they are treated as a single population for the present analysis. The measure sample varies among bones but comprise, at least, 60 males and 60 females. The measurements taken in each long bone (maximum length and diameters at mid-shaft) were fitted in a Gompertz curve. Sexual differences in growth rate and duration in each different variable were established by an F-test of Gompertz parameters. The proportion of sexual dimorphism resulting from sexual differences in growth rate and duration varies between English and Portuguese samples. For example, in the first sample, relative contribution of growth rate to adult sexual dimorphism of long bone lengths is bigger than that of duration. However in Portugues sample, there is a great contribution of growth duration.

Key words: development, sexual dimorphism, Gompertz curve

The potential of cremation weight for bioarchaeological research

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Cremation was a very popular practice in many past -cultural contexts and, not infrequently, it was the only/majorfunerary custom adopted Hence, their importance for the biological knowledge of past populations as well as for their mortuary practices is thus unmistakable. Regrettably, heat-induced changes limit our capabilities to retrieve osteological data from bones. Therefore, lack of reliability regarding bioanthropological inspection is a peril always present when dealing with cremains. A good example of one analytical approach that may enclose such peril is the one related to skeletal weight. This approach has been used as a replacement of more conventional and well-established methods that are usually applied to unburned skeletons because its analytical value is not as impaired by taphonomic-related fragmentation – bone weight remains somewhat the same. In sum, bone weight has been pointed out has a potentially valuable indicator four parameters: the minimum number of individuals; the sex of the deceased; the completeness of the skeleton; and the representativeness of each anatomical region on a given burial. However, how reliable is this kind of approach? Cremation weights were documented for Portuguese modern cremations and its potential for the estimation of the four parameters was then investigated by using both modern and archaeological cremains. Results demonstrated that, under certain circumstances, bone weight may carry valuable insights regarding the bioarchaeological research of cremains although its value is increased by using other non-osteological data.

Key words: Biological Anthropology, cremains, skeletal weight, mortuary practices, burned bones

More than bones: the future of archaeological recovery of human osteological remains and their contextual information

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Mortuary and funerary sites, often solely materialized by sedimentary discontinuities and human skeletal remains, are among the most delicate archaeological cases, rending the efficiency of the salvation work highly dependent of excavation and documentation options. Because of the fragility of the remains and volume of data, the salvation of funerary/mortuary sites is extremely dependant on excavation and documentation procedures. Consequently, we developed a thorough Geoarchaeology/Arqueothanatology terrain protocol for the recovery of human remains and contextual information, which was first applied in 2009 to the excavation of Valle da Gafaria (Lagos, Portugal), the oldest known mortuary site of African slaves in the world (XV-XVII centuries), aiming to assure a detailed perception of this unique site by contemporaneous and future generations. We have ever since improved the protocol, introducing state-of-art technology: combining time series of digital data produced by middle-range terrestrial laser-scanning, digital photogrammetry and geophysical surveying with the archaeothanatological information and GIS produces a detailed 4D database of the synchronic and diachronic evolution of the sites. Results showed that, if a consistent field protocol is mandatory to understand past funerary behaviours, the use of advanced Geomatics, Geophysics and Spatial technologies considerably enhances our ability to produce significant historical information, relevant to society: scientists, stakeholders, communities and general public.

Key words: Archaeothanatology, Geoarchaeology, field protocol, interdisciplinarity

Questions surrounding the management of human osteological remains resulting from archaeological contexts

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In the past decades, archaeological interventions increased significantly in Portugal. Development projects have triggered a whole array of salvage archaeology actions, following a well defined state policy for Archaeology and Cultural Heritage. All public and private development interventions require previous archaeological work, thus minimizing the possible negative impact that they might have on our common heritage. It was in this context that we saw a major growth in the identification of cemetery areas from different time periods across the whole territory, thus creating an enormous amount of human remains exhumed from these sites. Although this fact significantly enhanced our research possibilities, it also brought up new problems concerning the management of these osteological collections. Presently, the national archaeology database (*Endovelico*) has more than 5.000 funerary sites recorded, most of them with human remains. Management and conservation of these collections - some of them with thousands of skeletons - are not compatible with most of the deposit areas available throughout the country. In parallel, there are ethical issues being raised, regarding what the most suitable deposit area should be, for these past human populations. Some of these issues are reflected in some cases with which Portuguese Heritage has recently been confronted with. These cases will be presented, in order to enrich our debate and hopefully reach a consensus regarding the management and conservation of such important collections.

Key words: human osteological remains, management of osteological collections, Archaeological Database - Endovelico

Representation of disease in a Makonde sculpture collection curated by the University of Coimbra

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Disease is a biological and social phenomenon experienced by all human groups and it is subject of diversely cultural representations. The study of these representations allows interdisciplinary and biocultural approaches. The aim of this work is to present evidence of disease representation in a collection of 135 sculptures donated in 2007 to the University of Coimbra by Maria Luisa Silva, by the will of her husband, Manuel dos Santos Soares (MSS), to leave in his birthplace a collection of "African blackwood sculptures of Genuine Art from the Makonde ethnic goup". The carvings have dimensions of approximately 10 to 50 cm and represent human and zoomorphic figures, collected between 1940-1974 by MSS in the Makonde Plateau, district of Cabo Delgado, when he worked as agronomist. A detailed observation enabled the identification of seven sculptures, representing individuals showing lesions consistent with leprosy, poliomyelitis, and kyphosis as well as with other possible pathological conditions. Other representations revealed identity marks (profusely decorated with facial scarification, lip and auricular piercings), couples in sexual intercourse, people defecating, animal biting a person, among others. The ethnographic context and the international recognition of Makonde sculptures led to a large-scale production. However, the representation of diseases by this group, or in African sculpture in general, is rare according to the bibliography consulted, highlighting the relevance of this collection.

Key words: Mozambique, Paleopathology, Ethnography, identity marks, leprosy, poliomyelitis

Vertebral lesions on human remains recovered from the 19th to 20th centuries public cemetery of Amieira do Tejo, Portugal

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The individuals presented in this work were recovered during two archaeological field seasons carried out inside the Castle of Amieira do Tejo, which was adapted to a public cemetery between 1839 and 1936. The skeletal sample consists of a minimum number of 62 individuals, of which 17 are adults (7 males, 7 females, and 3 individuals of unknown sex) and 9 are non-adults (7 infants, 1 child, and 1 adolescent). This paper aims to present and describe two cases of pathological relevance. The first case refers to a poorly preserved mature adult male with lytic lesions in the anterior-superior angle of three vertebral bodies (T11, L1, and an undetermined lumbar). Schmorl nodes are present in the body surfaces of these vertebrae as well as in other six (T11, T12, L1, L2, L3, and L4). T12 is fused with the left rib and L5 is ankylosed with the sacrum. The second case refers to an also poorly preserved mature adult male, who shows similar lytic lesions in two lumbar vertebrae. Both skeletons do not present other pathological changes. The differential diagnosis led us to consider osteoarthritis, tuberculosis, vertebral osteochondrosis, and brucellosis. The reported lesions are discussed with the description present in the paleopathological literature, radiological examination and the occupations stated in the obituary records of Amieira do Tejo population, which show that 15 out of 294 (5,1%) adult men were shepherds. This study benefits from the biographic data of the population and confirms the importance of documentary sources and a biocultural approach in paleopathology.

Key words: pathology, differential diagnosis, osteolytic lesion, adults

Preauricular sulcus, occupation and age in a sample of Portuguese males from the 19th and 20th centuries

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The preauricular sulcus is a groove, located anteroinferior to the iliac auricular surface, resulting from bone resorption due to the tension produced by attaching ligaments. Consequently, it is possible that greater stress can lead its emergence. Preauricular sulcus can appear in both sexes, however, its etiology is still not well understood. The present study wishes to determine whether occupation or age are associated with the presence of the preauricular sulcus on 173 male individuals (18 to 96 years old) from two Portuguese identified skeletal collections. The sample was divided into two groups according to occupation: manual (n=100) and nonmanual (n=73). Individuals from the manual group were considered to have a more physical demanding occupation and, inversely, the nonmanual group was composed by individuals with less physically demanding occupations. The absence or presence of the preauricular sulcus was recorded, and its possible association with occupation or age was determinedThe number and percentage of individuals with preauricular sulcus were similar in both occupational groups (Manual group: n=24, 24.0%; Nonmanual group: n=18, 24.7%), and the chi-square test results show that there is no statistically significant difference ($\chi2$= 0.010; p=0.921). Similar results were obtained for age (p= 0.793). Thus, occupation and age does not seem to be associated with the presence of the preauricular sulcus in this male sample. Further research is necessary, especially in female individuals.

Key words: paraglenoid groove, preauricular area, biomechanical stress

Metabolic diseases in a buried Chalcolithic child from El Portalón Archaeological site (Sierra de Atapuerca, Spain)

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During the 2012 field season, the first complete burial of a subadult individual (Atp'12.1420) was discovered in the Holocene site of El Portalón (Sierra de Atapuerca, Burgos, Spain). The burial was intact and a rather complete skeleton was recovered in good state of conservation. Atp'12.1420 has been directly dated by radiocarbon in 4.350 ± 30 years BP (Cal BP 5030 to 5020), being therefore attributed to the Chalcolithic period. Age at death of this individual is estimated based on crown and root mineralization and it is established in seven years old. Macroscopic and CT-scan analysis of ATP'12.1420 revealed some pathological signs and stress indicators in both the dentition and skeleton. Caries are present in deciduous upper second molars (dm^2) and a periosteal lesion in left dm^2 could have been caused by an abscess or a periapical cyst. Enamel hypoplasias are found in permanent teeth and abnormal porosity and subperiosteal new bone formation in both, skull (greater wing of sphenoid, palate and mandibular coronoid process) and in all diaphysis of long bones. Abnormal porosity is referred here as the presence of holes of various sizes penetrating the compact or trabecular bone. Although these stress indicators are non-specific and could be related to nutritional deficiencies or growth disturbances, the degrees of severity and distribution are compatible with a diagnosis of rickets or scurvy. If this diagnosis is correct, Atp'12.1420 represents one of the few documented cases of these metabolic diseases in recent prehistoric times.

Key words: recent Prehistory, scurvy, rickets, abnormal porosity

The black slaves: estimating ancestry through non-metric analysis

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In forensic anthropological analysis, ancestry estimation is essential in establishing the individual's biological profile. Several metric and non-metric approaches have been developed in order to estimate adults' ancestry based on skeletal remains. The morphological analysis of the skull, particularly of the face where there are useful structures to assess ancestry, is the main method used. The aim of the present work is to present the results of the application of morphological methods for assessing ancestry in 35 African slaves' skulls. These skeletal remains belong to African slaves discarded during the 15th-17th centuries in a waste disposal site at Valle da Gafaria, Lagos (Portugal), being therefore individuals with Negroid characteristics. Thirty-eight morphological characters of the skull were selected from the Rhine (1990) list, and their precision tested. Three characteristics were excluded due to the low precision presented. The traits observed in the present sample include broad nose, reduced spine, low and rounded root, low bridge, guttered lower border, hyperbolic palate, rectangular orbits, and great prognathism. Other traits, such as shovel shapes incisors, carabelli's cusps, nasal projection, inion hook and metopic trace, are absent from this sample. The obtained results are consistent with a Black population. In other words, the non-metric analysis of the skull proved to be very useful in assessing ancestry in this sample, being a good methodology to continue applying both in past populations and forensic sciences.

Key words: population affinities, anthroposcopic analysis, cranium, Anthropology of Past Populations, Forensic Anthropology

Limb proportions in an African slaves sample from Lagos (Portugal)

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Limb proportions can be an indicator of the type of environment one population lives in. It can also provide some evidences about the nutritional effects on growth. Therefore, the main goal of the current study is to test whether the individuals (N =21 adults; 14 females and 7 males) from an African skeletal sample dated from the 15th-16th centuries, recovered in Lagos (Portugal), show distal stretching of the limbs (limbs with longer distal bones in comparison with the proximal ones). Sampling was constrained by the fact that this type of study should only be applied to adults and because the methods require a relatively good condition of the osteological material. Standard osteometric dimensions were taken according to Martin's methodology on the left humerus, radius, femurs and tibias in order to calculate brachial, crural, and intermembral indices. The results were compared to those obtained by Wasterlain (2000) for the Identified Skeletal Collection from the University of Coimbra, and reveal that the 21 individuals present distal stretching of the limbs. Besides, the upper limbs tend to be longer in relation to the lower ones. Since these individuals were African, these results corroborate the theory correlating climate and limb proportions. However, more studies should be done, especially with larger samples, for more accurate results.

Key words: limb morphological variation, climate, Negroid skeletal sample

Evidences of illness in the Medieval ossuary exhumed near the Torre Sineira (Miranda do Corvo)

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Inserted in the project of the Rede Urbana dos Castelos e Muralhas Medievais do Mondego (RCMM) an archaeological intervention near the Torre Sineira in Miranda do Corvo was undertaken in 2011. This excavation revealed a large ossuary. A subsample from this sample, representing a minimum number of minimum of 153 individuals, 110 adults and 43 non-adults, of both sexes revealed four pathological cases that will be presented and discussed in this paper. All cases were observed in adult bones and include traumatic, degenerative and congenital and infection diseases. The former one represents a complete fracture of a left ulna, without fusion of both diaphysis fragments. A complete fusion of the right 2nd and 3rd metacarpals, the trapezoid and capitate was observed. Besides degenerative joint disease, other possible diagnosis, as rheumatoid arthritis are discussed. Evidence of congenital disease, namely calcaneo-navicular non-osseous coalition was observed in 3 calcaneus (2 rights and 1 left) corresponding to a minimum of two individuals. Untimely, signs of severe infection disease were register in the diaphysis of a right femur which is completely covered with a thick layer of bone forming a type of involucrum. It is also visible a small hole, 10mm, which seems to correspond to a cloacae which presence allows us to suggest a diagnosis of osteomyelitis.

Key words: ossuary, cloacae, fracture, non-osseous coalition, rheumatoid arthritis

A possible case of pulmonary disease in a slave child from Lagos, Portugal

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The purpose of this report is to present a case of a possible pulmonary non-tuberculous disease in an African slave child from *Valle da Gafaria*, Lagos (15th-17th centuries), discussing its differential diagnosis based on the lesions' pattern. Age-at-death was estimated between 7 and 11 years-old using standards of development for permanent mandibular teeth, and charters for calcification and eruption times. The anatomical preservation index obtained for this individual (78.98%) represents a very good state of preservation. The skeleton was examined by gross inspection, and the bones radiographed through digital mammography. Several lesions are apparent in this individual, some of which are lytic in nature. The lytic lesions (measuring 4 to 11 millimeters) are present in the sternal extremity (visceral surface) of four right ribs. There are also multiple areas of new bone formation, both woven and lamellar. More specifically, the visceral surfaces of the ribs show proliferative changes, taking the form of periosteal reactions which are moderate in extent. In some ribs, new bone apposition led to the enlargement of the shafts. Periostitis is also found in the diaphyseal shafts of both femora and the right humerus. Although, at the first sight, ribs' lesions could be suggestive of tuberculosis, their location and morphology do not support such diagnosis. So, other pathologies such as bronchitis, pneumonia or pleurisy should integrate the differential diagnosis.

Key words: ribs' lesions, childhood, slavery, Paleopathology

Bronze Age populations of the Northwestern Iberia. Anthropological and pathological features of Quinta de Água Branca (Vila Nova de Cerveira) and Agra de Antas (Esposende)

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This work aims to study some anthropological and pathological features of the Bronze Age populations in northwestern Iberia. This will be done based on the study of bones from two funerary contexts of the Northwest Atlantic coast of Portugal: the Quinta de Água Branca cist and the Agra de Antas / S. Paio de Antas cists necropolis. Both were radiometrically dated from the 2nd millennium BC, ie from the Bronze Age. From bone analysis of Quinta de Água Branca, it is only possible to say that they belonged to an adult, probably male, with evidences of caries. The study of bones from the necropolis of Agra de Antas revealed the presence of at least four individuals. One, a adult male, aged more than 40-45 and less than 60 years at the time of death, who suffered from degenerative diseases such as osteoarthritis. Another individuals was adult, male, between 40-60 years of age, tall - 168.9 ± 6.90 cm- and robust- He displayed degenerative changes all over the skeleton, both articular (osteoarthritis) as non-articular (entheseal changes) that foreshadow continued physical activity. He also exhibited an old fracture in his the left forearm. Degenerative lesions of the upper limbs, enable to assume that this individual had performed repeated and continuing efforts. This should be related to the frequent use of the upper limbs muscles, including the ligaments of the fingers. Furthermore, this individual also displayed a severe and angled teeth wear, suggesting an abrasive diet and possibly a malocclusion. The remaining two other individuals were adults as well. Both were smaller, less robust and younger than those described above. One of them would be female while the other male. No pathological alterations were registered. Despite the small set of data we can consider that the western facade of the Northwest Portuguese, during the 2nd millennium BC, some communities practiced primary inhumation of adults of both sexes. Almost all of them had problems of dental caries. And the degenerative changes, both articular and non-articular of the individuals from Agra das Antas should be highlighted.

Key words: Northwest of Portugal, funerary context, Bronze Age, anthropological features, pathologies

Geometrical properties of the proximal femur in three identified Portuguese skeletal samples

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Bone continuously adapts to biomechanical stress. Moreover, bone geometry is a potential risk factor for fractures, increasing or diminishing bone strength and the proclivity to fall. As such, we assessed three bi-dimensional geometrical parameters of the proximal femur (femoral neck axis length, femoral neck width and neck-shaft angle) in three identified Portuguese skeletal samples (Coimbra Identified Skeletal Collection; Luis Lopes Collection, Lisbon; and Identified Skeletal Collection of the 21st Century, Santarém) aiming to discern secular trends (considering individual years of birth and death) in the proximal femur phenotype throughout the 20th century in Portugal. The association of the so-called osteoporotic fractures (hip, vertebral, proximal humerus and distal radius fractures; N=89/492; 18,1%) with proximal femur geometry was also evaluated. It was not detected a definite secular trend in the proximal femur geometry during the last century. Notwithstanding, the femoral neck width, in both sexes of the pooled sample (all skeletal samples tested together), and the neck-shaft angle, in the females' pooled sample, are significantly associated with osteoporotic fractures.

Key words: bone geometry, femur, osteoporotic fractures, osteological reference samples, Portugal

Intentional cranial modification in aboriginal societies of northwestern Argentina

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Intentional cranial deformation is the practice of body modification which involves the alteration of the human skull shape. It is done by distorting the normal growth of infant crania applying different techniques, including the use of pads, boards, bandages and manual molding or massaging as well. In past aboriginal societies, cranial modifications have been used as a marker of gender, ancestry, social status, aesthetics, and for ritual purposes. The aim of this study is to present the evidences of intentional modification of the skull shape found in aboriginal societies of the provinces of Catamarca and Santiago del Estero in the Argentinean northwestern region. The individuals analyzed in the present study were recovered from pre-Columbian archaeological sites in the Hualfín valley and the rivers Dulce and Salado basins in the mentioned provinces. The sample consists of 80 adult crania dated between centuries X and XVI AD. Patterns of deformation were examined, including the morphological appearance of the deformed skull and their degrees of modification. Osteological evidence reveals modification of the skull shape in both sexes. Occipital flattening of the crania, also known as *tabular erecta* form of intentional deformation, has a frequency of 89% on this skeletal sample, and it seems it was predominant in the plains and valleys of northwestern Argentina before the contact with Europeans. These results reveal that skull deformation in these ancient populations was a decisive indicator of social inclusion and ethnicity and was not necessarily related to the social status of the individuals with modified crania.

Key words: cultural modification, head, pre-Columbian Argentina

Dental traits in the Neolithic sample from the site of Outeiro Alto 2 (Brinches, Serpa, Portugal)

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The dental morphology analysis is essential in past population's studies. It evidences genetic and/or familiar bonds allowing inferences about individual and/or groups affinities. This type of studies is quite viable, quick and costs very little. Besides that, the durability and endurance of teeth facing taphonomic and environmental factors allows the deduction of valuable information in very fragmented osteological remains. The main goal of this study is the analysis of dental traits in the Late Neolithic sample exhumed from "*núcleo C*" of the archaeological site of "*Outeiro Alto 2*" (*Brinches, Serpa*). This includes the dental remains recovered from Hypogea 5 and 16. Fourteen dental traits were register according to ASUDAS. Among the most relevant data are the frequencies obtained for upper canines of the mesial accessory ridge (bushman) (left: 42.86%, N=7; right: 27.27%, N=11) and the distal accessory ridge (left: 42.86%, N=7; right: 45.45%, N=11), in Hypogeum 5. For Hypogeum 16 the frequencies are lower for both traits; mesial accessory ridge are lower (bushman) (left: 11.11%, N=9; right: 16.67%, N=6) and distal accessory ridge (left: 22.22%, N=9; right: 33.33%, N=6). In Hypogeum 5, positive expression (ASU = + 5) of Carabelli cusp in first molar are, respectively, 30% (N=10) and 14.29% (N=7), for Hypogea 5 and 16. These data represent a contribution to the characterization of dental morphological traits of Portuguese Late Neolithic population and are discussed considering available data of other Portuguese coeval samples.

Key words: Late Neolithic, Outeiro Alto 2, morphological dental traits, accessory ridge in canines, carabelli trait

Trauma evidences in adult individuals from 1st-3rd centuries AD from Roman Ossonoba

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The necropolis of *Ossonoba*, located in the center of the current city of Faro (Algarve, Portugal), has been excavated by ARKHAIOS in 2004. The artifacts found indicate its use between the 1st and 3rd centuries AD. Of the 82 exhumed skeletons, so far 34 (41.5%) adult individuals were analyzed, 19 males (56%) and 14 females (41%). The aim of this work is to show the evidence of trauma found in this sample. The analysis performed showed 13 cases of possible trauma distributed by 9 individuals, 6 males (67% - N=6/9) and 3 females (33% - N= 3/9). In females were found one lesion in the frontal bone and evidence of Colles' fracture in the left radius (burial 76), one fracture in the left clavicle (burial 18) and a possible dislocation in one right foot phalange (burial 33). In males, we observed three individuals with evidences of two fractures each: burial 34 with a possible trauma in the right ulna and left tibia, burial 67 with evidence of Colles' fracture in right ulna and radius and burial 68 with a possible trauma in the right clavicle and another in the 9th right rib. Also, evidence of trauma were recorded in a left clavicle (burial 13), in the right scapula (burial 24) and one possible case in the humerus, that led to the formation of a new joint with the radius (burial 75). Trauma is one of the most prevalent conditions encountered in human archaeological remains. In this sample, a high number of individuals with evidence of trauma has been observed (26% of the individuals). However, this value is greatly influenced by the state of preservation of the skeletal remains. The reasons that can lead to the emergence of this condition are extensive, and include accidental and intentional violence.

Key words: Paleopathology, traumatic pathology, 1st to 3rd centuries AD, Algarve

Degenerative injuries in the upper left limb in an individual from Hipogeu 3 in Vale de Barrancas, Berinjel, Beja

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In 2012, in the scope of Subconcessão da Auto-Estrada do Baixo Alentejo, it was excavated in Berinjel (Beja) a set of archaeological sites by the firm ERA Arqueologia. Between the collective burials excavated, the Vale de Barrancas 1 site includes 7 hipogea containing human osteological remains. Among the material recovered from Hipogeu 3 (provisional NMI of 6 individuals), it was registered severe degenerative alterations in three bones from the upper left limb, in the elbow articulation. Although the pieces were not found articulated between them, the similarity of the injuries suggests they belong to the same individual. In this paper it will be described such alterations, particularly relevant if we consider that these injuries are rarely reported in coeval studies and that they would've had important implications in this individual's daily activities. This case also allows us to add more data concerning the quotidian of these pre-historic individuals, who lived and died in this south-eastern region of Alentejo.

Key words: osteoartrosis, Vale de Barrancas 1, degenerative pathology, hipogea, final Neolithic

Mortuary practices at the Perdigões Enclosure: inhumations and cremations in pits

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Perdigões is a large set of ditched enclosures located in Alentejo, South of Portugal, and dates from Late Neolithic/Chalcolithic periods. This enclosure presents a remarkable variety of funerary contexts: primary depositions in pits, secondary depositions in tholoi type monuments and ditches and depositions of cremated remains in a pit and in open area. In this work we present the results of the paleoanthropological study of human remains recovered from different pits, containing inhumations or cremations. In pits 7 and 11 were found primary inhumations of, respectively one adult and three non-adults. Pit 16 contained a secondary deposition of cremated remains representing a minimum number of 6 adults and 3 non-adults. Despite the high degree of fragmentation of the human bones recovered from these funerary contexts some anthropological data (estimation of minimum number of individuals, demographic data and evidence of diseases) were obtained. These were complemented by ancient DNA analysis. The results will be interpreted taking into account the different funerary solutions observed.

Key words: Late Neolithic/Chalcolithic, funerary practices, inhumations, cremations

A possible case of *Concha bullosa* in a female adult cranium recovered from the 'jail cleaning yard' of Évora Inquisition (Portugal)

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Concha bullosa is usually characterized as the hypertrophy of the middle nasal conchae, the inferior projections of the ethmoid bone. Few cases are reported in the paleopathological literature and its etiology is still little known, but trauma during nasal cartilage growth and genetics are identified as the main causes, which should be understood more as an anatomical variation than the result of a disease. This work aims to present a case identified in a cranium coming from commingled remains recovered in the 'jail cleaning yard' of the Évora Inquisition. This is the only case identified amongst the remains of 3 males and 9 female adult skeletons, within a minimum number of 16 individuals in commingled bones. The macroscopic observation of the complete cranium of an adult female led to the record of a pneumatization of the right nasal middle concha. This projection has an anterior-posterior maximum width of ca. 20mm and medial-lateral of ca. 10mm. The surface presents cortical bone spiculae and the nasal septum shows a marked shift to the left, which may cause the change of air flow in the nasal cavity and can generate inflammatory changes, nosebleeds or obstruction, eventually resulting in infection of paranasal conchae. The association between *Concha bullosa* and sinusitis is still in debate. The diferential diagnosis, that will benefit from the use of CT scan, includes fibrous dysplasia and tumor. The discussion of this case intended to contribute to the knowledge of this rarely reported condition and alert to the need of its research in Portuguese skeletal populations.

Key words: dump, prisoners, discarded, septal deviation

The unburied individuals at the Évora Inquisition (Portugal): complementary between skeletons and documental interpretations

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An area of 20.75 m^2 from the so-called '*Jail cleaning yard*' of the religious court of the Évora Inquisition was excavated by Crivarque, Lda in 2007/2008. The archaeological context consisted of layers of sediment containing discharges of domestic waste. The present work aims to present and interpret the funerary anthropology associated with the human remains recovered. The sample under analysis consists of 12 adult individuals in articulation (3 male, 9 female) and a minimum of 16 adults in a context of commingled bones. Funerary structures were absent and no grave goods were found. Four individuals were in *decubitus supinus* (oriented E-W, S-N, SW-NE, NE-SW), four in *lateral decubitus*, 3 on the right side and 1 on the left (2 SW-NE and E-W, W-E, one each), three in *ventral decubitus* (2 SW-NE, 1 W-E) and in one skeleton the position wasn't registered in the field records. The position of the limbs is also quite variable, the upper usually on the chest/pelvis or folded on the body's opposite direction and the lower distended, flexed or crossed. The apparent absence of burial rituals is consistent with individuals not reconciled with the Catholic faith, according to the Inquisition historical processes. Furthermore, these documental sources allowed the identification of 87 prisoners who died during the period in which the dump has been in use, 11 (12,6%) of which confirmed discarded and charged of Judaism, heresy and/or apostasy. The specific context of this sample can help find possible explanations for Medieval/Modern burials outside the Christian standards, usually known as "atypical" or "deviant burials".

Key words: dump, prisoners, Judaism, discarded, atypical burials

The early practice of Physical Anthropology by the Renaissance Portuguese physician Amatus Lusitanus (1511-1568)

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The birth of physical anthropology is often attributed to Johann Friedrich Blumenbach (1752-1840), a German professor of medicine, naturalist and collector of human skulls. The works of his predecessors, such as Carolus Linnaeus (1707-1778), Georges-Louis Leclerc or Comte de Buffon (1707-1788) and Petrus Camper (1722-1789), reveal that the interest on human biological variation grew with the scientific revolution taking place over the Enlightenment. However, remarkable progresses occurred before, namely during the Renaissance, when human anatomy became subject of artistic and scientific interest, as witnessed by the iconographic representations of Leonardo da Vinci or the anatomical treatises of Andreas Vesalius. The old Galenic and Hippocratic paradigms regarding the human body gradually shifted during this period and the practice of human dissections opened the door to the scientific study of human tissues and organs, including bones and teeth. Thus, the Renaissance medical texts represent an interesting and underexplored source for the history of biological anthropology. This work aims to describe one of the earliest evidences of the practice of physical anthropology performed by Amatus Lusitanus (1511-1568), pseudonymous of João Rodrigues, born in Castelo Branco, Portugal. Between 1551 and 1561, this physician published 7 volumes entitled *Curationum medicinalium centuriae*, each containing 100 cures (*curas*) reporting unusual medical cases treated in several European countries. The last cure from the 4th *centuriae* describes his attempt to understand handedness by measuring the weight differences between left and right humeri. This evidence shows that Amatus Lusitanus may be considered one of the precursors of Portuguese physical anthropology.

Key words: History of Biological Anthropology, bone weight, handedness

Hypogea 1 and 2 from Sítio Monte Malheiro 2

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During the archaeological works at the Selmes's irrigation block (Vidigueira, Beja - Portugal) two hypogea were discovered in Sítio Monte Malheiro 2. Approximately 5m away from each other, both presented human osteological remains dated from the Final Neolithic. At the Hypogeum 1, three individuals in anatomical connection and three completely disarticulated were found, giving a total of six individuals adults and non adults. At the Hypogeum 2 it was possible to retrieve one skeleton in anatomical connection, and a set of disarticulated bones corresponding to a Minimum Number of Individuals of three individuals, making a total of four individuals adults and non adults. The human skeletal remains recovered from both hypogea presented a high level of fragmentation limiting their anthropological study. This work aims to present the results obtained from the funerary anthropological study and the paleobiological analysis of the human skeletal remains, in order to contribute to the characterization of the human communities that have inhabited this region of Portugal 5,000 years ago.

Key words: hypogeum, Late Neolithic/Chalcholithic, human skeletal remains, Monte Malheiro 2

Damaged goods: the case-study of an individual from the archaeological collection of slaves from Lagos (Algarve, Portugal)

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The main focus of this poster is to show the pathological traits of the individual number 72 from the osteoarchaeological collection *Valle da Gafaria*. The present collection was acquired through a salvation excavation in Lagos. The skeletons were retrieved from a dumpster with 5000m^2, and its utility spam was of two hundred years (15th-17th centuries). In the midst of urban garbage were found 158 skeletons of African ancestry. Based on several historical sources, it is thought that the African skeletons that constitute this collection belonged to slaves that perished shortly after they ported. The individual number 72, an adult male, was found in ventral decubitus with his upper limbs behind his back, and it has a fairly good osteological representativity, which translates in a good mapping of its pathological lesions. Through the use of the map of the lesions and macroscopic analysis a differential diagnostic will be proposed. At *priori* it is known that the individual has eburnation, marginal lipping and porosity in the diarthrodial joints of the spine and other regions of the body as such it could be osteoarthritis, but he also displays eburnation, porosity and osteophyte growth in the amphiarthrodial joints of the vertebral bodies, which could be an indicator of its severity. However, the infectious process on thoracic vertebrae does not fully support such diagnosis. So, other joint pathologies raging from degenerative to immune will be considered in the differential diagnosis.

Key words: eburnation, osteophytic growth, erosion, infectious processes

Multiple pathologies in a male individual exhumed of the Churchyard of Old Church of S. Pedro da Sobreira (Paredes), 13th-19th century

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The churchyard of the Old Church of S. Pedro da Sobreira (Paredes) worked as a cemetery between the 13th century and the end of the 19th century. During the archaeological excavations carried out in 2007 and 2008, 80 graves were excavated, of which 34 contained human bones, corresponding to a minimum number of 90 individuals (83 adults and 7 subadults). Among the exhumed sample, the individual 1 of the grave 71 (mature adult male) stands out. This skeleton presents the left talus and calcaneus fused. In these bones is also visible new lamellar bone formation. The left navicular, the right talus, calcaneus and navicular exhibit microporosity. Also, the shafts of the metatarsals display slightly deposition of lamellar bone. Possible diagnoses of this fusion are discussed. These include congenital and traumatic origin. Other pathological findings detected in this individual include signs of infection and degenerative pathology. On the visceral surface of the vertebral end of four right ribs deposition of a thin layer of woven bone was observed. Their articular facets exhibit osteolytic changes, accompanied by formation of new compact bone and marginal lipping. The articular facets of the vertebrae also exhibit these changes in more developed stage and body's destruction is severe (marked in the cervical ones). Moreover, the 6th and 7th cervical vertebrae are fused. Furthermore, the lipping is also more exuberant in the vertebral bodies.The distal end of the right femur and the corresponding patella shows notorious lipping and eburnation. The natures of these lesions are discussed in the historical-medical context of the Municipality of Paredes.

Key words: infection pathology, degenerative pathology, congenital fusion, traumatic fusion, Medieval/Modern

Hypercementosis in the West Prehispanic, México

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Individuals of seven pre-Hispanic Colima osteological collections show dental hypercementosis in two or more teeth. Out of 64 skeletons studied, 37.5% (24) show hypercementosis at various degrees, including severe cases. The method employed to assessed it was morphological aspect: thickening apical and area covered, besides radiological anaylsis. The presence of this condition has been associated with dental trauma, tooth wear, occlusal stress, periodontal disease and systemic diseases, including Paget´s. The objective of this study was to establish the tooth pattern, the frequency, type and degree of anomaly, its relationship with the oral pathology in question or Paget disease, detectable through paleopathological analysis of the skeletal remains and radiological study. For the purpose of this study, it was necessary to sex and age the sample, stablish the type and degree of injury and identify possible factors that caused its presence in the ancient habitants of Colima. The results indicate that this alteration is associated with periodontal, calculus disease and possible periodical anaemia. In the analyzed sample, hypercementosis is not associated with trauma or tooth wear as it been reported in previous studies for other populations.

Key words: hypercementosis, periodontal disease, anemia, Colima

Early illness: a possible case of meningitis in a Modern child from the foundling wheel of *Santa Casa da Misericórdia* (Faro, Portugal)

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The aim of the present study is to make the differential diagnosis of an uncommon pathological case, from an archaeological intervention in Santa Casa da Misericórdia (Faro, Portugal). The excavation, in 2006, brought to light the Santa Casa's cemetery (16th-19th centuries) with three phases of funerary use – three adult burials with catholic orientation; an ossuary with a wide demographic constitution; and 51 non-adult inhumations (aged from foetus to one adolescent, most being less than 12 months), corresponding to abandoned new-borns received in the institution by foundling wheel's mechanism means. These immature individuals are being studied as part of a Master thesis, in which the case here reported was identified. One well preserved 2 year-old skeleton (age-at-death estimated by dental calcification) presents unusual lithic intracranial marks in the parietal and occipital bones. All bones were examined under standardized lighting conditions by careful visual inspection, with the aid of a stereomicroscope. The differential diagnosis of the lesions gave rise to several possible pathological conditions, namely anaemia, scurvy, rickets, battered baby syndrome, and bacterial and tuberculous meningitis. However, after comparing the present case with the descriptions and images of different types of cranial lesions, those seem to match the ones of bacterial meningitis. The postcranial evidences (porosity and woven bone presence at the scapula and long bones) match this diagnosis. Considering the circumstances where the wheel's children lived, orphanages with poor nutritional and hygienic conditions, pathogens' exposure was highly likely to occur. This historical fact could explain a meningitis case.

Key words: meningitis, non-adult, growth, Paleopathology

Dolmens of Rego da Murta (Portugal): Burial practices and paleoanthropological analysis

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The village of Alvaiázere is integrated in the Portuguese region of Alto Ribatejo. It is a focal point of many cultural groups who arrived by inland or coastal, covering the courses of rivers, interacting with the landscape, and transforming this region in the key-element to the perception of the emergence of new technologies and thoughts, which occurred in the Neolithic, namely the megaliths phenomena.The megalithic complex of Rego da Murta is composed of a set of stone monuments which fits in the chronology of the Late Neolithic to early Bronze Age (V-II millennium BC), within an area of about 1 km^2, on the right bank of the stream of Rego da Murta. Of the many megalithic monuments, two dolmens stand out, the Dolmen I and Dolmen II of Rego da Murta. The human skeletal remains exhumed and already study until this date, revealed a minimum of about 20 individuals (9 non-adults and 11 adults, 2 of whom are males and 3 are females) for Dolmen I. The Dolmen II presents about 61 individuals (29 non-adults and 32 adults, 7 males and 5 females).This poster summarizes the data of the paleoanthropological study and the burial practices.

Key words: mortuary practices, anthropological data, Late Neolithic, dolmens, Rego da Murta

Past granite: anthropological analysis of the Mediaeval/Modern human skeletal remains from Pinhel (Guarda)

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In 2006 an archaeological intervention in Pinhel (Guarda) uncovered four mediaeval/modern necropolises, located at the forecourt of the church of *Santa Maria do Castelo*, *Santiago* Square, *São Martinho* Square and *Silva Gouveia* Street. In the present work, the paleoanthropological analysis of the human remains exhumed from the four necropolises is performed in order to characterize this sample. The analysed sample is composed by 20 adult individuals (7 males, 6 females and 7 individuals of unknown sex), 6 non-adults (three newborn, one 11 year- old child, two 6-9 month-old babies), and an ossuary with at least 7 adult individuals. Despite the high fragmentation and other taphonomic alterations of the bones, particularly in those exhumed from the church of Santa Maria do Castelo, it was possible to obtain important information about this population. The individuals' biological profile was drawn through age-at-death estimation, sexual diagnosis and stature´s estimation, using standard methods (Buikstra and Ubelaker, 1984). Several pathologies have been identified, namely oral, neoplastic, degenerative (both articular and non-articular) and infectious. Non-metric cranial and post-cranial characters were also recorded. Despite of being a relatively small and poorly preserved sample, it was possible to gather important information about the individuals who lived and died in this town during the mediaeval/modern times.

Key words: biological profile, Paleopathology, past populations

Evidence of the use of lime on a 15th-19th century archaeological population from the Convent of Saint Elói, Porto

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The Convent of Saint Elói was located in Porto in an area known as "Cardosas". It belonged to the order of Saint John Evangelist, functioning from 1490 to 1834. Part of its inside was excavated in 2009, prior to its reshuffle in order to accommodate a hotel. During the excavation, a sample of 66 individuals, comprising adults (N=45) and non-adults (N=21), was exhumed from both the Crypt and the Cloister, comprising osteological remains from in situ and ossuary contexts, which was studied for the elaboration of a Masters dissertation. It has been considered common knowledge that the use of lime accelerates the process of decomposition, having its use and therefore relevance in forensic cases as it has been used to accelerate cadaver. Since lime has been used over a long period of time and by several populations, the understanding of its effects on human remains is important, not only for forensic anthropology, but also for better understanding of archaeological contexts. This study presents some examples on which the presence of lime was observed, aiming to establish a connection between its use and the individuals or their burial place, in order to observe the possible relation between the use of lime and the place of burial or with disease. The presence of white powder was observed in all individuals from the Crypt (N=20) and in two individuals buried in the Cloister (graves 3 and 21). Several hypotheses could explain this phenomenon, namely hydrolysis, exposition to the elements, and lime deposition, being the latter considered the most likely. In what concerns spatial distribution, it is not odd that the deposition of lime was observed mainly in the Crypt, as it was part of one of the chapels of the church as it is one of the measures advised for burial inside buildings, to prevent odor and contagion as well as to insure the occurrence of decomposition . Concerning the two individuals in the Cloister, they were both males over 40 years of age, one of them suffering from a possible infectious disease.

Key words: Funerary Anthropology, crypt, cloister, burial

Non-osseous tarsal coalition: evidence from a 15th-19th Portuguese archaeological population from the Convent of Saint Elói

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The Convent of Saint Elói, which belonged to the order of Saint John Evangelist, was the 6th house of the congregation in Portugal and the only one located in Porto, in an area known today as "Palácio das Cardosas", a designation that portrays the memory of the bourgeois palace built after the Convent was shut down and sold. In 2009, the excavation work done prior to the demolishing and construction on the site exposed part of the Church and Cloister and uncovered some of the burials. A sample of 66 individuals, which was comprised by a majority of adults (N=45) of which most were over 50 years of age at the time of death, exhumed from the Crypt and Cloister, from *in situ* and ossuary contexts, was studied for the masters dissertation of the first author. As the third metatarsal and third cuneiform coalition has been rarely reported in studies concerning archaeological populations, we have decided to present some evidences of this congenital defect in our sample, hoping to contribute to the further understanding of this morphological feature.

This congenital defect t is usually bilateral and is characterized by a circular or oval shape in the proximal surface of the third metatarsal and on the distal surface of the third cuneiform, on which it is usually circumscribed to a third of the plantar surface, with some extent of variability in its morphology and size. In this sample, 5 cases of non-osseous coalition of the third metatarsal and third cuneiform were observed, all from ossuary contexts, of which 4 (4/41) were observed in the third metatarsal and 1 (1/22) in the third cuneiform, corresponding to a NMI of 3 individuals from the Cloister's graves 2,3 and 13. The proposed differential diagnose has taken into account biomechanical changes, arthritis, infection, trauma and non-osseous tarsal coalition. Unfortunately the absence of the Convent records has not allowed to establish the connection between the burials and family relations, only DNA testing could further clarify this matter.

Key words: third cuneiform, third metatarsal, ossuary, cloister

High infant mortality *versus* low number of diseases in paleopathological literature: the cases from S. Bartolomeu necropolis (Aljustrel, Portugal)

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In 1981/2, an archaeological emergency excavation was developed at the S. Bartolomeu necropolis, related to the pyrite mining site of Aljustrel (Beja, Portugal). The remains identified covered a wide chronological spectrum, from the Middle Ages to Modernity. This area is also known as *Vipasca*, the Roman designation of this cooper extraction center. The current research aims to study 23 fetuses/newborns among a MNI (minimum number of individuals) of 35 non-adult individuals (23/35=65.7%), questioning the living conditions of this population, in particularly of the women during pregnancy. New bone formation was identified in one skeleton as well as in commingled bones belonging to a minimal number of 7 individuals aged less than 1 year at the moment of death. Besides, a range of porous abnormalities affecting the bones of the skull (sphenoid, *pars basilaris, pars lateralis, pars petrosa*, mandible and maxilla), *scapulae*, *ilia* and long bones diaphysis was also found. Conditions like rickets, anemia and infections were considered in the differential diagnosis, but the characteristics and distribution patterns of these lesions suggest a metabolic aetiology, most probably scurvy. However, both paleopathological and clinical literature highlight the rarity of such conditions during breastfeeding even from severely malnourished mothers. Thus, this research also discusses the difficulty of paleopathology in interpreting the mortality of infants based on a few number of diseases known to leave bone changes particularly in the first months of life.

Key words: fetuses and newborns, metabolic diseases, Medieval and Modern periods, Aljustrel mines

The megalithic monument of Cabeço dos Moinhos (Brenha, Figueira da Foz, Portugal): anthropological data

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Cabeço dos Moinhos is a megalithic tomb built on a limestone outcrop located in a little hill placed on the ridgeline of Boa Viagem Mountain. Excavated by Santos Rocha in the end of the 19th century, this funerary monument reveals human bones, pottery, lithics and bone object dated to the Neolithic period. However it was reused during the third, second, and probably the first millennium BC. The focus of the present work is the study of the human remains nowadays housed in the Museu Municipal Santos Rocha (Figueira da Foz). The bone assemblage (1213 fragments), representing a minimum number of 10 individuals (8 adults and 2 non-adults) is composed by fragments of all parts of the skeleton, some of them displaying chromatic alterations due to the exposition of fire. The dominant colour change is black, indicating that these human remains were submitted to low temperatures (300°C – 500°C). Besides the descriptions of the alterations due to the exposition to fire, the obtained anthropological data are presented, as evidence of disease. All these evidences are discussed as a contribution of the understanding of burial practices in Western Central Portugal during the Prehistory.

Key words: Neolithic, human bones, burned bones, funerary practices

Scaphoid nonunion from the Medieval site Kladruby

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At the medieval burial site Kladruby, scaphoid nonunion was identified in two graves: No. 4019 (male in the age 40-50 years) and No. 4025 (admixture to the main finding undefined sex and age). Comparison with a model created by Hidaki and Nakamura (1998) using three-dimensional computed tomography allowed, on the basis of a clinical set consisting of three skiascopically checked patients (5 months, 3,7 years, 19 years after injury), to set up the chronological succession of the development of degenerative changes in not united scaphoid bone fractures. Between the 4th-7th year, onset of the development of generative changes on the distal scaphoid fragment takes place. From the 7th to 10th year pointing of the radial styloid occurs, and cysts may be visible on x-ray films. As a rule, enlargement of the distal fragment osteophyte occurs after 10th year. Using this classification it will be possible to determine the time of injury prior to death if the distal fragment of the scaphoid, and the radial bone are preserved at least (maybe also the contralateral- for comparison). In the 40 to 50 years old man from the grave No. 4019 this was 7-10 years prior to death, in the person from the grave No. 4025 the estimate amounts to 4-7 years prior to death. Progressive osteoarthritis inevitably develops in all cases with untreated scaphoid non-union fractures.

Key words: bone fracture, development degenerative changes, Medieval population

Funerary anthropology of the Early Medieval cemetery of Torre Velha
(Castro de Avelãs, Bragança)

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This poster presents the results of the excavations campaign conducted at the early medieval cemetery of the archaeological site of Torre Velha (Castro de Avelãs, Bragança), during the summer of 2012. The analysis will be done in an integrated way, linking the (new) archaeological data (chronology and associated archaeological materials) and funerary anthropology, along with a brief historical overview of the site - one of the most referred in the archaeological literature of Trás-os-Montes, commonly identified as the capital of Zoelas in Roman times. The first phase of the work field revealed a Roman living area (whose materials point to a timeline that goes from the first century until the V / VI A.D.) and an early medieval cemetery, whose burials radiocarbon dating allowed to get a chronology between VI and XII centuries. Were exhumed 19 individuals from 18 graves excavated. The graves can be grouped into five distinct types, which will be described in the poster. Individuals were buried in supine position, with the head to west and the feet to the east (except the grave of the individual 14 (a child) that is oriented NW-SE) and with no archaeological materials associated, denouncing Christian despoliation of this time. Some of the graves have associated ossuaries, demonstrating the reutilization of the funerary space through times.

Keywords: Castro de Avelãs, Bragança, Early Middle Age, Funerary Anthropology

Case studies in Forensic Anthropology

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Forensic anthropology is an applied subdiscipline of biological anthropology that relates to medicolegal death investigations. It is considered its own discipline by many practitioners and researchers as it has evolved from the examination of isolated or individual cases to having a strong research schema. It is extremely important for a forensic anthropologist to have expert knowledge in many aspects of skeletal biology and human biological variation in order to be able to correctly asses, assist the medical examiner in making identifications, trauma reconstructions and other scientific recommendations or determinations that will ultimately have a legal consequence. In addition, many forensic anthropologists testify on their findings in court and it is imperative that the forensic anthropologist does not overstep their bounds or overstate their findings as they would have a detrimental effect on the case outcome. Cases that exemplify the breadth of work performed in the Forensic Analysis Laboratory at NC State University will be presented. An important aspect of forensic casework is that new research is often driven by questions that arise from this casework.

Temporal variation of Calliphoridae (Diptera) in urban and rural areas in Algarve, Portugal

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The determination of the PMI based in entomological studies has great advantages, compared to other methods, giving accurate results even when the corpse is in advanced decomposition stages. The type of species that occur in the corpse is influenced by geographical location, season or the type of habitat. Thus, the determination of the PMI or the place where death occurred, can only be resolved if the necrophagous fauna of the geographical region in question is known, as well as the seasonal variations and distribution of the different species. In order to investigate the specific composition and seasonal changes of the Calliphoridae species for distinct environments (rural and urban), one experiment was carried out during one year using bottle traps (Hwang & Turner, 2005). Algarve was the chosen region for this study, since no study was ever conducted here. 6,129 adult Diptera were collected, of which 4,256 belong to Calliphoridae family. Five species were identified: *Calliphora vicina*, *Calliphora vomitoria*, *Lucilia ampullacea, Lucilia caesar* and *Lucilia sericata*. *C. vicina* and *C. vomitoria* were associated with autumn and winter, while *L. sericata*, *L. caesar* and *L. ampullacea* were associated with spring and summer. Regarding the distribution, *C. vomitoria, L. caesar* and *L. ampullacea* were present in the rural environment, while *L. sericata* was found in the urban area. *C. vicina* demonstrated a ubiquitous distribution, maintaining activity in both types of environments studied. Results are compared with data from other studies in the Iberian Peninsula and species are classified according to their potential utility as forensic indicators of time and place of death.

Key words: Forensic Entomology, species, seasonality, distribution, PMI

An histological approach to age estimation in Forensic Anthropology: a preliminary study

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Bone histology has proved to be a relevant tool for age estimation in forensic contexts. Different bones and histological components can be used, and differences regarding the preparation of thin sections are observed, as well. The main goal of this research is to demonstrate the potential of the relative cortical bone area (RelCt.Ar) in age estimation of adults, using a microscopic free method. For this purpose, 18 identified samples (10 males and 8 females) were collected from the clavicles' midshaft in a Portuguese forensic context. The preparation of thin sections was made, after the maceration of the soft tissue, following the instructions of Maat and collaborators (2001). Cortical bone area was accessed using a regular digital scan, and all measurements were performed in Photoshop CS5. Results were highly conditioned by the sample size. For this reason, the study has a preliminary character. However, it was possible to observe that younger individuals presented higher values of RelCt.Ar relatively to older ones. Sex might also have influence on this histological feature, as the preliminary results indicate. The current study demonstrates that it is possible to use a histomorphometric approach for age estimation, without using complex and expensive equipment, only by means of a regular scan and simple methodology in the preparation of thin sections. Alterations in the RelCt.Ar might be correlated with age, as preliminary data suggest. Nevertheless, it is necessary to increase the sample size and to apply suitable statistical tests, in order to ensure that this methodology can easily be used in the current practice of forensic anthropology.

Key words: Forensic Science, histomorphology, adults, age at death, clavicle

An analysis of the utility of maxillary shape in determining the ancestral affiliation of fetal and neonatal individuals using a 3D geometric morphometric approach

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The mid-face is a critical region of the skull for assessing ancestry or populational affiliation, both in *H. sapiens* and across genus *Homo*. While adult morphologies are well documented, the ontogenetic trajectories that lead to these adult patterns are not fully understood. Many mid-facial traits which vary in frequency between populations are presumed to develop prenatally. While limited qualitative analysis has been done to test this hypothesis, only one study has taken a 3D geometric morphometric approach to studying prenatal maxillary ontogeny, and that study was limited to one population (Japanese). This research project seeks to augment our understanding of fetal maxillary growth patterns, most especially in terms of intraspecific variation within extant *H. sapiens*. We tested the hypothesis that fetal maxillary dimensions can accurately predict ancestry (in a sample of Euro-American, African-American, and "Mixed Ancestry" individuals from osteological collections). An Immersion Corp. Microscribe was used to collect 3D coordinate landmark data on the right maxillae of fetal and neonatal individuals (n=102). The data were analyzed using the programs Morphologika and MorphoJ. Generalized Procrustes analysis (GPA) revealed that shape differences were seen mainly in the lateral wall of the piriform aperture, the anterior nasal spine, and the anterior alveolar region. When a canonical variates analysis (CVA) was run, specimens did not cluster distinctly by age, but the Euro-Americans and African-Americans did cluster by population with only modest overlap. A discriminant function analysis (DFA) showed statistically significant differences in the average maxillary shapes when comparing Euro-Americans and African-Americans, and between Euro-Americans and individuals of "Mixed Ancestry". The DFA was also fairly successful at assigning individuals to the correct ancestry categories; for example, in a comparison of African-Americans and Euro-Americans, 88% of Euro - Americans were correctly classified and 80% of African-Americans were correctly classified (the comparisons of Euro-Americans and African-Americans with "Mixed Ancestry" produced even higher accuracy in classifying individuals). These results suggest that populational variation in maxillary morphology develops very early. Maxillary dimensions may therefore be useful in determining ancestry of unidentified fetal and neonatal remains.

Key words: mid-face, ontogeny, populational variation, ancestry

Age estimation of non-adult human skeletal remains: testing regression formulas from measurements of the long bones

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Age at death estimation is of paramount importance in the identification of human skeletal remains in a forensic context. Age in non-adults can be estimated from the length of the long bones and few regression methods have been proposed. However, their accuracy has not been systematically tested. This study intends to test the accuracy of several regression formulas for age estimation in non-adult skeletons from measurements of long bones. The sample is comprised of 184 individuals of known sex with ages ranging from 0 to 12 years. Data were collected from three documented human skeletal collections (Lisbon, Spitalfields and St.Bride's). The maximum diaphyseal length of six long bones (humerus, radius, ulna, femur, tibia and fibula) was measured. Age was estimated as proposed by Rissech *et al.*, (2008, 2011, 2012) and Facchini and Veschi (2004), then it was compared to known chronological age and the mean difference (MD) was calculated. Results were broken down by age group (total sample, <2 years and ≥2 years) and by sex. When applying the formulae proposed by Facchini and Veschi's formulae, the MD is 0.02 years (total sample), 0.04 years (<2years) and 0.01 years (≥2 years) when the sexes are combined. When applying the formulae proposed by Rissech *et al.*, the MD is -0.55 years (total sample), -0.84 years (<2years) and 0.29 years (≥2years) when the sexes are combined. Sex differences in accuracy are negligible. The formulae that gives the best results is that of Facchini and Veschi (2004). Considering that the sample is comprised of children who were born and died over 50 years ago and that there has been a very pronounced secular increase in body size in Portuguese children since the 1970s, the regression formulae tested here are unlikely to be useful in a modern Portuguese medico-legal context. Consequently, these formulae will not reflect the current growth status of children in most developed nations.

Key words: growth, length, diaphysis

Buried corpses decay: a process with many question marks

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Understanding the variability of the cadaveric decomposition process is critical in forensic cases, being the basis for post mortem interval (PMI) estimation, and relevant in funeral management. With this presentation we contribute to the understanding of the patterns of bone degradation and decomposition of buried corpses; appreciate their relationship with PMI; evaluate the influence of taphonomic factors in the course of the decomposition process, and how these influence the estimation of PMI. Through the principles of Taphonomy, we analysed the processes of decomposition and skeletonization; skeletal preservation; the effect of environmental, individual, and anthropogenic variables on these processes; and the possible relationship with PMI, in 199 cases from public cemeteries. The study revealed a large variability in the course of the decomposition process. The formation of adipocere was often observed, being its evolution highly variable. The decomposition and subsequent skeletonization showed dependence with PMI. However, since this relation is quite variable, it is not possible to predict the PMI based on the state of decomposition. The sample reflects the mortality of adult Portuguese population, making age a variable with bias, which complicated the analysis of bone preservation as a function of age and sex. The type and characteristics of the burials in two cemeteries are propitious to adipocere formation. Still, the results do not explain clearly the role of clothing and burial characteristics in the course of the decomposition process. These results are useful for the management of Portuguese cemeteries, and for routine cases of forensic anthropology.

Key words: cadaveric decomposition, skeletonization, bone degradation, post mortem interval (PMI), Taphonomy

Is there a fase 7 in pubic symphysis? A test using a Portuguese male forensic sample

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The estimation of age at death is, even today, one of the most problematic issues in forensic anthropology casework, despite all the recent advances. When an older unknown victim is involved, the use of morphological methods in age estimation seems even more problematic. Despite of some studies arguing the difficulty of accessing age after 40 years old, Hartnett (2010) points out the existence of a fase 7 when estimating age at death using the pubic symphysis. 61 male pubic symphysis collected during forensic autopsies were used to evaluate the existence of a fase 7 in the Portuguese population. They were first categorized according to Hartnett's descriptions and then they were grouped according to similarities of their morphological characteristics, in order to create useful descriptions to distinguish between a fase 6 and a fase 7. The areas described were: general aspect of pubic symphysis, ventral face, dorsal face, symphyseal face, symphyseal rim, the attachment of the gracilis muscles, the attachments of the adductor muscles, the pubic crest and the pubic tubercle. This study shows that a fase 7 may be easily recognizable in the Portuguese male population. Both mean age at death and age intervals are very similar between Portuguese and American samples and there are only minor differences in the morphological changes of the pubic symphysis between both samples. This preliminary analysis shows that the Hartnett's method is suitable in the forensic estimation of age, despite of some minor differences, which can be overcome through knowledge of the interpopulational differences.

Key words: Forensic Anthropology, age at death, Hartnett's method

Sexual diagnose of the first cervical vertebra: morphometric analysis

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The sex diagnosis is one of the four parameters of the biological profile. This consists in the estimation of sex dimorphism and robustness present in the human skeleton manifested after puberty. This study involves the development of a statistical methodology from the macroscopic and metric evaluation of the dimorphic robustness of the first cervical vertebra; with the intention of define their gender as a probability. The investigation had cooperation from the Department of Life Sciences (FCTUC), with the provision of two identified skeletal collections, the Skeletons Identified Collection from the Conchada Cemetery, 20st century (Training Collection) and the skeletons Identified collection from the Cemetery of Santarém dating from mid-21st century (Test Collection). We measured a total of 188 vertebrae in the collection of training, 99 male and 89 female, and 54 vertebrae in the test collection (29 male and 25 female). The first cervical vertebra proved to be a dimorphic bone with acceptable grading standards, with probabilities of 89,4% for males and 88,7% for females. These values were obtained through the development of a logistic regression function. Four main variables were considered the most dimorphic ones and with better precision values (DTM, DmFTA, LMFSD and DFSM).

Key words: Atlas, vertebrae, sex determination, sexual dimorphism, Forensic Anthropology

A quite unusual case of a cremated body from a house fire

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We here present a first approach to a quite atypical case of a cremated body found in the context of a house fire. A woman was caught by a fire in her kitchen and died in the consequence of it. Her body was destroyed in a very asymmetry way. While the trunk was completely reduced to bone fragments, the lower limbs were preserved with both soft tissues and skin, which displayed severe burns. The skull was not skeletonized and maintained some hair. We here discuss some hypotheses to explain the progress of the fire, namely to understand why the fire stop on the upper part of the lower limbs while both ribs and vertebrae were reduced to fragments, highlighting the contribution of forensic anthropology to this atypical case.

Key words: Cremains, Forensic Anthropology

Genetic diversity of Linear Pottery Culture (LBK) in the light of ancient DNA analysis of LBK individuals from Poland

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A lot has been written about Linear Pottery Culture (LBK) genetics, and its population currently has one of the largest paleogenetic datasets available. That is why it was chosen for the first research project conducted by our team in newly open ancient DNA Laboratory in Poznań. We decided to analyze and compare the genetic diversity between and within LBK populations after complementing available ancient DNA (aDNA) with the data obtained by us for LBK individuals found in Poland. Based on available literature, eleven LBK individuals were chosen and localized (in different museums around Poland), from which eight were sampled for aDNA. Mitochondrial HVS I and chosen coding region markers were than amplified, cloned and sequenced. After rejecting samples that carried obvious contamination, a small dataset was obtained and used for downstream statistic analyses. The acquired mitochondrial DNA (mtDNA) haplotypes were added to previously LBK data obtained by different researchers. Than the whole dataset were divided into sub-populations representing archaeologically recognized settlement zones (Eastern and Central) and compared via population statistics. The results, while being so far inconclusive themselves, enrich our knowledge about genetics of Early Neolithic populations of Central Europe. They also are helping to once again address the questions about neolithic transition processes in the Europe.

Key words: Archaeogenetics, Biomolecular Archaeology, Neolithic transition, Paleogenetics, Phylogeography

Sex estimation using the second cervical vertebra: a metric analysis in a Portuguese sample

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Biological sex estimation is one of the main questions concerning construction of a biological profile of an unknown deceased person. In cases of corpses in an advanced state of decomposition, skeletonized or severely mutilated, bone analysis may provide the only way to access biological sex. The human skeleton areas with greater sexual dimorphism (pelvis and skull) are often badly preserved and/or fragmented or may not even be present in some cases. For that reason, it is necessary to develop sex estimation methods based on bones taken as less dimorphic. In this study, 13 dimensions of the second cervical vertebra were measured in order to verify the existence of sexual differences. As a training sample, 190 individuals from the Identified Skeletal Collection of the University of Coimbra were used, whereas as a test sample, 47 individuals from the 21st Century Identified Skeletal Collection were analyzed. Logistic regression of the measurements was carried out and an accuracy of 89.7% and 86.7% was attained, respectively in training sample and the test sample. The results of this study indicate that the second cervical vertebra enables sex estimation with a percentage of assertiveness similar to other elements of the skeleton. We recommend that, in order to confirm its reliability in forensic context, this method should be tested in other Portuguese modern and/or forensically relevant samples.

Key words: Forensic Anthropology, second cervical vertebra, sex estimation, sexual dimorphism, logistic regression

Biosocial Anthropology and neglected tropical diseases

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This paper reflects on conflicts that have emerged in the course of doing anthropological research alongside colleagues seeking to control the spread of neglected tropical diseases in sub-Saharan Africa. Drawing upon fieldwork undertaken at numerous locations in Uganda and Tanzania since 2005, the paper analyses responses to our research on three tropical diseases: schistosomiasis, lymphatic filariasis and soil-transmitted helminths. This research suggests that current strategies to distribute drugs free of charge to adults and children living in endemic areas is less effective than that indicated in the biomedical literature and, at several sites, has failed. The process of researching and writing up field research has elicited a range of responses from parasitologists, epidemiologists, vector biologists and public health specialists involved in the implementation and/or monitoring of the control programmes. This has included attempts to restrict access to field sites, to contain the dissemination of findings, to re-do local studies in such a way as to suggest that drug coverage is higher than it is, to hold back information suggesting rates of re-infection are high in the aftermath of treatment, the exertion of moral pressure to set aside information that may threaten funding and livelihoods, and misrepresentation of our research in refereed medical journals in an effort to discredit it. The paper highlights the challenges of developing a biosocial perspective and 'speaking truth to power' in a context where control programmes are primarily funded by international organisations such as the Gates Foundation, USAID, and the UK DfID, and it notes the benefits of doing so as well as the counter-productive consequences.

Fluctuating asymmetry in dental non-metric traits: analysis of sex differences in the Coimbra late 19th/early 20th century population

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The dentition of 600 Portuguese individuals (300 of each sex) was scored for dental and mandibular morphology. This sample is composed of 600 identified specimens from 7 to 97 years at death, mainly from Coimbra. The two sides of the dentition were compared, determining the proportion and type of asymmetry. Fluctuating asymmetry (FA) was the only type expected. Directional asymmetry and antisymmetry were accordingly dismissed. FA is most likely related to developmental stress (DS). Therefore, FA's distribution may indicate differential exposure to DS. The two sexes were compared and differences expected to be small and random, due to exposure to similar environments. When data for all traits are combined, females revealed more asymmetry than males in: overall FA (F: 10.0%, 831/8315; M: 8.6%, 754/8744; z-ratio = 3.083; P = 0.002); FA excluding bilateral absences (F: 47.4%, 798/1683; M: 41.6%, 724/1741; z-ratio = 3.432; P = 0.0006); and FA excluding bilateral absences and traits with $n < 40$ (F: 38.5%, 437/1134; M: 33.6%, 407/1212; z-ratio = 2.499; P = 0.0125). FA related to odontogeny timings suggest early gender role definition plays a part in these differences. Correlation between age at death and FA is discussed, to explore the hypothesis that males died earlier when exposed to greater DS, since this would bias the results, found mainly in adults. Our results suggest turn of the 19th century Portuguese women could be socially and culturally subjected to poorer health and nutrition conditions than men.

Key words: Human Ecology, gender inequality, early contemporary Portugal

Cancer mortality in Portugal: analyzing deaths and associated risk factors within a geographical view

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Portugal has a modern epidemiological profile, where cancer diseases play an increasing importance as causes of mortality and morbidity. However, geographical analyses of deaths due to specific cancers show different mortality patterns; these spatial variations in death, and in health, result from differences in biological, community and societal factors. This study aims to analyse the geographical variations of death by specific cancers in mainland Portugal and its association with social and environmental factors at NUT III level. We observed deaths occurred between 2007 and 2009 caused by 14 types of cancers in 28 sub regions (NUT's III), and identified risk areas for specific cancers. The statistical association between cancers and environmental factors was screened using multivariate statistics. Our results show that cancers are a group of heterogeneous and discriminatory diseases which can be associated to risk factors, the latter varying with the type of cancer. In our multivariate models, we found significant associations between the increased risk of death and socioeconomic, cultural, behaviour and environmental characteristics, assessed by composite indexes of development and deprivation. We observed negative correlations between the developing indicators and all cancers except for both lung and oesophagus. The association between some cancers and risk factors provides, on one hand, aetiological clues that allowed the search for causal hypotheses; on the other hand, this association underlies geographical clusters of regions, allowing the establishment of a spatial typology. This emergent typology can (and should) be used in prevention strategies that seek a reduction in cancer incidence and mortality.

Key words: cancers, geographical variations, risk factors, epidemiological profile

Understanding the changes in suicide rates in Portugal between 1991 and 2011

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Suicide mortality rates at population level can vary quite considerably across time and space. Limited economic resources and residing in areas with high income inequality are some of the social factors that can influence this variation. The main goal of the present study was to analyze the distribution of deaths caused by suicide within Portuguese main sub-regions *NUT's III* and municipalities, and their correlation to social and economic inequalities. Information on deaths and its causes were compiled from computerized database of *Instituto Nacional de Estatística* (*INE*) for the period of 1991-2011, as well as social and economic development indicators. Data were analyzed by gender and age, in ten–year periods. Correlation analysis was performed in order to determine a statistic association between deaths by suicide and socioeconomic factors using the *SPSS 20* software. Throughout 1991–2011, a total of 16497 suicides were registered in mainland Portugal. The Alentejo was the sub-region with the highest number of suicides per 100 000 inhabitants in the country. More than 50% of deaths were caused by men and women aged 65 and more years. About 76% of all suicides were caused by men. Unemployment, illiteracy and low income, as well as living in rural and less populated areas were associated with higher mortality rates. Overall, the association between suicide deaths and some socio-demographic factors provides important clues that can and should be used in prevention strategies that seek a reduction in the mortality caused by intentional auto-inflicted injuries.

Key words: suicide rates, socio-demographic variables, Portugal's municipalities

Breakfast consumption and overweight in Portuguese children

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Lifestyle-related risk factors, such as skipping breakfast, tend to increase overweight risk. Thus, identifying subgroups with greater chance of displaying those behaviors may help in the planning of preventive programs. Assess the association between skipping breakfast and overweight. Cross-sectional study including nationwide representative sample of Portuguese children living in the region of mainland Portugal districts (50.6% girls; n=16,746). Parents answered a questionnaire about family characteristics and children's eating habits. Breakfast consumption was ascertained by the question "Does your child eat breakfast regularly?" (yes/no). Weight and height were measured by standard procedures to calculate body mass index, classified according International Obesity Task Force's cut-off points. Analyses considered three age groups: 3-5, 6-9, and 10-11 years-old. Chi-square test and multivariate logistic regression models were used to estimate the association between weight status and breakfast consumption, controlled by child sex and parent's obesity. Overweight prevalence varied across age groups (23.0%, 31.0%, 28.0%, respectively, p<0.01), as well as skipping breakfast prevalence (2.9%, 3.2%, 5.5%, respectively, p<0.01). There was higher prevalence of overweight among children who usually skipped breakfast, compared to those who regularly had it (3-5 years-old: 30.0 *vs* 22.0%, p=0.03; 6-9 years-old: 42.0 *vs* 30.0%, p<0.01), although this association was not significant for 10-11 years old children (p=0.13). In multivariate logistic regression models, the chance of overweight was higher only for 6-9 years-old children (OR=1.5, 95%CI=1.2, 2.0) that usually skipped breakfast. Thus, among Portuguese schoolchildren from 6-9 years old, skipping breakfast was associated with overweight, independently of child sex and parent's weight status.

Key words: skipping breakfast, weight status, schoolchildren, preschool children

Secular trends in height, weight and BMI among 19-year old Polish men: 6 national surveys from 1965 till 2009/10

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The aim of this analysis was to examine the changes in body height, weight and BMI of nationally representative samples of young adult Polish males between 1965 and 2010, in the context of the socio-economical history of Poland. Data were taken from six national surveys of 19-year-old Polish men (conscripts) from cohorts 1965, 1976, 1986, 1995, 2001 and 2010 (successive birth cohorts: 1946, 1957, 1976, 1982 and 1990/91). The mean body height of conscripts against general population increased throughout the period of 45 years from 175 cm in 1965 to 178.3 cm in 2010. This stature-increasing effect proves continual increase of individual's growth potential, and hence, indirectly, gradual improvement of living conditions of children and youth. However, the average of body height gain per decade declined from 2.4 cm in 1965-1976 to 0.8 cm in 1995-2001 and again increased to 1.0 cm in the last period. The average body weight increased from 63.2 kg in 1965 to 73.1 kg in 2010 and BMI rose from 21.73 to 22.94. The tempo of increase varied in different periods: between 1965 and 1986, an increase of about 0.12 units was observed; in 1986-1995 there was no increase, whereas the period of 2001-2010 witnessed a significant increase (0.76 BMI units). The trend within the whole population, though slowing down, remained continually positive and was a steady process, with temporal breakdowns, set-backs or re-growths. No significant traces of socio-economical crises of the late 60-ties, the turn of the 70-ties and the 80-ties, nor of the transformation shock of the 90-ties were observed. Therefore, we conclude that, irrespective of the depth of those crises in view of the macro-economical statistic, strong and effective mechanism protective for the living conditions of the children and youth have been operating within the population. The most important of them were probably various social transfer and protective role of the family.

Key words: secular changes, physical developments, socio-economical crises

Intensity of aging males' symptoms, life satisfaction and socioeconomic factors in Polish adult men

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Social differences in the successful aging, being an important issue of public health of contemporary aging societies, have not been comprehensively studied. The aim of this study was to evaluate whether age, educational level and marital status significantly differentiated the intensity of andropausal symptoms (AS) and life satisfaction (LS). The participants of this study were 355 men with 35-86 years of age (mean age: 57.8±11.4y), healthy inhabitants of the city of Wroclaw, Poland. The data on AS were obtained using *The Aging Males' Symptoms' Rating Scale. The Self-Anchoring Self-Esteem Scale* was used to assess LS. The educational level (1: university, 2: secondary school, 3: primary school or trade school) constituted a marker of social status in Poland. Marital status was defined by two categories: males living with partners (married or concubinage) and single (never married, divorced or widowed). All examined andropausal symptoms increased with age (p<0.001). The results of a variance analysis revealed that age and educational level were two independent determinants of intensity of aging males' symptoms. Well educated Polish men in all age groups declared fewer aging symptoms then their less educated age-matched peers. Marital status had no relation to the aging process among this group. Life satisfaction of Polish men was strongly dependent on the severity of the aging process (r_p=0.36, p≤0.001). The major factor influencing the life satisfaction in Polish men was intensity of aging symptoms. This analysis indicates that age and educational level are a strong determinant of intensity of aging symptoms, which are the main factor influencing the life satisfaction of men.

Key words: aging male, educational level, marital status, life satisfaction

Does television make children unhealthy? Yes

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Screen-viewing time has been associated with higher levels of adult obesity, type 2 diabetes, all-cause mortality, and cardiovascular events. Among children, screen-viewing time is associated with increased risk of obesity, unhealthy dietary behaviors, poor mental well-being, and higher levels of cardiovascular risk factors. Screen-viewing patterns moderately track from childhood to adulthood, so reducing youth screen-viewing time is important for lifetime disease prevention. The aim of this study was to examine associations between television viewing, obesity and cardiovascular risk markers in children. The sample comprises 17509 children aged 2-13 years who participated in the 2009/2010 Portuguese Prevalence Study of Obesity in Childhood. Parents filled out a questionnaire with child television time and other family characteristics. Height, weight, skinfolds and blood pressure were collected by trained fieldworkers. Body Mass Index (height/weight^2) was computed. Watching television for more than 2 hours/day (compared to less than 1 hour/day) was associated with higher age- and sex-specific BMI standard deviation score and sum of skinfolds. TV viewing was positively associated with clustered cardiovascular risk score, Diastolic Blood Pressure (DBP) and Systolic Blood Pressure (SBP) after adjustment for all covariates. Television viewing was consistently associated with adiposity and cardiovascular risk markers. These results require a great attention for public health strategies in promoting a reduction in television time among children.

Key words: child, obesity, television

Nutritional status and body dissatisfaction among the female students of the University of Coimbra, Portugal

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There is a consensus that social factors send powerful messages defining physical attributes undesirable in contemporary society and the enormous cultural value of thinness often takes precedent in relation to health. This cross sectional study aims to understand the prevalence of body dissatisfaction and its association with the body mass index (BMI) in a random representative sample of 252 (17-29 years) female university students of Coimbra. Anthropometric measurements of weight and height following standard procedures were collected in order to calculate BMI (kg/m^2), classified according World Health Organization cut-offs. Figure Rating Scale was applied to assess body dissatisfaction, considering the discrepancy between the silhouette chosen as representative of the own body and the one desired, which was taken as measure of body dissatisfaction. Chi-square test was used to verify if body dissatisfaction (i.e., the desire to have a smaller silhouette) is associated with BMI (considering whether or not overweight). It was found that 94.1% of the students with overweight or obesity and 39% of the normal or underweight participants want to have a smaller body ($p < 0.01$). As expected, body dissatisfaction is associated with the highest body mass index considered, related to the perception of being away from that ideal. However, the expressed desire to be thinner from 39% of the other participants indicates the societal pressure for thinness. Considering the effect of body image on woman's eating habits, influencing food intake, it is plausible to consider body dissatisfaction as an important factor on public health nutrition in the feminine population.

Key words: body image, figure rating scale, body mass index, thin ideal

Overweight and hypertension in Portuguese children

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Children's primary hypertension exhibits strong correlations with various factors among which overweight and obesity assumes a considerable role. High prevalence of overweight/obesity has been observed in Portuguese children. The aim of this study was to examine the association between overweight and obesity with current BP in school children aged three to ten years old and explorer the relation with socioeconomic factors and life style. A cross sectional study was conducted during 2009. Height, weight, waist circumference and BP were measured. A total of 2320 children were measured. Overweight and obesity was defined according Cole et al. (2000) BMI cutoff points. The revised BP values proposed by Task Force on Blood Pressure Control in Children were used to define prehypertension and hypertension. Prehypertension was defined as systolic blood pressure (SBP) and/or diastolic blood pressure (DBP) ≥90th and <95th percentile and hypertension was defined as SBP and/or DBP ≥95th percentile for sex, age and height. Two categories of BP were established, normal (NBP) and prehypertension+hypertension (PHH). The prevalence of PHH was 9.2%. The averages were 93.3±11.4 mmHg for SBP and 57.9±8.4 mmHg for DBP. The frequencies of children´s BP category (NBP and PHH) were significantly different for: children´s BMI (PHH: 8.1% thin/normal, 12.0% overweight+obesity), children´s age (PHH: 14.4% for ≤5y.old, 7.2% for ≥6 y.old), father's educations (PHH: 12.4% for ≤9years, 9.7% for 10-12 years, 5.3% for ≥university), mother's education (PHH: 13.0% for ≤9 years, 10.6% for 10-12 years, 6.0% for ≥university), degree of urbanization of the residence (PHH: 7.2% urban, 14.2% semi-urban, 7.5% rural) and sports activity besides school (PHH: 6.7% with and 11.9% without sport activity). Results suggest that early detection and interventions to promote health and healthy lifestyles should be developed to reduce the PHH and overweight in children and the risk factors for high BP in adult.

Key words: blood pressure, overweight/obesity, childhood

Association between proximity of fast-food restaurants in residential area and childhood obesity in Coimbra

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The environment has been identified as a potential source of influence on eating behaviors and thus, risk of obesity. This study examines the association between proximity of fast-food restaurants (FFR) in residential area (RA) and body mass index (BMI) z-score of children. This cross-sectional study included 847 children (6-10 years; 52.2% girls) and 182 FFR from Coimbra, Portugal. FFR includes all establishments which sell food quickly prepared, highly processed, with low nutritional value, such as snack-bars and franchising chains. Obesity was defined using International Obesity Task Force cut-offs, and BMI z-scores recommended by World Health Organization was calculated. Parents filled a questionnaire, in which it was asked the street where they live. Both, children (using postcode) and FFR (using GPS records) were geo-referenced and introduced in ArcGIS software. This program was used to create Euclidian buffers (250m) around each child's residence for to define RA, and to calculate Euclidian distances (straight-line) between children´s homes and FFR. Simple analysis of variance was used. Obesity in our sample was 29.8% (17.8% girls). Statistically significant association was found between BMI z-scores and the proximity of FFR in the RA for the parish of Sé Nova ($p < 0.05$), but this association was not found for the whole city. This work showed that proximity of FFR to the children's residence cannot be thought as a single promoter factor of obesity. So, in order to implement an intervention to prevent childhood obesity, we must take into account the particularly characteristics of each parish.

Key words: BMI z-scores, fast food restaurant, proximity

Suicide and socioeconomic inequalities in Coimbra district between 2000 and 2004

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In Portugal, in the last 20 years, suicide rates showed a significant inter-regional variation. The Center region was, following Alentejo and Algarve, the third area of mainland Portugal with the highest rate of suicide. The present study investigated, across the 17 municipalities of Coimbra district which is one of the major geographic regions located in central Portugal, the suicide rate throughout 2000-2004 and its association with social and economic changes. A total of 197 suicides (158 men and 39 women) were taken from the *Direcção Geral de Saúde* database, and analyzed in 10 - year age groups. Additional information concerning social, economic and demographic variables was obtained from *Instituto Nacional de Estatística* and *Comissão de Coordenação e Desenvolvimento Regional do Centro*. A correlation method (*Pearson's r*) was used to determine the statistical association between suicide rates and several socio-demographic variables, including the proportion of older people in the population, income *per capita*, education level, both health and social security level, employment, and cultural activity. The municipalities with low income and poor socioeconomic development showed the highest suicide rates. Age and gender had different contributions to the overall statistics of suicide across the 17 municipalities, for most of them, the older group (65 and older) had the highest contribution to the suicide rate. Hanging was the most frequent method used. This research suggested that the nature of social environment contribute significantly to the number of deaths by suicide in Coimbra district.

Key words: suicide rates, socio-demographic variables, Coimbra's municipalities

Green spaces influence on physical activity of the older population from Coimbra

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Currently, 18% of the European Union (EU 27) population is over 65 years old. This percentage is estimated to increase up to 30% by 2060. This ageing in developed countries brings new problems, such as expenses with health of the elderly. Physical activity, like walking, prevents or attenuates health problems on the older population. Several studies related the amount of physical activity with the presence of green spaces in urban environments. Yet, it is not known how the availability of green areas and spaces helps motor activity in those people. We hypothesize that the presence of green areas allows for increased physical activity thus decreasing health complications. In this study, we associate physical activity of the elderly with the availability and use of green areas in Coimbra. We will investigate the frequency of use of green spaces and their distance to the users' homes. The data collection will be performed from March to May, 2013, during sunlight, all week, whenever there is good weather. The investigator will interview seniors (>65 years old) at parks and other green spaces in Coimbra. The relation between seniors' physical activity and the presence of green spaces nearby will then be statistically analyzed. We expect that the majority of the people frequenting green parks also engage in other physical activities, like gardening. The conditions of the parks and not the distance to users' homes might be the main factor influencing the visits.

Key words: ageing, urban parks, health

Social class-specific secular trends in height among 19-year-old Polish men: national surveys from 1965 till 2010

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Height-for-age is one of characteristics of physical growth which, although in part conditioned genetically, is also sensitive to changes and/or inequalities of living standards in a population, especially to the adequacy of nutrition and health care. A more discerning method of analysis consists in examining group-specific trends, i.e. in tracing secular trends within each of several social strata, or socio-occupational groups, considered separately. The aim of our analyses was to examine the nature of differences in stature between social class-specific, defined in each generation by the same group of markers of social position. Massive data collected in the course of five national surveys of 19-year-old Polish military conscripts, carried out in 1965, 1986, 1995, 2001 and 2010 were used. The sampling method yielded a 10% systematically selected national sample representing all social strata and all regions in the country, because reporting for registration and examination at the exact specified data was compulsory for all 19-year-old males. In addition to taking height measurements at the time of examination, each subject was asked about the socioeconomic background of their family, including parental education, and his place of residence. During period 1965-2001 there has been a clear tendency: the sons of well educated parents from the large cities were the tallest of all the separate social groups. The social gradients in stature between the extreme groups (located at the top and bottom of the social ladder) have a tendency to diminish. In 2010, differences in stature between each analyzed social groups tended to diminish, caused by higher increase in the group lowest on the social scale. Our data imply that there has been still a tendency for social class inequalities in living standards. In the last decade, improvement in living standards in the group lowest on the social scale is observed.

Key words: social inequality, physical development, Polish conscripts

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