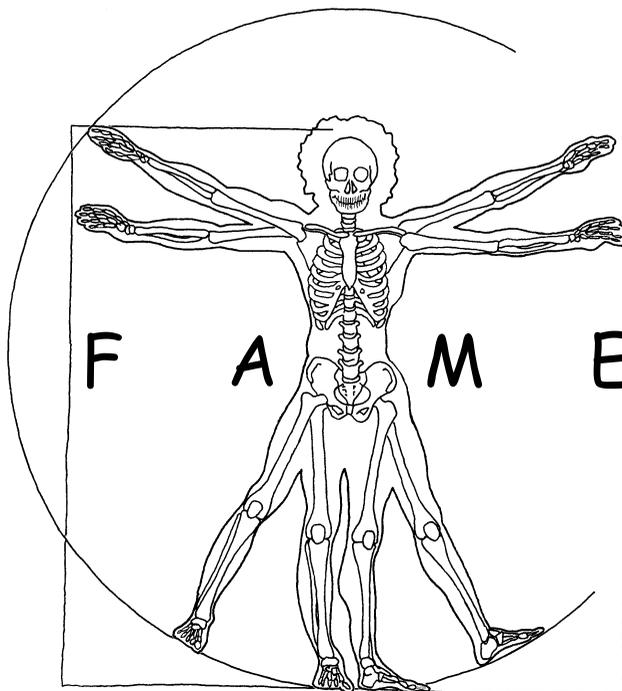


Fysisch-Anthropologische Mededelingen



Newsletter of the Dutch Association of Physical Anthropologists

No. 23, February 2015

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From the editor

George Maat is ons nieuwste ereid. Hij stond aan de wieg van onze vereniging en nog steeds kunnen wij rekenen op zijn advies en actieve steun. Op de knekelzolder van het Anatomisch Lab overtuigde hij mij dat de NVFA een interessante club was en vele anderen zullen een dergelijke ervaring hebben. Gefeliciteerd George en zeer verdiend.

Ons najaars symposium over Paleoantropologie keek terug naar ons verre verleden, een onderwerp dat mij na aan het hart ligt. Naast de ons bekende Paul Storm en een zeker even inventieve nieuwkomer, Marco Langbroek, waren er ook twee PhD studenten, Andrew Sorenson en Fulco Scherjon, die ons over hun lopende promotie onderzoek vertelden.

Tenslotte neem ik afscheid van U, na 16 of 17 jaar, ben de tel een beetje kwijt. Het is tijd dat een nieuwe generatie het botje gaat overnemen dus verwelkom ik als nieuwe editor Lisette Kootker. Ik hoop dat zij evenveel plezier aan het editorship zal beleven als ik. Het was elk jaar weer een uitdaging en elk jaar lukte het dankzij onze enthousiaste leden.

Kelly

From the new editor

Aan mij de eer het stokje van Kelly over te nemen. Ik zal er zorg voor dragen dat de komende jaren bij iedere jaarvergadering een nieuwe FAME klaar ligt met daarin de jaarlijkse wetenschappelijke bijdragen van de leden der NVFA.

Kelly, namens het bestuur en alle leden van de NVFA bedankt voor je tomeloze inzet om ieder jaar weer een FAME samen te stellen!

Lisette

Marco Langbroek

Post-doc researcher Geo- and Bioarchaeology, VU University, Amsterdam

Geen idioten maar idiosyncraten. Uniek gedrag en cognitie bij Neandertalers

Onze visie op het gedrag en de cognitie van Neandertalers wordt sterk gekleurd omdat wij Neandertalers als spiegel voor ons zelf gebruiken. Neandertalers worden meestal ergens op een ladder geplaatst, met ons aan de top en apen aan de basis. Dat is een erg ouderwets en achterhaald evolutiemodel. Het benadrukt uniek gedrag en unieke aspecten van cognitie bij ons: maar hoe zit het met unieke aspecten van cognitie en gedrag bij Neandertalers? Juist die maken immers "De Neandertaler". Een lezing op het raakvlak van archeologie en paleoneurologie.



Andrew C. Sorenson

PhD researcher Human Origins Group, Leiden University

A spark in the dark: On the origins of fire production in the Palaeolithic

The use of fire by Neandertals and their predecessors is currently a hot-button issue in the realms of Palaeolithic Archaeology and Palaeoanthropology. By and large, research within this vein focuses on the origins of "habitual" fire use, inferred from morphological changes within the human lineage observed in the fossil record, or from discerning higher frequencies of possible anthropogenic fire features on increasingly older sites. My research, on the other hand, focuses on identifying direct evidence of fire production in the Palaeolithic record by looking for tools used to make fire, namely "strike-a-lights" made from flint or other siliceous material used in conjunction with sulphur- and iron-bearing minerals (e.g. pyrite and marcasite) to make sparks. While strike-a-lights have been regularly identified from the late Upper Palaeolithic onwards, this is not the case for the Middle Palaeolithic. In this light, the "expedient strike-a-light model" has been proposed, which asserts early fire-making tools were likely used on an ad hoc basis for only a short period of time prior to being discarded. This stands in stark contrast to the more "classic" curated strike-a-lights recovered from Neolithic and Bronze Age contexts that show very heavy use traces, indicative of multiple episodes of use. It implies that the

traces on Middle Palaeolithic strike-a-lights may be less easily detected in the archaeological record and perhaps the fire making techniques used differed from those in later periods. Current results from a series of practical fire making experiments and how they compare to what we know from the archaeological record will be discussed.



Fulco Scherjon

PhD researcher Human Origins Group, Leiden University

Het simuleren van mensachtigen (Hominidae) in een realistisch landschap

Genetic, morphological and archaeological research suggest that the Neandertal lineage disappeared around the time that modern humans arrived in Europe. The exact process, timing and causation are poorly understood. Landscape scale taphonomy and research intensity create a biased record. HomininSpace 2.0 is a modelling and simulation system for exploratory analysis of dispersal behaviour of hominin groups in large scale realistic landscapes and over long timescales. As a case study to validate the concept, an explicit Neandertal model is constructed and implemented. Simulation against the Neandertal archaeological record is used to identify the most likely values for key model parameters. The aim of this research is to quantitatively assess the importance of different parameters on the energy management of past hominins. As such HomininSpace offers an alternative approach to analysis of the past.



Paul Storm

Lecturer Hogeschool van Rotterdam

Een vleesetende rol voor *Homo Erectus*

Considering anatomical and archaeological aspects of *Homo erectus*, it is likely that meat of vertebrates was an important part in its diet. Unfortunately, no or hardly any information is available for Java Man (*Homo erectus*). Therefore, in this paper, the Number of Identified Specimens (NISP) of five Middle Pleistocene Javanese sites are examined, and the Minimum Number of Individuals (MNI) from two of them are calculated, to acquire information about the possible ecological role of Javanese *Homo*

erectus. Although one has to be extremely careful with the interpretation of fossil bone assemblages, in order to try to gain some insight about the abundance of species in palaeocommunities, it is argued that both the NISP and the MNI indicate that the bone accumulations reflect at least two trophic levels in the ecological pyramid, that of primary and secondary consumers. The occurrences of the remains of *Homo erectus* are comparable with the quantity of secondary consumers, i.e. large carnivores. This could suggest that this species had, as an omnivore, a carnivorous niche, in Java.

Storm, P. 2011. A carnivorous niche for Java Man? A preliminary consideration of the abundance of fossils in Middle Pleistocene Java. *C.R. Palevol* (2011), doi:10.1016/j.crpv.2011.04.002



IDENTIFICATIE VAN SLACHTOFFERS VAN EEN RAMP

Boer, H.H., Kloosterman, A.D., de Bruijn en and Maat, G.J.R.

In: Nederlands Tijdschrift voor Geneeskunde 158 (50): 2214-2218, 2014.

Bij rampen is een snelle en zorgvuldige identificatie van de overledenen van groot belang. In Nederland wordt dit uitgevoerd door het Landelijk Team Forensische Opsporing (LTFO). Het LTFO bestaat uit recherchebeambten, defensiemedewerkers en personen van overige overheidsdiensten, aangevuld met enkele gespecialiseerde tandartsen en artsen. Slachtoffer worden geïdentificeerd door een vergelijking van *ante mortem* en *post mortem* gegevens. Tijdens het verzamelen van *ante mortem* gegevens speelt de (huis)arts van het slachtoffer een belangrijke ondersteunde rol. Er wordt onderscheid gemaakt tussen primaire en secundaire identiteitskenmerken. Primaire identiteitskenmerken zijn het huidlijstenpatroon, het DNA-profiel en de gebitsstatus. Secundaire identiteitskenmerken zijn alle overige persoonsgebonden kenmerken. Voor een identificatie is tenminste één primair identiteitskenmerk nodig. De artsen van het LTFO onderzoeken de stoffelijke resten op anatomische kenmerken en stellen DNA-monsters veilig. Vanwege de vaak uitgebreide beschadigingen aan de lichamen is specialistische anatomische en fysisch antropologische kennis een voorwaarde.



MOLECULAR SPECTRUM OF A-GLOBIN GENES DEFECTS IN THE OMANI POPULATION

Hassan SM^{1,2}, Harteveld CL² Bakker E² and Giordano PC².

¹Molecular Genetic Laboratory, National Genetic Centre, Muscat, Sultanate of Oman.

²The Reference Haemoglobinopathies Laboratory, Department of Human and Clinical Genetics, Leiden University Medical Centre, Leiden, The Netherlands.

In: Hemoglobin. 2014; 38 (6):422-6

We describe the molecular characterization of α -globin gene defects in a cohort of 634 Omani patients. A total of 21 different α -gene mutations were found in 484 subjects. Overall, we identified 3 different large deletions, 3 small deletions, 11 point mutations (2

in the poly A tail of α_2 and 9 alpha-chain variants), 3 $\alpha\alpha^{\text{anti } 3.7}$ triplication, a 21nt duplication in the α_1 gene and 2 novel presumed polymorphisms in the alpha 3.7kbp hybrid gene namely; -5 C>T and + 46 C>A. Out of these defects, 15 have not been previously reported in the Omani population. This large heterogeneity of α -thalassemia observed in the Omani population could be expected in neighbouring Arab countries. The high frequency of α -thalassemia, solely or in association with β -globin gene defects, emphasize the necessity of adding α -thalassemia testing to pre-marital programs for accurate genetic counselling.



MOLECULAR DIAGNOSTICS OF THE HBB GENE IN AN OMANI COHORT USING BENCH-TOP DNA ION TORRENT PGM TECHNOLOGY

Hassan SM^{1,4}, Vossen RHAM², Chessa R^{3,4}, den Dunnen JT⁴, Bakker E⁴, Giordano PC⁴ and Harteveld CL⁴

¹Molecular Genetic Laboratory, National Genetic Centre, Muscat, Sultanate of Oman. ²Leiden Genome Technology Center (LGTC), Human and Clinical Genetics, Leiden University Medical Center, Leiden. The Netherlands. ³Dipartimento di Sanità Pubblica, medicina clinica e molecolare, Università di Cagliari, Italy. ⁴Department of Human and Clinical Genetics, Leiden University Medical Centre, Leiden, The Netherlands.

In: Blood Cells Mol Dis. 2014; 53 (3):133-7

Hemoglobinopathies, such as sickle cell disease (SCD) and beta thalassemia major (TM), are severe diseases and the most common autosomal recessive condition worldwide and in particular in Oman. Early screening and diagnosis of carriers is the key for primary prevention. Once a country-wide population screening program is mandated by law, a sequencing technology that can rapidly confirm or identify disease-causing mutations for a large number of patients in a short period of time will be necessary. While Sanger sequencing is the standard protocol for molecular diagnosis, next generation sequencing starts to become available to reference laboratories. Using the Ion Torrent PGM sequencer, we have analysed a cohort of 297 unrelated Omani cases and reliably identified mutations in the beta globin (*HBB*) gene. Our model study has shown that ion torrent PGM can rapidly sequence such a small gene in a large number of samples using a barcoded uni-directional or bi-directional sequence methodology, reducing cost, workload and providing accurate diagnosis. Based on our results we believe that the Ion Torrent PGM sequencing platform, able to analyse hundreds of patients simultaneously for a

single disease gene can be a valid molecular screening alternative to ABI sequencing in the diagnosis of Hemoglobinopathies and other genetic disorders in the near future.



BROADER SPECTRUM OF B-THALASSEMIA MUTATIONS IN OMAN: REGIONAL DISTRIBUTION AND COMPARISON WITH NEIGHBOURING COUNTRIES

Hassan SM^{1,2}, Harteveld CL² Bakker E² and Giordano PC²

¹Molecular Genetic Laboratory, National Genetic Centre, Muscat, Sultanate of Oman.

²The Reference Haemoglobinopathies Laboratory, Department of Human and Clinical Genetics, Leiden University Medical Centre, Leiden, the Netherlands.

Objective: To expand and study the molecular spectrum of β -thalassemia mutations in Oman by examining cases from 7 different regions and comparing the prevalence with bordering countries.

Methods: A total of 446 cases of β -hemoglobinopathy were obtained and analyzed to determine the frequency and distribution of the different β -alleles.

Results: The molecular spectrum of β -thalassemia in Oman reveals the presence of 32 different mutations of different origin and 11 alleles are reported for the first time in the Omani population.

Conclusions: The wide heterogeneous spectrum of β -thalassemia mutations found can be associated with the history of trade and migration as well as the past domination from other countries. The presented data will facilitate the development of a comprehensive prevention strategy in Oman.



HAPLOTYPES, SUB-HAPLOTYPES AND GEOGRAPHICAL DISTRIBUTION IN OMANI PATIENTS WITH SICKLE CELL DISEASE

Hassan SM¹, Al Muslahi M², Al Riyami M², Al Balushi A², Bakker E³, Harteveld CL³ and Giordano PC³.

¹Molecular Genetic Laboratory, Genetics Centre, Muscat, Sultanate of Oman. ² Royal Hospital, Muscat, Sultanate of Oman. ³The Reference Haemoglobinopathies Laboratory,

dept. of Human and Clinical Genetics, Leiden University Medical Centre, Leiden, The Netherlands.

Introduction. Despite the fact that patients homozygous for the sickle cell disease (SCD) mutation have an identical genotype, the severity of the disease can be extremely variable. The HbS mutation has been described on five different haplotypes with different clinical expression. Identifying the genotypes, haplotypes and sub-haplotypes of the β gene cluster in Oman needs to be studied in more details to establish a correlation between the genotype/haplotype and phenotype diversity observed in SCD patients for prognostic purposes, accurate diagnosis and thus planning for the best tailored treatment.

Methods. We have investigated 125 HbS homozygotes from different parts of Oman and determined their haplotypes and sub-haplotypes and correlated this to the hematological and clinical expression.

Results. We have found 11 haplotype combinations differently distributed in the country. The Asian/Asian HbS haplotype was the most predominant (37.6%) and was associated with a milder disease. The Benin/Benin came second (20.0%) and was associated with a more severe condition. A new haplotype, in combination with Asian, which we called Asian/OmanI was the third most common (11.2%), CAR/CAR (10.4%) and CAR/OmanI were fourth (10.4%) and CAR/Asian fifth (6.4%). Other haplotype combinations were found at a lower frequency (4%). In patients with CAR/OmanI haplotype, 3 different sub-haplotypes were found. As expected, the correlation between haplotypes, sub-haplotypes and disease severity was mainly associated with HbF expression.

Conclusion. Our study on haplotype/phenotype correlation has shown which major haplotypes occur in the different regions of Oman. Furthermore, neither the haplotype or sub-haplotype nor the HbF alone appeared to be fully associable with the variable clinical phenotypes. External factors do occur and are associated with the expression of the disease.



STRONTIUMISOTOPENONDERZOEK NAAR MOBILITEIT

Kootker, L.M.

In: R.C.G.M. Lauwerier & J.W. De Kort (eds.): Merovingers in een villa 2. Romeinse villa en Merovingisch grafveld Borgharen - Pasestraat. Onderzoek 2012. Amersfoort (Rapportage Archeologische Monumentenzorg 222), 109-112

Strontiumisotopenonderzoek is uitgevoerd op zowel menselijke individuen als paarden uit

de opgraving Pasestraat (campagnes 2008, 2009 en 2012) te Borgharen met als doel meer inzicht te verkrijgen in de rol die mobiliteit in de vroege middeleeuwen heeft gespeeld. Is er bijvoorbeeld sprake van mobiliteit van mensen of enkel de uitwisseling van materialen en objecten in vroegmiddeleeuws Borgharen. Ook wordt gekeken naar de ruimtelijke verspreiding tussen de mogelijke lokale en niet-lokale individuen: liggen de ‘migranten’ op een andere locatie begraven, of was er geen sprake van een dergelijk onderscheid tussen ‘lokaal’ en ‘niet-lokaal’?



RISE FROM THE ASHES; FLUORESCENCE AS TOOL TO DIFFERENTIATE BETWEEN THERMALLY ALTERED HUMAN REMAINS AND FIRE DEBRIS.

T. Krap ^{1,2}, K. Nota ³, F.R.W. van de Goot ⁴, W. Duijst ¹, R.J. Oostra ²

¹: Ars Cognisendi centre for forensic and legal medicine.

²: Academic Medical Centre Amsterdam (AMC), department of Anatomy, Embryology & Physiology.

³: Van Hall Larenstein, University of Applied Sciences

⁴: Symbiant, Pathology Expert Centre

Poster presentation at the first Forensic PhD symposium, Co van Ledden Hulsebosch Center.

To reconstruct the perimortem events and for ethical reasons it is of great importance to retrieve all human remains from a scene, whether it is a crime scene or an accidental fire scene. The recovery of human remains from fire scenes can be difficult because the fragmentary remains blend in easily with the structural debris, hence in some cases not all remains will be recovered. To improve the recovery yield an alternate light source (ALS) has been suggested to differentiate unheated bone from a non-organic matrix. Both the in- and organic component of bone fluoresce strongly. According to literature, cremated skeletal remains do not fluoresce under any light source in combination with any filter. This is in contradiction with the expectation because the organic component burns away at around 400°C. If the inorganic component of bone is also responsible for the fluorescent property it is possible that heated bone, exposed to a relative high temperature, will fluoresce. To test this hypothesis heating experiments were carried out on unembalmed human diaphyseal bone samples with three varying dependents; time, temperature and surrounding medium. A Phoenix like resurrection of fluorescence was observed after exposure to a temperature higher than 600°C. The presence of carbon as pyrolytic by-product, char, may obscure the fluorescence or block the irradiated light at temperatures between 300°C and 600°C.



HET MEROVINGISCH GRAFVELD.

R.C.G.M. Lauwerier, J.W. de Kort, E. Altena, C.R. Brandenburgh, J. Hendriks, I.M.M. van der Jagt, M. Kars, L.M. Kootker & R.G.A.M. Panhuysen, 2014

In: R.C.G.M. Lauwerier & J.W. De Kort (eds.): Merovingers in een villa 2. Romeinse villa en Merovingisch grafveld Borgharen - Pasestraat. Onderzoek 2012. Amersfoort (Rapportage Archeologische Monumentenzorg 222), 211-220.

Zie “STRONTIUMISOTOPENONDERZOEK NAAR MOBILITEIT”



LIFE IN THE LINES: INTERPRETING STRESS AND LIFE HISTORY EVENTS FROM PRIMATE TEETH

Simone A. M. Lemmers^{1,2}, Wendy Dirks^{1,2}, Pam Walton², Barthélemy Ngoubangoye³, Anaïs Herbert³, Joanna M. Setchell¹.

¹ Durham University, Department of Anthropology

² Newcastle University, School of Dental Science

³ Centre International de Recherches Médicales, Franceville, Gabon

Presentation at the BABAQ & SSHB meeting, Oxford 2014

Comparative data from modern primates can help us to reconstruct the physiology and behavior of extinct species, including our fossil ancestors. Study of the evolution of primate life history sheds light on the evolution of the timing of events like age at weaning, maturation and first reproduction. Studying the schedule of these events in our own order, the primates, is key to understanding which characteristics are unique to *Homo sapiens sapiens*. Previous studies have hypothesized that stress caused by weaning can be

detected at a micro-level in both enamel and dentin. We are using histological analysis of the teeth of naturally deceased mandrills (*Mandrillus sphinx*) with known life histories to investigate the timing of accentuated increments in the microstructure of their dentition in relation to life history events. We will test to what extent stress related to life history events is recorded in the dentition and how different events and phases can be distinguished from one another. Our aim is to establish a methodology that can be applied to 'blind' material such as the fossil teeth of extinct, wild and/or poorly known primates, contributing to the understanding of the evolution of the life history of our own species and of human and non-human primates in general.



SCHEURBUIK. STERVEN IN DE KOUDE WERELD VAN SPITSBERGEN

Maat, G.J.R.

In: Natuurkundige Voordrachten 2013-2014. Nieuwe Reeks 92: 95-101, 2014.

Voorafgaand aan de Nederlandse maritieme expansie van de 17de en 18 eeuw was scheurbuik in de Lage Landen bekend als een 'gewone' ziekte die bijna jaarlijks onder de bevolking uitbrak aan het einde van de winter. Toch kreeg de ziekte wat meer aandacht aan het einde van de 16^{de} eeuw omdat er steeds meer scheurbuik voorkwam op de zeilschepen die lange (ontdekkings-) reizen over de wereld maakten. Opvallend genoeg, werd in diezelfde eeuw, in de Nederlandse medische literatuur, een sterk verband gelegd tussen het risico om scheurbuik te krijgen en het voordurend eten van 'slecht' veelal bedorven voedsel. Hoewel veel Nederlandse medici toen al aanrieten om als behandelwijze sinasappelen en lepelblad te eten, duurde het toch nog 200 jaar voordat de onbeholpen verzorging van de zieken werd vervangen door goede voorzorgsmaatregelen. Waarom duurde het zo lang voordat de goede oude en welbekende aanbevelingen voor de zeelieden werden ingevoerd? Om dat te begrijpen hebben we de overblijfselen bestudeerd van negenendertig Nederlandse walvisvaarders die in de 17^{de} eeuw in het Hoge Noorden op Spitsbergen omkwamen.



DIET- AND CLIMATE-RELATED VARIATION OF THE HUMAN CRANIUM

Marlijn Noback

Proefschrift aan de Eberhard Karls Universiteit Tübingen, 2014

<https://de.linkedin.com/in/marlijnnoback> en

http://www.researchgate.net/profile/Marlijn_Noback
email: marlijnnoback@gmail.com

Why do we look the way we do? The human face shows clear geographic variation, but how and why this global diversity came to exist is still not well understood. This cumulative dissertation investigates how climatic factors, diet and covariation have contributed to human geographic cranial variation. Three-dimensional geometric morphometrics methods, computer-tomography scanning, and multivariate statistics were employed to model and analyze the shape of the bony nasal cavity and masticatory apparatus of worldwide population samples from different climates and with different subsistence strategies. The nasal cavity is essential for humidifying and warming the air before it enters the sensitive lungs, and therefore a highly informative area to explore for human climatic adaptations.

Paper I of this dissertation shows that nasal cavity shape is correlated with a cline from cold-dry to hothumid climates. In increasingly demanding environments for breathing, nasal cavities showed features that enhance turbulence and surface-to-volume ratios to improve humidification and warming of inhaled air.

Paper II addresses global patterns of diet-related cranial variation, and shows strongest correlations between diet and shape of the temporalis muscle and general cranium. Importantly, diet related differences are more pronounced between plant-eating and meat-eating populations than between agriculturalists and hunter-gatherers. Dental arch shape does not correlate with subsistence pattern, possibly indicating the high plasticity of this region of the face in relation to age, disease and individual use of dentition. Paper III investigates

covariation in the masticatory apparatus. The relative positioning, orientation, and size of the dental arch is more important than its shape within the masticatory apparatus. Covariation patterns among cranial regions differ mainly between hunting-fishing and gathering-agriculture groups, possibly relating to their relative carnivorous diet, which results in greater masticatory strains. High strain groups show stronger covariation between upper dental arch and masticatory muscle shape than low strain groups. This dissertation shows that evolution of human cranial diversity is complex, as there is large overlap in the effects of climate, diet and population history on cranial shape. Nevertheless, by studying specific functional regions of the cranium, effects of climate on nasal cavity shape, effects of diet on temporalis shape, and cranial covariation can be detected. This dissertation thereby makes a significant contribution to our understanding of the selective pressures and cranial integration that together shaped the human face.



THE ALKMAAR MASS GRAVES: A MULTIDISCIPLINARY APPROACH TO WAR VICTIMS AND GUNSHOT TRAUMA

Schats R, LM Kootker, R Hermsen, GR Davies & MLP Hoogland 2014

In: C Knüsel & MJ Smith (eds.) *The Routledge Handbook of the Bioarchaeology of Human Conflict*. Routledge, London, 455-472

In 2010, excavations on the Paardenmarkt in Alkmaar revealed the presence of two mass graves in which victims of the Eighty Years' War siege of Alkmaar were interred. Various archaeological and historical studies into this important event in Dutch history have already been undertaken, however, no human remains that could be directly associated with the siege had been previously encountered. The present study of the human remains found at the Paardenmarkt has the potential to provide a new perspective on the siege and add substantially to the current historical knowledge. This chapter presents the known historical data and demonstrates how the archaeological, osteological, forensic and isotopic studies of these skeletal remains and the associated trauma can contribute to a better and fuller understanding of this important historical event in Dutch history.



GENDER-RELATED VITAMIN D DEFICIENCY IN A DUTCH POST-MEDIEVAL FARMING COMMUNITY

Barbara Veselka, Menno L.P. Hoogland, and Andrea L. Waters-Rist

Presented at the British Association for Biological Anthropology and Osteoarchaeology Conference in September 2014 in Durham.

The most common cause of vitamin D deficiency is inadequate sunlight-based dermal synthesis. In subadults this condition is called rickets, in adults osteomalacia. In Beemster, a post-Medieval rural community in the Netherlands, rickets was present in 30.4% of the subadults under the age of four years (n=71). This research explores vitamin D deficiency in adults from Beemster with a multidisciplinary approach including macroscopic, radiological and microscopic analyses. Fourteen out of twenty two cases of residual rickets in the Beemster adults (n=200) are females, providing information on gender-related risk of developing rickets. A complex interplay of multiple factors is proposed to have affected vitamin D intake, including sociocultural variables such as gender-based labour norms. Division of labour is thought to have been traditional, and to have begun in childhood, with females working in and around the house and males on the land. As such, girls and women may have spent more indoors and received less sunlight. Thus, this paper proposes gender-based labour norms were an important etiological agent in the

occurrence of rickets in this community. This research highlights the importance of continuing to explore gender based health differences in past populations.



VITAMIN D: WHAT PART DID THE SUNSHINE VITAMIN PLAY IN HUMAN EVOLUTION?

Barbara Veselka

Presented in November 2014 for Human Origins, Faculty of Archaeology, Leiden University

Vitamin D is needed for various processes in our body, such as stimulating the immune system, and mineralization of the skeleton. Acquiring vitamin D seems fairly simple. Under the influence of UVB radiation in sunlight, vitamin D is dermally synthesized and provides us with enough vitamin D to maintain the delicate balance needed for a relative healthy skeleton. In addition, there are also several foods that contain vitamin D, but cutaneous synthesis is by far the most efficient way of acquiring vitamin D. Several factors influence the amount of vitamin D that can be produced in the skin, such as clothing, skin pigmentation, and activity related to the amount of time spend outdoors. Three important evolutionary changes in humans have been attributed to vitamin D production: loss of fur, the gain and loss of skin pigmentation respectively. Inadequate levels of vitamin D are problematic and, among others, eventually will imperil the reproductive capacity. Natural selection would favour mutations leading to an adequate level of vitamin D. So was vitamin D the driving force behind these mutations? Understanding the impact of vitamin D on human evolution will help us to better understand the functions of vitamin D today.



REGENTS AND THE RICH: THE LIVES AND DEATHS OF THE GOUDA ELITE IN POST-MEDIEVAL NETHERLANDS

Barbara Veselka¹ and Marcel van Dasselaaar²

¹ Freelance physical anthropologist and PhD-researcher at Leiden University

² Archaeologist at ArcheoMedia B.V.

To be presented at the Conference on Environmental Archaeology of European Cities in May 2015 in Brussels.

Being buried in the St. John's church in the city of Gouda, The Netherlands, was a privilege of the elite and the rich. Several family crypts, dating to the 17th and 18th

centuries, with large tombstones marked the floor of the coir loft containing deceased mayors, and regents. Individuals of lesser socioeconomic status, such as headmasters, and skilled workers, were buried in the ambulatory since the 16th century. Archival data on the ownership of each grave is available, but the graves in the ambulatory consist of several layers of burials and prior renovations of both the coir loft and the ambulatory have removed part of the buried individuals. Although some information on the individuals is available in the archives, analysis of the human remains will be able to provide additional data such as stature, pathological anomalies and information on their lifestyle, habits, and activity patterns not present in the historical records. Moreover, detailed analysis of the human skeletal remains is needed to match specific archival data to the exhumed individuals. The demographic results of the individuals of high socioeconomic status will be compared to the ones of lesser socioeconomic status to highlight possible differences in stature, age and sex distribution and disease prevalence. This way, the impact of status on daily life of the Gouda individuals will be assessed. Future analyses of stable isotopes and the consistency of dental calculus will improve our understanding of the diet of these individuals. This paper will discuss the burials rituals and the osteoarchaeological results to improve our insight in the way socioeconomic status influenced the personal lives and deaths of the Gouda elite.



A PECULIAR OBJECT FROM PANAMA

Anne-Marie Visser

Natuurhistorisch- en Volkenkundig Museum Oudenbosch

It must be about ten years ago when our museum was surprised by an extraordinary gift. We were invited to Muiden to collect an object that presumably would fit in with our collection – although it was as yet not quite clear to which department the object should be assigned: ethnology, natural history or archaeology. The pertinent object happened to be a human skull from a pre-Columbian native American culture; not something to be encountered any day. We combined a meeting at Amsterdam with a visit to Muiden, and took the skull, which was packed in a cardboard box, home with us.

The object was completely embedded in a yellowish sediment, consisting of finely fragmented shells and sand. We had not learnt much about the provenance of the find. It was inherited from a relation, but further details were completely missing. The only clue was a note, scribbled in pencil on a yellowed piece of paper, saying (in Dutch): “Precolumbian Indian grave – Venado beach – artificial dislocation of lower jaw”. Some research on the internet brought quick results. We found a scientific article that bore witness of horrid practices...

Venado Beach is a coastal strip along the Pacific Ocean, southwest of the Panama Canal. Due to exceptional circumstances, in this location skeletal material has been preserved well in a covered raised littoral layer of white sand and compressed shell grit (‘coquina’). Human remains came to light when in 1948 the dark top layer was removed to be used for soil improvement on the lawns of the American naval base Fort Kobbe, a few miles further inland. If any grave markings would have existed, they were by now shoveled off by the bulldozer.

But at some distance from the high water line at the mouth of the Mangopobre Valley 365 inhumations were found, of which 202 were excavated in 1951 by the Peabody Museum of Harvard University. The remaining 167 were exposed by Neville A. Harte. The excavation archives were handed over to S.K. Lothrop, a renowned anthropologist at Harvard University.

Lothrop published the striking results of his research in 1954 in the scientific journal

American Antiquity, in an article with the title: 'Suicide, sacrifice and mutilations in burials at Venado Beach, Panama' (1).

Individual inhumations were found, where chambers, sometimes with steps, were cut out of the sediment. The body lay flexed on the back or the side, or extended on the back (known as a 'bathtub burial'). Sometimes the chambers contained several individuals. Human remains in urns were also found.

From the sixteenth century a record is preserved of burial customs of the local population, written by the Spanish historian Gonzalo Fernández de Oviedo. The burial ceremonies were regarded as a magical ritual giving access to another world. It was mainly the privilege of nobility from the ruling class. Ordinary people and slaves normally were not buried at all, but were offered for consumption to birds of prey and scavenging animals. Certain individuals from the lower classes were selected to serve their masters in the hereafter. To this end they were either killed, or they committed suicide by taking poison. Their bodies were placed in their master's grave.

Sometimes they were buried alive, after being sedated with alcohol. Consistent with this, to us horrible, way of dying were a number of burials at Venado Beach where the deceased seems to bite his own fingers. This posture suggests a movement of the hand after burial.

It seems probable that the individuals suffering an involuntary death were slaves, usually prisoners of war. Oviedo states that to discourage escape the personal sign of their owner was tattooed on their face. Also often their front teeth were knocked out.

From the research of Venado Beach skeletons it was found that the individuals were killed by dislocating their neck or their back. A broken neck could be concluded from the abnormal position of the head. Part of the burial practices was also the taking apart of bodies after removal of the flesh. This method seems to be used especially on persons of rank. Decapitation was common; sometimes the head was buried with the body, sometimes it was removed and taken elsewhere. In some cases the lower jaw and the canines from the upper jaw were present with the remainder of the body, while the skull with the upper jaw was removed. The operation had been performed with great precision, indicating considerable skill in this area. It would seem that the skull we received was also subjected to this practice.

The described mutilations of the body were found in approximately a fifth part of the burials. In about one in three burials the individuals were found on the back, with their hands under the chin and the knees flexed upwards. They were so densely packed that they probably were tied up with ropes or sewn into sacks. Bodies laying on their sides were not folded together. Only one in eight of the bodies was found in an extended position, usually on the back.

Another remarkable phenomenon was established in the research of the teeth of the excavated bodies. On the back of the front teeth in the upper jaw a peculiar kind of wear was found that is not uncommon with native American populations. It is described as 'Lingual Surface Attrition of the Maxillary Anterior Teeth' (abbreviated to LSAMAT). This deformity seems to be related to the chewing of sweet manioc roots (2). It would be interesting to submit our skull to a closer research, to establish whether this deformity is to be found here as well. The skull might, however, be too fragile now for this kind of investigation.

(1)Lothrop, S.K. (1954) Suicide, sacrifice and Mutilations in burials at Venado Beach, Panama, *American Antiquity* 1,3 1954: pp 226-234.

(2) Irish, J.D. and Chr. G. Turner II (1987) More Lingual Surface Attrition of the Maxillary Anterior Teeth in American Indians: Prehistoric Panamanians. *American Journal of Physical Anthropology*: 73.208-213