6th Annual Meeting of the

European Society for the study of Human Evolution

14-17 September 2016
MADRID / SPAIN

ESHE

Journal of Human Evolution

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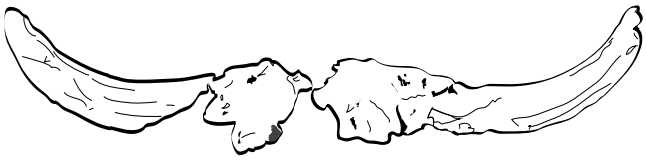

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Dear Participants of the 6th Annual meeting of the *European Society for the study of Human Evolution,*

¡Bienvenido a Madrid!

We are delighted to welcome you to the historical city of Alcalá de Henares in the Community of Madrid. Spain has made a tremendous contribution to European palaeoanthropology, beginning with precursors such as Casiano de Prado in the 1860's. It is also the place where palaeolithic rock art was first recognised in 1879, when the nine year old daughter of Marcelino Sanz de Sautuloa cried out *"¡Mira papá, bueyes!" ("look papa, bulls!")* in the Altamira Cave. This discovery was followed by intense debate within the entire European archaeological community, ending only with the memorable *mea culpa* by Émile Cartailhac in 1902. Since then, Spain has continued to be the focus of attention for many prehistorians, most notably including early famous figures, such as Henri Breuil and Hugo Obermaier. In recent decades, Spanish palaeoanthropology has witnessed spectacular development, boosted by the extraordinary discoveries in the Atapuerca area and the pioneering work of Emiliano Aguirre. This has given birth to a new generation of young, prolific researchers.

As we open the 6th Annual ESHE meeting, we celebrate the ongoing success of the society, which I am honoured to have been a part of since its conception. This year, we accepted more abstracts than ever before, and as of August, have over 525 members. The success of the society means that each year we are able to present to you even more exciting and ground-breaking research, which shapes our knowledge of our remote past to help us better understand our present and prepare for the future. Thanks to the kind support of the Museo Arqueológico Regional, we have not only been able to host our conference in a stunning location, but also host special guest Fernando Colmenares as our keynote speaker, as well as visit the rich and historical site of Pinilla del Valle.

As in previous years, we are able to encourage and support our student members to attend and participate in the conferences by providing travel grants to those presenting at this year's meeting. In addition to our yearly student poster prize, we are also able to introduce a Pecha Kucha Prize this year for students thanks to the kind donation by the Journal of Human Evolution, who will also host a workshop over the weekend to help young researchers get their work published.

This meeting would not be possible without the hard work of our local organisers in Madrid. I would firstly like to thank Juan Luis Arsuaga and Enrique Baquedano, director of the Museo Arqueológico, for scouting and providing us with this amazing venue. I would also like to give special thanks to their teams, Belén Marquez Mora and Bárbara Rodriguez Alvarez for taking care of local organisation and making this entire conference possible.

The 6th Annual ESHE meeting is sponsored by the Museo Arqueológico Regional, the Journal of Human Evolution ,Aicon 3D Systems and Nature Ecology and Evolution.

The organisation of this meeting and the preparation of the abstract volume was diligently undertaken by the tireless work of Mikaela Lui and our ESHE Board Members, in particular Phillipp Gunz, Shannon McPherron, Marie Soressi and Thomas Terberger.

We thank you for taking part in making this year's ESHE meeting a success, and we look forward to seeing you all at the 7th Annual meeting in Leiden in the Netherlands in 2017.

With best wishes,

Jean-Jacques Hublin
President, European Society for the study of Human Evolution.

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Poster Presentation Number 10, We (17:00-19:00)

Innovative approaches to quantify and statistically compare tooth enamel thickness distribution

Clément Zanolli[1], Margot Cantaloube[1], Priscilla Bayle[2], Luca Bondioli[3], Jean Dumoncel[1], Stanley Durrleman [4], Jean-Pierre Jessel[5], Gérard Subsol[6], Roberto Macchiarelli[7,8]

1 - UMR 5288 CNRS, Université Toulouse III – Paul Sabatier, France · 2 - UMR 5199 PACEA CNRS, Université de Bordeaux, France · 3 - Sezione di Bioarcheologia, Museo Nazionale Preistorico Etnografico "L. Pigorini", Roma, Italy · 4 - INRIA/ICM, Pitié Salpêtrière Hospital of Paris, France · 5 - UMR 5505 IRIT CNRS, Université Toulouse III – Paul Sabatier, France · 6 - UMR 5506 LIRMM CNRS, Université de Montpellier, France · 7 - UMR 7194 CNRS, Muséum National d'Histoire Naturelle, Paris, France · 8 - Département Géosciences, Université de Poitiers, France

Primates are heterodont and diphyodont mammals, thus growing two sets of dental elements during their life, i.e., the primary (deciduous) teeth and the replacing secondary (permanent) dentition. In addition to differences in developmental timing and patterning distinguishing these two sets, deciduous teeth are in functional occlusion for a much shorter period of time and commonly subject to considerably lower functional constraints (at least until weaning). It is by now recognized that the hominid tooth enamel thickness (ET) patterns stem from an evolutionary compromise between functional/adaptive constraints and strict control mechanisms of the morphogenetic program, though its variability is also presumably linked to a number of biological and environmental factors. ET is considered to be a reliable parameter for tracking diet-related structural adaptations and exploring life-history trajectories, phylogenetic relationships and evolutionary trends [1-2], even if bi-dimensional studies of relative ET show marked overlap among fossil and extant hominin taxa [3]. However, the degree of co-variation of this tissue in deciduous and permanent crowns is still poorly understood in extinct and extant hominids and remains to be assessed in an evolutionary morpho-functional perspective. In order to set free from "average" estimates (generally limited to a gradient scale of single values) and to comparatively quantify the local absolute and relative ET distribution patterns, new investigative approaches based on advanced virtual imaging are necessary. We use here two original methods to measure the degree of intra-taxic co-variation of the deciduous and permanent ET molar variation as possible taxon-specific marker in Miocene (*Ouranopithecus*=1, *Oreopithecus*=1) and extant apes (*Pongo*=5, *Gorilla*=4, *Pan*=1), in nonhuman Plio-Pleistocene hominins (*Australopithecus africanus*=1, *Paranthropus robustus*=2), and in representatives of our own taxon (*H. erectus*=1, Neanderthals=2, extant humans=12). In total, we used 30 couples of lower dm2 and M1 belonging to the same individual (except for *Oreopithecus* and *H. erectus*, where the deciduous and the permanent molars sample different individuals). The first method corresponds to an improvement of the routine originally developed for virtually unrolling and mapping the long bone shaft and the tooth root local morphometric properties [4] adapted to the lateral ET (in order to avoid occlusal wear). The second original method allows the statistical comparisons among the maps by performing a matching using biological features between a reference surface and the occlusal surfaces. At this stage, we applied this method to unworn M1s only, limiting the investigated sample to 29 tooth crowns representing all previously mentioned taxa except *H. erectus* (too worn occlusal surface). By using PCA and between-group PCA, we observe a distinction among the taxa compatible with a diet-related signal. However, larger samples and a better understanding of the intraspecific variation are necessary to sort the ecological-adaptive from the phylogenetic signal. In this perspective, the dm2 and M1 crown dimensions and proportions were recently shown to be linked by developmental inhibitory cascade mechanisms [5], but more research is needed in order to fully appreciate their relationships in fossil and extant hominids in terms of subtle inner structural organization and tissue proportions.

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