

## &gt;NEWS FROM ATAPUERCA IN ENGLISH



## &gt; NEW RESEARCH IN GRAN DOLINA

## A PLETHORA OF AMPHIBIANS AND REPTILES IN GRAN DOLINA REVEAL CLIMATIC DATA

> Three new publications. The latest articles published by the Atapuerca Research Group (ARG) in the last three months have focused on Gran Dolina. Carolina Mallol and Eudald Carbonell have studied the sediment at the site using a technique known as "micromorphology", based on the microscopic analysis of small slivers of clay. Gloria Cuenca, Blain and Bailon presented their study of amphibian and reptile remains from a sample cut in Gran Dolina using what is called biostatigraphy, which uses the way the proportions of species change over time to infer the conditions of the local habitat. Finally, Rosell and Blasco compared the fauna records in Gran Dolina and Bolomor Cave (Valencia Region) from a zooarchaeological perspective in their effort to explain the frequent presence of carnivores in places that were inhabited by humans. Their study proves that these humans hunted the carnivores, and that there was no competition between the two groups of predators, which alternated their use of the caves.

## &gt;NATURE PUBLISHES SIMA DEL ELEFANTE STUDY

> Scientist all over the world dream of one day publishing an article in Science or Nature, the two publications which represent the cutting edge of scientific knowledge. Using the strictest standards imposed by some of the most prestigious reviewers, barely 5% of the papers submitted from around the world are actually published. The Atapuerca team has already published several articles in the US-based journal Science: in 1995, the discovery of *Homo antecessor* in Gran Dolina, at the time the oldest known fossil of our genus in Europe; in 1996, the oldest proof of human cannibalism found in bones from Atapuerca; in 1997, the variation in size between Middle Pleistocene men and women, proving that differences between the genuses were similar to those found today; in the same year, an article appeared about new adult human bones found in Gran Dolina and their proposed connections with Eurasian hominids.

In the British journal Nature, Atapuerca was given front cover treatment in 1993 with an unprecedented discovery: the first three complete skulls discovered in Sima de los Huesos, which have become the basis for our knowledge about the shape and size of the Neanderthals' predecessors. In 1999, Na-

## A selection of highlights from the previous issue

ture published the locomotive and obstetrical implications of the study of a complete *Homo heidelbergensis* pelvis, also found in Sima de los Huesos. The latest front cover treatment in Nature has once again set Spanish research and the Atapuerca sites in the world's scientific limelight. This time, the article presents the anthropological discoveries at the base level of Sima del Elefante and their chronological, cultural and palaeontological context.

>EDITORIAL  
TRAVELLING THROUGH TIME AND SPACE  
>Ethel Allué  
*Archaeobotany, IPHES researcher, Tarragona. ARG member.*

Travelling is one of the greatest pleasures that my profession as an archaeologist has given me. Not only travelling on account of our research projects and conferences, which have enabled me to visit many parts of the world, but also travelling through space and time thanks to the archaeological record. Archaeobotany is one of those areas of knowledge that bring together two concepts and many times and spaces, because

to use special techniques to extract them and conduct our research. They are usually carbonised, although they can be preserved in very moist or very dry environments. To recover the carbonised material, we use what is called flotation. Because

of the differences in density, when soil is placed in a vessel containing water, the carbonised material becomes detached from it and floats to the surface. In order to identify these botanical traces, we often compare their shapes or cells under the microscope. Charcoal remains from a fire, for example, come from material collected as firewood, which still preserves the wood's cell structure. Simi-

lars and legumes. Every archaeobotanical discovery contains a story that deals with food, trade, inequalities, rituals, daily events, the landscape, the climate, etc. Indeed, every part of the world harbours remains waiting to be discovered and guide us towards these interpretations. In South America, it is corn, in Asia, millet, soy and rice, in Africa, millet, wheat, sorghum and legumes, while in Europe and the Middle East, it is wheat and barley. The growth of these so-

called primary products is part of our ancestors' history and our own background as well. Sometimes we are unaware of the importance of the indispensable products in our highly-appreciated Mediterranean diet. Tomatoes, aubergines, lentils and potatoes originated elsewhere in the world, while grapes, olives and wheat have been used in the Mediterranean since we began to domesticate plants. Coming back home to Atapuerca for a moment, the Neolithic and Bronze Age botanical remains from El Mirador Cave have revealed a landscape covered with deciduous and evergreen oaks, but also cropland and grasslands used for grazing livestock in an area that was occupied by our direct ancestors. The archaeobotanical research into the Atapuerca sites is being conducted by several scientists who are striving to get a clearer understanding of both our past and our future.

## OTHER ARG ACTIVITIES

>ARG SCIENTIST RUTH BLASCO has recently published an article in the Journal of Archaeological Science about her

>ZOOARCHAEOLOGY DVD AND BOOK. Two books on zooarchaeology have been published by the Burgos University Publications Service, edited by Carlos Díez in collaboration with several other ARG members. One of the DVDs covers the experimental work aimed at recreating the butchery process using stone tools, conducted at Burgos University and Maimónides University in Buenos Aires, which focuses on the extremities of various African, European and South American animals. The book, *Zooarqueología hoy. Encuentros hispano argentinos*, presents the contributions made by several experts who have studied the relationships between human groups and vertebrate remains that have appeared at archaeological sites.

>DIEGO E. ANGLUCCI, Coordinator of the CENIEH's Neogene and Quaternary Geology Programme, is taking part in a project on the transition from the last Neanderthals to the first *Homo sapiens*, currently underway in the Murcia region. The project, led by João Zilhão (University of Bristol) and Josefina Zapata (University of Murcia) and funded by the Séneca Foundation, is currently in its second season. The team is now focusing on intensive prospecting around the town of Mula, although it will shortly start to dig at one of the sites that has been discovered. Its potential is expected to yield information about the transition between the Middle and Late Palaeolithic, one of the most enigmatic periods in European prehistory.

>LETICIA MENÉNDEZ AND JORDI ROSELL, ARG members working at the Rovira i Virgili de University (Tarragona), in conjunction with Marie Helène Moncel from the Human de Palaeontology Institute in Paris have just published a comparison between two Mousterian occupation levels at the sites in Fuentes de San Cristóbal (Huesca) and Payre (Ardèche, France) in the Proceedings of the 15th UISPP Congress. In spite of the chronological and environmental differences between the two deposits, the authors have reached the conclusion that the two groups had similar behaviour patterns with regard to the subsistence and mobility strategies that they adopted.

>SERGIO MORAL AND MARCOS TERRADILLOS, ERG members from Burgos University, in conjunction with the Deputy Director of the Portuguese Institute of Architectural and Archaeological Heritage, Joao Pedro Cunha Ribeiro and other colleagues, have recently published an article in the Portuguese journal ERA Arqueologia on the results of the work at the Quinta da Boavista station, the first Lower Paleolithic site to be dug on the left bank in the lower reaches of the Tagus River. The results suggest it was an open air supply and work point for raw materials, which has yielded an interesting Mode 2 (Acheulian) stone industry collection.



## &gt;Evolutionary Anthropology, 17:22–37 (2008)

## THE ORIGIN OF MODERN ANATOMY: BY SPECIATION OR INTRASPECIFIC EVOLUTION?

GÜNTER BRAÜER

> (...) In 1978, I started a morphological analysis of the Middle and late Pleistocene hominin material from Africa. This research finally led to a framework of *Homo sapiens* evolution suggesting a mosaic-like, continuous anatomical process of modernization, from an early archaic grade via a more derived late archaic grade to anatomically modern humans. This result suggesting that the modernization process in Africa occurred largely in parallel to the Neanderthalization process in Europe.

(...) The anatomical modernization process can be divided into three largely diachronic grades of *Homo sapiens*, each including hominin specimens of similar evolutionary level. The specimens in the early archaic *Homo sapiens* category are clearly derived relative to *Homo erectus*, sharing apomorphies with later *Homo sapiens* (...). The late archaic *Homo sapiens* is clearly more derived as compared to the morphological pattern of the early archaics (...). This grade of evolution is followed by the anatomically modern *Homo sapiens*.

(...) Key evidence of the presence of early archaic *Homo sapiens* comes from the hominin specimen from Bodo (Ethiopia), dated by

Ar/Ar to ca. 600,000 years B.P.; Saldanha (or Elandsfontein) cranium from South Africa; the cranium from Ndutu (Tanzania); crania from Kabwe (Zambia), Eyasi (Tanzania), and Salé (Morocco).

(...) The late archaic grade comprises specimens spreading from northern to southern. An example of these near-moderns is the cranium KNM-ER 3884 from Ileret, East Turkana. Important late archaic specimens also exist from Northern Africa, such as the crania from Jebel Irhoud (Morocco), dated to about 170,000 years B.P.

(...) Based on the current evidence, it seems likely that the earliest transition to anatomically modern humans occurred in Eastern Africa.

(...) According to Foley, the three major groups should be classified as *Homo heidelbergensis*, *Homo helmei*, and *Homo sapiens*. In view of the generally agreed transitional character of this derived premodern group, it is much more appropriate to include this morph within the species *Homo sapiens* as a late archaic group, an intermediate stage, or a somehow labelled chrono-subspecies. Rightmire suggested a speciation event between *Homo erectus* and *Homo heidelbergensis* in Africa at around 800,000 to 700,000 years ago.

Most recent U-series dates using (ICP-MS) yielded an age of about 600,000 years B.P. for the pre-Neanderthals from Atapuerca Sima de los Huesos, indicating that the Neanderthalization process might have already started in the early Middle Pleistocene.

The obviously great diversity in using the name *Homo heidelbergensis* reveals that it is hardly a well-defined taxon proving that speciation events occurred within the Neanderthal or modern human lineages.

(...) Another hypothesis suggests that the last common ancestor of the Neanderthal and modern lineages is represented by a *Homo antecessor*. This species was suggested on the basis of the hominin remains from the ca. 800,000-year old TD6 level of Gran Dolina, Atapuerca (Spain).

(...) As demonstrated in the present paper, both the African and European fossil records represent long continuous lineages through most of the Middle Pleistocene. It is likely that the lineages diverged some time after the speciation of *Homo sapiens* from *Homo erectus* in Africa about 700,000 or 800,000 years ago, and thus are closely related.

se it is both archaeology and botany, involving the analysis of the botanical remains (pollen, seeds, wood, charcoal, etc.) that we discover at archaeological sites. Most archaeobotanical scientists initially study archaeology and then train as botanists, which gives us a perspective in our research that is extremely useful for understanding the relationships between plants and people. The botanical remains that we discover at archaeological sites are usually tiny, so we have

larly, even when remains of fruit and seeds are burned, they maintain their original shape, so when they are compared, we can identify the different species and the ones that were used by our ancestors. That is when we embark on a journey through space and time! Scientists have not come up with a single explanation, although we do know that 10,000 years ago, human groups became sedentary and dependent on the resources they were able

to grow. They stopped acting as hunter-gatherers and became graziers, shepherds and crop farmers. A climatic bonanza, population growth, changes in the social and economic organisation of the hunter-gatherer groups and other factors led

cutting edge research which will undoubtedly have widespread repercussions for future interpretations of the fossil record. In conjunction with other ARG members, Blasco has detected a range of alterations to bones left by hominids when they were trodden on accidentally. Their work has been supplemented with experiments which prove that people's movements give the bones quite characteristic fractures and marks which can be detected in fossilized bones.