

>NEWS FROM ATAPUERCA IN ENGLISH



> THE BONES PIT, AN INEXHAUSTIBLE SCIENTIFIC QUARRY

H. ANTECESSOR AND HEIDELBERGENSIS HANDS WERE DIFFERENT

> Three PhD theses at the Madrid's Complutense University. If the scientific importance of a site could be measured by its number of PhD theses, Atapuerca would unquestionably be at the head of the world ranking. The High Distinction *cum laudem* awarded to all three new doctors is also an indication of the quality of the work being done. Ana Gracia Téllez, Carles Lorenzo Merino and Cayetana Martínez Maza have joined the ranks of more than 20 other Atapuerca PhDs, and they have shown that the sites in these Hills are a splendid opportunity for Spanish science and research to move even further ahead.

This time, the three PhDs coincided in their focus on human remains, in particular the bones found in the unique, astonishing deposit known as Sima de los Huesos (Bones Pit), part of the Cueva Mayor-Cueva del Silo limestone complex dating back more than 400,000 years, which is yielding the sharpest image to date of a *Homo heidelbergensis* population. The 30 corpses left there in accordance with the express wishes of their congeners are providing us with a clearer understanding of our origins and the evolutionary traits of our forebears.

FROM THE SIMA'S ORIGINS TO HOMINID AILMENTS

> ANA GRACIA. On 29 October, Ana Gracia Téllez successfully defended her PhD thesis in the Biological Science Faculty of Madrid's Complutense University. The study, entitled "Palaeobiological research into cranial remains of Atapuerca hominids, with special reference to Sima de los Huesos fossils", was awarded a special mention as a "European Doctorate". This new doctor has been working at Atapuerca since 1986 with a research team led by Dr. Juan Luis Arsuaga. Throughout this period, her research, summarised in the thesis, has focussed particularly on the analysis of hominid facial skeletons and pathologies. She is now has a contract as a senior technician at the Joint Centre for Human Evolution and Behaviour Research (Complutense University of Madrid- Carlos III Health Institute). With her team, Ana Gracia has worked on the excavation, classification and restoration of over 5000 human bones, including the identification of 15 individuals through their skulls. Her study has helped to resolve several issues concerning the phylogeny, sexual dimorphism and language of these hominids, as well as advancing our

A selection of highlights from the previous issue

knowledge about the taphonomy of the Sima site. Ana Gracia's work is now focused on the pathologies suffered by the individuals found at the site.

STRONG, BROAD, ACCURATE HANDS.

> CARLES LORENZO MERINO defended his PhD thesis, supervised by Dr. Juan Luis Arsuaga, on 14 September at the Complutense University Prehistory Department. He was brought to Atapuerca in 1989 by his Professor, Eudald Carbonell, and he soon focused on anthropological issues, moving to Madrid to conduct most of his research work. In his thesis entitled "Evolution of the hominid hand. Morphological

analysis of Sierra de Atapuerca fossils", Carles Lorenzo studied more than 500 bones from the hands of *Australopithecus*, Neanderthals and above all, *Homo antecessor* from the Dolina site and *H. heidelbergensis* from Sima de los Huesos, which he compared with modern-day humans and other related primates. He appreciated an evolutionary phase of robustness with a subsequent gracilization in our species. After their hands were freed by bipedalism, they

GROWTH OF BONE TISSUE.

> CAYETANA MARTÍNEZ MAZA was awarded her doctorate on 29 November, also at the Complutense University, for her paper entitled, "Ontogeny and phylogeny of bone modelling in

University Peabody Museum with Dr. Dan Lieberman, where she experimented with animals to detect bone formation patterns using histological cross-sections. Her most recent work has focused on the analysis of the large anthropologi-

cal collection from the El Sidrón site (Piloña, Asturias), under a grant for this important project directed by Javier Fortea and Marco de la Rasilla in Oviedo.

> The name Atapuerca represents not only some of human evolution's most emblematic fossils, but also a team of scientists who are passionate about their work, alert to the latest research trends and always prepared to explain the scope of their discoveries to society as a whole. That is why Atapuerca has been an inexhaustible source of knowledge about the history of the human species, and also an important training ground for scientific and cultural researchers.

> New forms of applied research which should show the way for future discoveries have been put into practice at these sites. The discoveries have earned the admiration of the scientific world, and also generated considerable benefits for the local community. The Museum of Human Evolution in Burgos, the large number of researchers who come here, attracted by the project's worldwide prestige, the tens of thousands of visitors... all of this is the fruit of a

being applied to serve society. > Working between the walls and in the pits of this unrivalled site, the men and women who are now learning about the lives of our forebears have also learnt to discover their secrets and the way they met the challenges of their time. Knowing what they were like and what they did allows us to delve further into our knowledge of ourselves and our realization that we are all an integral part of the Earth, which we have to nurture as the most valuable legacy that we can pass on from generation to generation.

ATAPUERCA CLIMATE WAS WARMER IN THE BRONZE AGE

> New data from Lookout Cave. Several members of the Atapuerca Research Group have been working on new studies of the Bronze Age levels in a similar initiative to the one described in the previous article on cannibalism.

An archaeobotanical study coordinated by Dan Cabanes will soon be published in the Quaternary International magazine. Cabanes and his fellow authors combine data from their analysis of seeds, pollen, phytolites and carbons to take a closer look at both the vegetation landscape at the time and also the diagenetic processes that formed the cave, linked to stabled livestock and cereal crop processing.

The El Mirador (Lookout) stratigraphic sequence is the continuation of a large 4 m deep Neolithic package. Several papers on the cave were presented at the 4th Peninsular Neolithic Congress held in Alicante in November last year, the proceedings of which will be published shortly. The presentation of the site, signed by all the members of an excavation team, includes an overall description of the site, its stratigraphy, dating series and current problems. The carpological studies presented by Ana Rodríguez and Ramón Buxó have revealed the predominance of both dicocum and common barley, while the preserved carbons, studied by Ethel Allué and Itxaso Auba, have shown that the vegetation in the landscape around the site was predominantly composed of pine, cherry, ash and hazelnut trees, etc. At the same congress, Juan Manuel López García, Gloria Cuenca-Bescós and Jordi Rosell presented the results from their analysis of the microvertebrates found in the Neolithic strata at the El Mirador site, where they have documented several species of mole, shrew and bat, as well as water rats, treefrogs and others, suggesting a mixed and relatively moist environment.

CANNIBALISM IN MIRADOR.

Human remains discovered in a pit dug into floor of the Mirador Cave have been confirmed as the second case of cannibalism documented in the Atapuerca Hills. These Bronze Age remains, much more recent than the *Homo antecessor* case and unrelated to it, have enabled our scientists to define some of the processing patterns that were repeated in all the individuals.



hominoid facial skeletons and jawbones. A study of the Neanderthal phylogenetic line based on samples from Atapuerca-SH and El Sidrón, supervised by Dr. Antonio Rosas. Her thesis analyses variations in the bone models of the rear part of our heads, which depend on factors linked to the body's growth and the speed of bone formation, as well as the evolutionary trends in our genus, which are related to a larger brain size and the role of the

cal collection from the El Sidrón site (Piloña, Asturias), under a grant for this important project directed by Javier Fortea and Marco de la Rasilla in Oviedo.

ATAPUERCA, A REFERENCE POINT FOR SPANISH RESEARCH

> JOSÉ LUIS RODRÍGUEZ ZAPATERO
Prime Minister.

The Atapuerca site is now firmly part of the history of Spanish

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AN ECTOCRANIAL LESION ON THE MIDDLE PLEISTOCENE HUMAN CRANIUM FROM HULU CAVE, NANJING, CHINA

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> (...) The bones of the facial skeleton are free of any pathological alterations, as are all of the preserved endocranial surfaces of the frontal bone, the parietal bones, and the occipital bone. (...) The external surface of the anterosuperior neurocranium exhibits a large and irregular area, a lesion which covers most of the frontal squamous and adjacent areas of the parietal bones. (...) It is therefore apparent that the Hulu 1 individual sustained a traumatic alteration of the anterior scalp, a serious neurocranial burn some time before death, and/or (but less likely) a large scale periosteal reaction. (...) As such, the lesion would have involved serious localized pain, and possibly a major level of haemorrhaging and/or subsequent

sensitivity. If the lesion was due to some form of trauma, there is a variety of possible accidental or intentional causes, none of which can be identified from the lesion or its location. If the lesion was secondary to anterior cranial burning, it would have occurred close to the time of the earliest evidence for the use of fire in at least Eurasia; the oldest evidence for fire in east Asia is from the <500 ka BP site of Zhoukoudian Locality 1, although secure evidence for fire and hearths is present at the 800 ka BP site of Gesher Benot Ya'aqov in southwest Asia.

The Hulu 1 cranium therefore joins a growing series of Pleistocene human remains with nontrivial pathological alterations. There is a number of cases of

such skeletal changes among Late Pleistocene archaic and modern humans. In addition, such cases are becoming increasingly documented for Early and Middle Pleistocene human remains. (...) These are joined by traumatic (or probably traumatic) cranial lesions on Lantien (Gongwangling) 1, Ceprano 1, Zuttiyeh 1, at least eight of the Atapuerca-SH crania, and several of the Zhoukoudian Locality 1 remains and by serious dentoalveolar abnormalities on Atapuerca-SH 700/721/888, Aubesier 11, Broken Hill 1, Dmanisi 3444/3900, and Ehringsdorf 6.

These remains also document their ability to survive both minor and major abnormalities, since all of these lesions document some degree of survival.

FROM RATS TO HUMANS. THE

begin to specialise in the constant use of their upper extremities, particularly to grip with force and work with precision. His thesis identifies a series of anatomical traits in the hands of the Sima hominids which he relates to the Neanderthals but are not detected in the Dolina specimens. Carles Lorenzo is now a researcher at Tarragona's Rovira i Virgili University, where he also lectures at the Arts Faculty.

cranial sutures in the early stages of life. The great interdisciplinary focus required by this type of analysis augurs well for the future expansion of anthropological studies with a biological basis. The author conducted almost all of her work at the Palaeobiology Department of the National Museum of Natural Science in Madrid (CSIC), and has worked on the Atapuerca excavations since 1997, particularly the Sima del Elefante site. Part of her training also took place at the Harvard

science, because it perfectly exemplifies the challenges and difficulties that have been overcome by researchers in our country, but also because of the massive amount of talent it is bringing to light in our universities.

> Between the moment when a group of enthusiastic archaeologists discovered the first remains in the area and the present day, with Atapuerca recognized as a world reference point, strengthened by its declaration as a World Heritage si-

research concept that combines the highest levels of scientific rigour with the development of practical applications that have spilled over into the development of other sectors including our cultural industries. That is the path that should be taken by our research. The contribution by my Government, increasing our R+D+i investment more than ever, will no doubt be reflected in other projects like the Atapuerca sites, becoming scientific reference points while at the same time