

3D models to study the origin of Linya, the prehistoric woman who lived in the Pyrenean foothills

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Credit: CENIEH

The 2023 excavation campaign has just finished at the Cova Gran rockshelter in Santa Linya (Lleida), where Alfonso Benito Calvo, a

geologist at the Centro Nacional de Investigación sobre la Evolución Humana (CENIEH) has been collaborating since 2009 with the archaeological team from the Center for Archaeological Heritage Studies at the Universitat Autònoma de Barcelona (CEPARQ-UAB).

This site is in the La Noguera region of the Pyrenean foothills and here, in 2021, bony remains of the 14,000-year-old skeleton of a small adult woman appeared, who has been dubbed Linya, the Lady of La Noguera.

In this summer's campaign, [excavation work](#) continued around where Linya's remains had been found, yielding the [stone tools](#) that surrounded her and endeavoring to reconstruct the natural post-death processes that led to her skeleton ending up buried under blocks of stone.

Various techniques are being used for this: stratigraphic studies, assessing the processes that accumulated the sediment; 3D photogrammetry to study the geometry of the strata and the site; [laser scanners](#) and drones with highly accurate GPS for 3D modeling of the site, and terrestrial photogrammetry to model the excavation where Linya was found.

"These 3D models are undergoing high-resolution processing at the CENIEH Digital Mapping and 3D Analysis Laboratory, and they will be crucial to the virtual reconstruction of the terrain where this member of our own species lay," explains Benito Calvo.

50,000 years of prehistory

Cova Gran is a large semi-vaulted rockshelter, where degradation of the walls led to accumulation of sediments inside that were progressively buried, thus preserving for us today the activities of the populations who lived in this area of the Pyrenean foothills during the last 50,000 years. The site has conserved important prehistoric settlements from the last

Neanderthals to the first modern humans, right up to the earliest farmers in the Neolithic.

The [archaeological work](#) at Cova Gran is one of the four-year research projects 2022-2025 of the Culture Department of the Generalitat de Catalunya, and is supported by the Institut d'Estudis Ilerdencs of the Diputació de Lleida, and the Ministerio de Ciencia y Tecnología.

Provided by CENIEH

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