

Supplemental information

Contrasting demographic impacts of Roman colonization and early medieval migrations in the Iberian Peninsula

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DATA S1:

Contrasting demographic impacts of Roman Colonization and Early Medieval Migrations in the Iberian Peninsula.

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1. Supplemental Figures

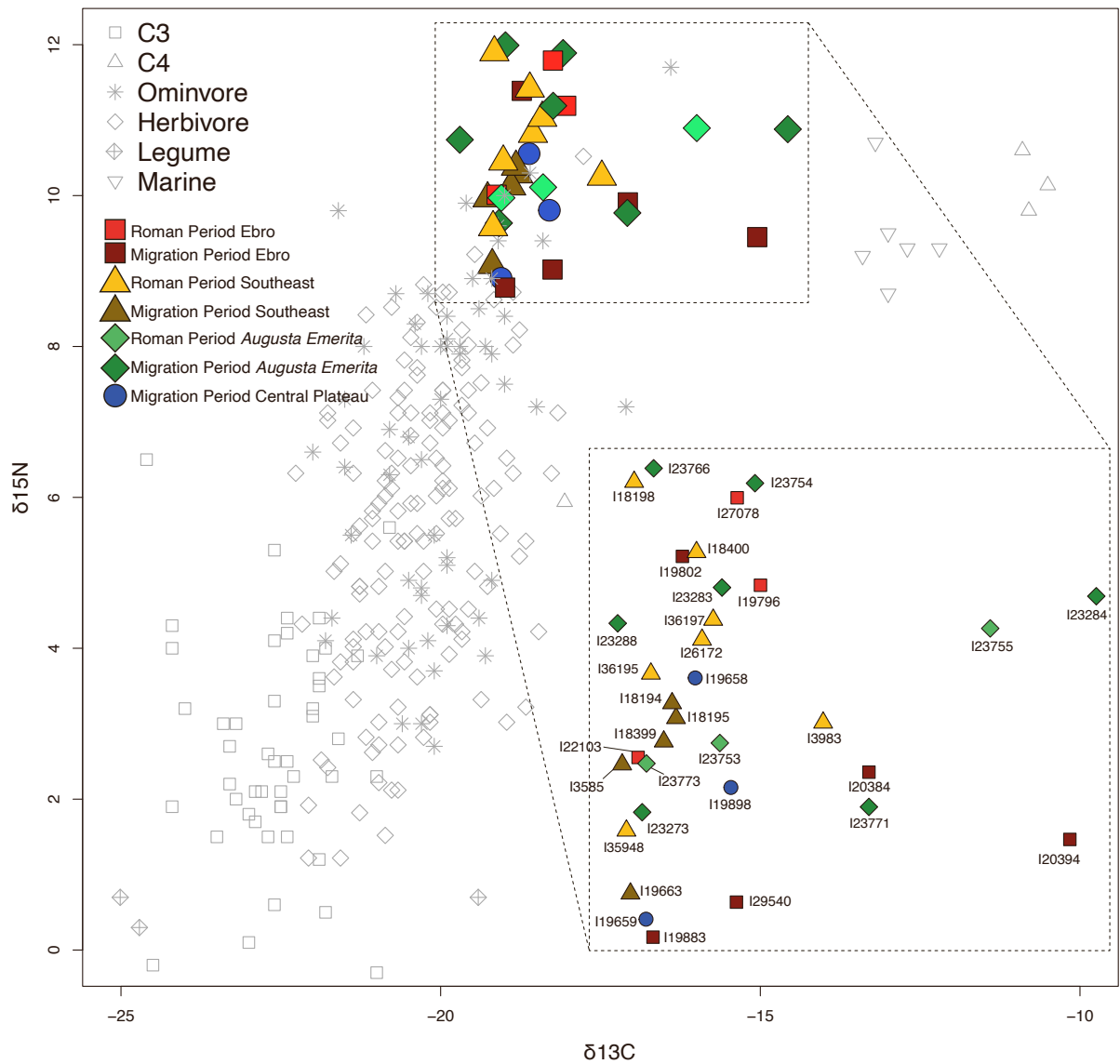


Figure S1. Carbon and nitrogen stable isotope ratios of newly reported individuals contextualized within Iberian plant and animal baselines for Roman and Early Middle Ages (Data S1 Section 3; Star Methods “Stable Isotope Analysis” Section).

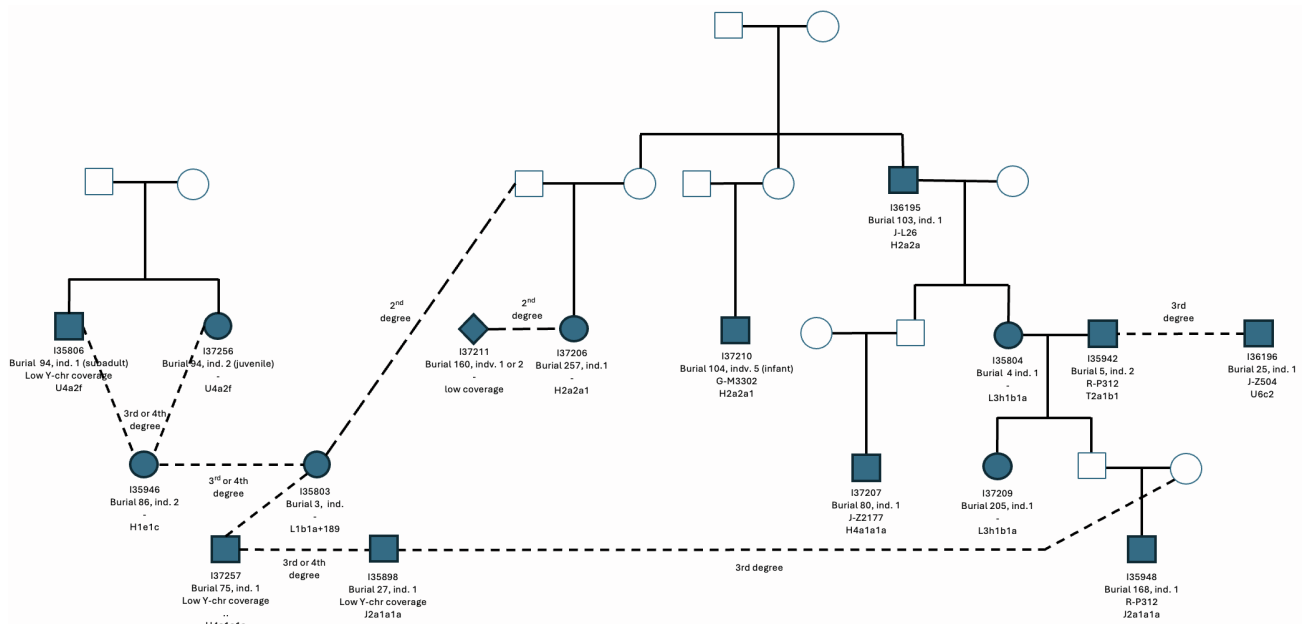


Figure S2. Reconstruction of Coracho Basilica Family A tree (Data S1 Section 4; Star Methods “Kinship Inference” Section; Results “Large-scale gene flow originating from North Africa” Section).

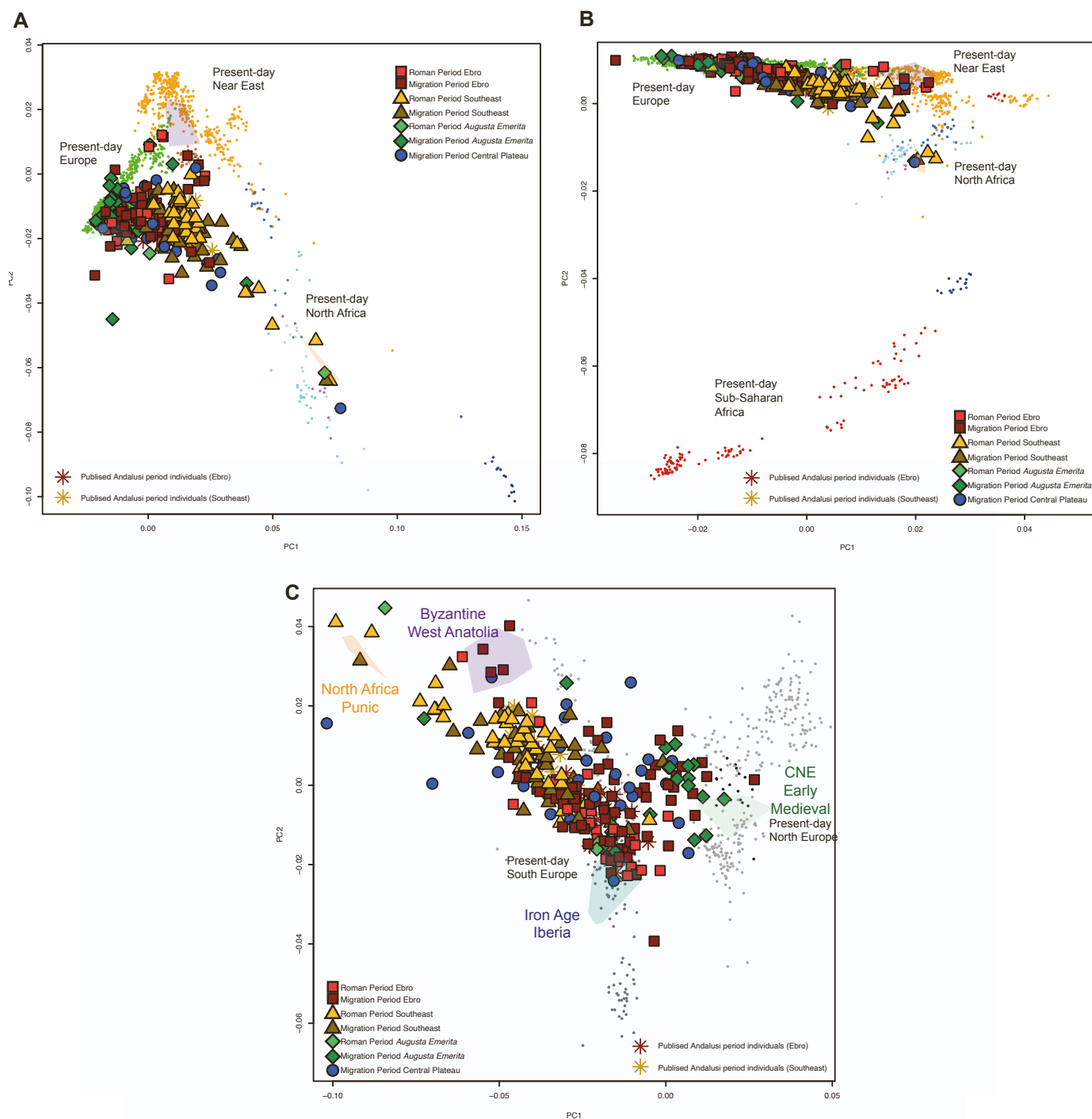


Figure S3. Principal Component Analyses (PCA) of newly reported individuals projected onto present-day reference datasets. A. PCA of West Eurasian and North African populations, genotyped on the Human Origins array. **B.** PCA including Sub-Saharan African, North African, and West Eurasian populations genotyped on the Human Origins array. **C.** PCA of present-day South and North European individuals from the Human Origins dataset. Asterisks denote the Andalusi period individuals published by Olalde et al.¹. (Star Methods “Principal Component Analysis (PCA)” Section; Figure 3A).

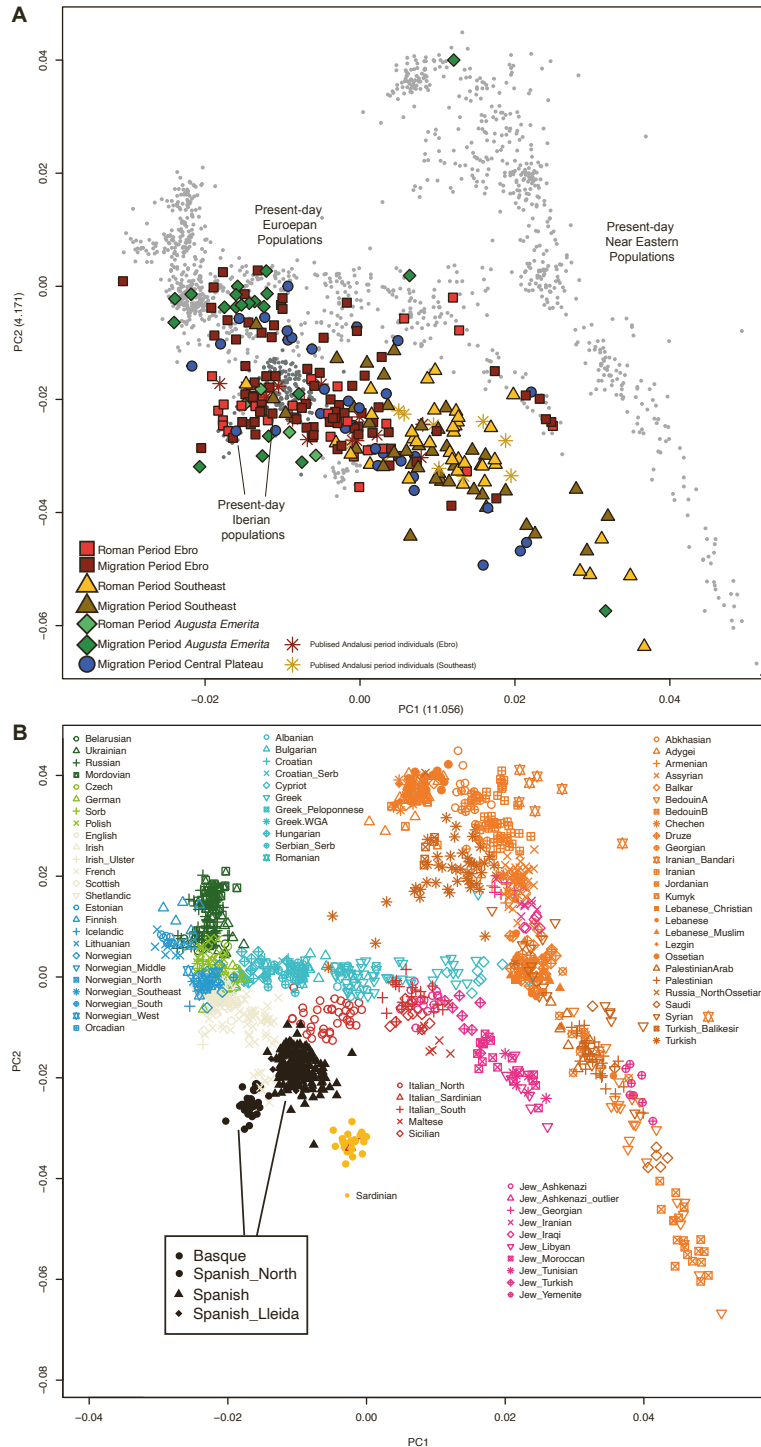
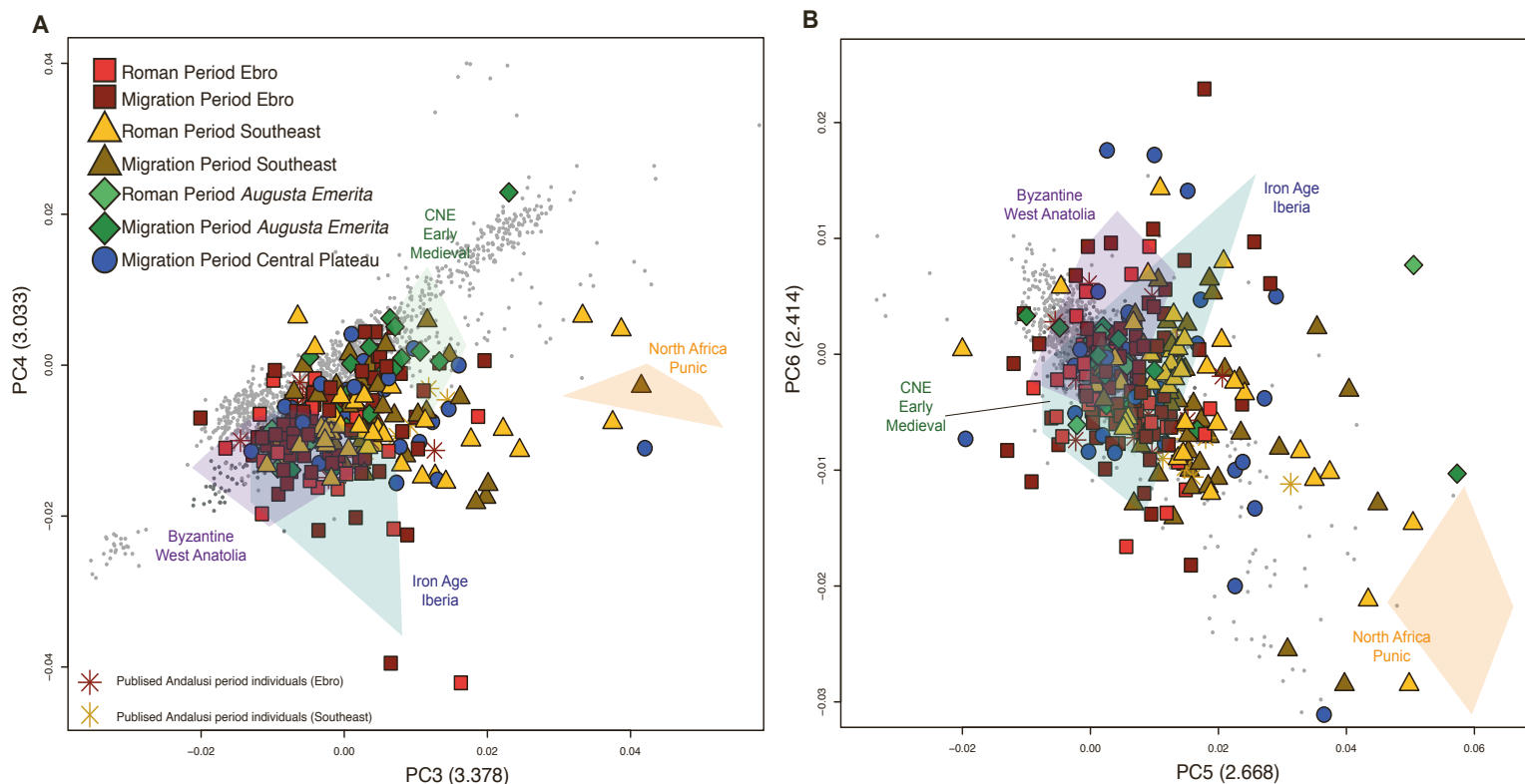
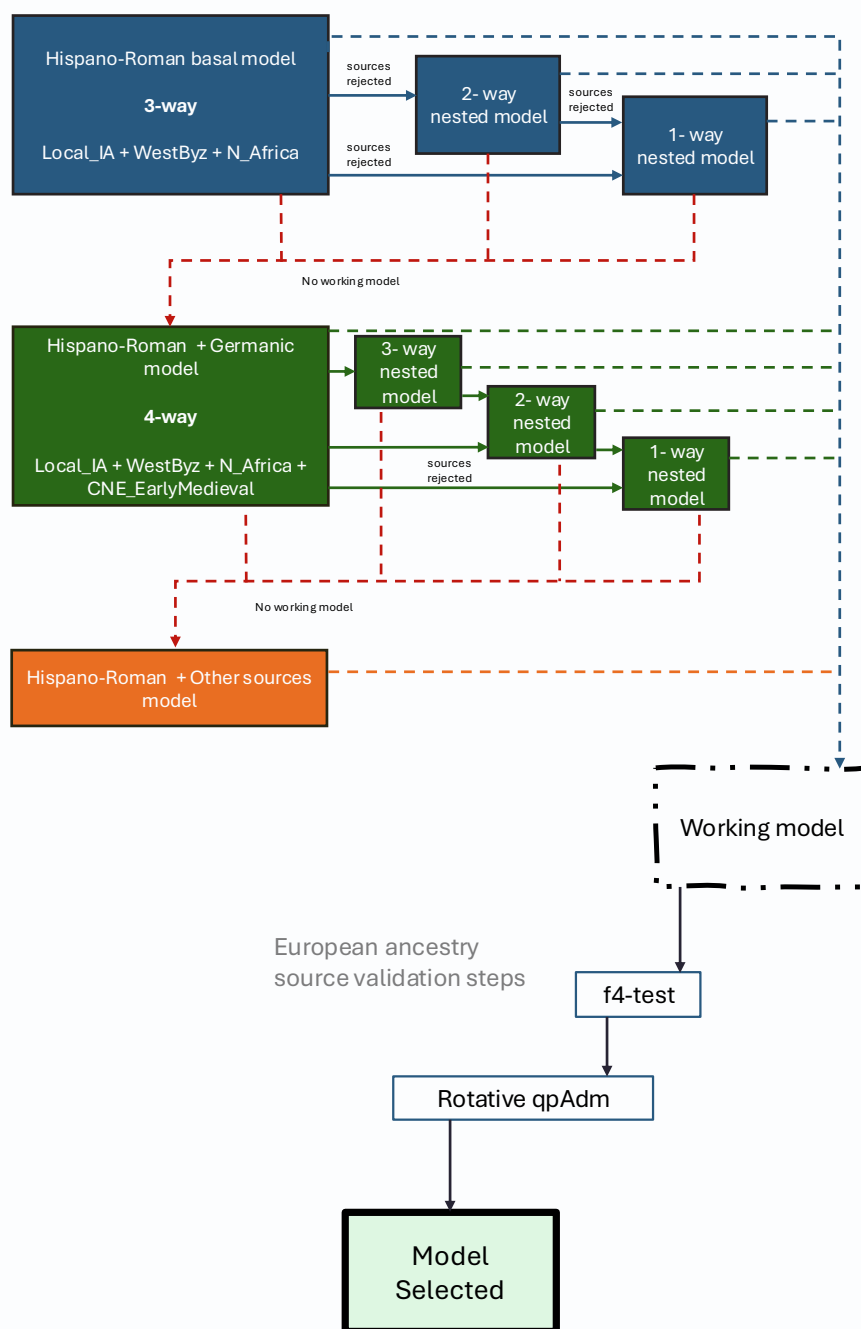


Figure S4. A. Principal Component Analyses (PCA) of newly reported individuals projected onto present-day West Eurasian populations genotyped in the Human Origins array. Asterisks denote the Andalus period individuals published by Olalde et al.¹. B. PCA of present-day West Eurasian populations used to compute the Principal Components. Black symbols denote present-day Iberian populations, providing context for the genetic landscape and highlighting differences from the study period. (Star Methods “Principal Component Analysis (PCA)” Section; Figure 1C-F; Figure 2E-F).



111 **Figure S5. Principal Component (PC) exploration from Principal Component Analyses**
 112 **(PCA) of newly reported individuals projected onto present-day West Eurasian**
 113 **populations genotyped in the Human Origins array. A. Plot for PCs 3 and 4. B. Plot for**
 114 **PCs 5 and 6. Asterisks denote the Andalusian period individuals published by Olalde et al.¹**
 115 **(Star Methods “Principal Component Analysis (PCA)” Section).**



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Figure S6. Workflow for individual-level ancestry modelling and refinement strategy.
(Data S1 section 5; Star Methods “Ancestry Modeling of ancient individuals” Section).

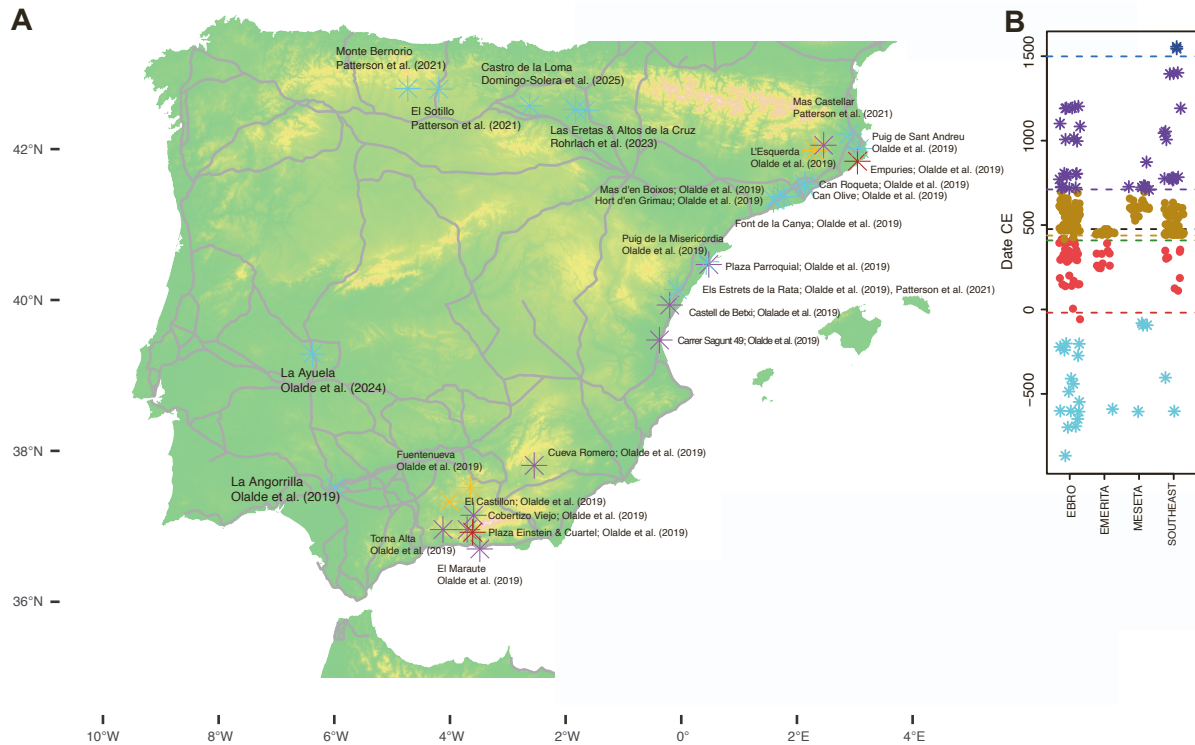


Figure S7. Geographical and Chronological context of published ancient individuals used as Source and Targets in the F-Stats tests. **A.** Map of the Iberian Peninsula marking the location of the published Iron Age (cyan), Roman period (red), Migration Period (yellow) and Andalusi - Christian period (purple) published individuals **B.** Time plot of newly reported and published ancient individuals used in F-stat tests in a broader chronological context. These individuals have been used as Sources (Iberian Iron Age populations; cyan asterisk) and post-Migration period Targets (purple: Andalusi period individuals, between 711 CE and 1492 CE; and dark blue: Christian period individuals; after 1492 CE¹). New contextual lines have been added on top of the 3 main historical points explained in Figure 1. The red dotted line indicates the date where the last remaining regions of the Iberian Peninsula were incorporated into the Roman realm in 19 BCE, after Emperor Augustus' victory in the Cantabrian wars. The purple dotted line shows the arrival date of the Umayyad caliphate in the peninsula in 711 CE, triggering the rapid fall of the Visigothic Kingdom. The darker blue dotted line indicates the fall of the last remnant Islamic political entity in the Iberian Peninsula in 1492 CE¹, after the Nasrid dynasty defeat in the Granada War (Data S1 section 5; Star Methods "Ancestry Modeling of ancient individuals" Section).

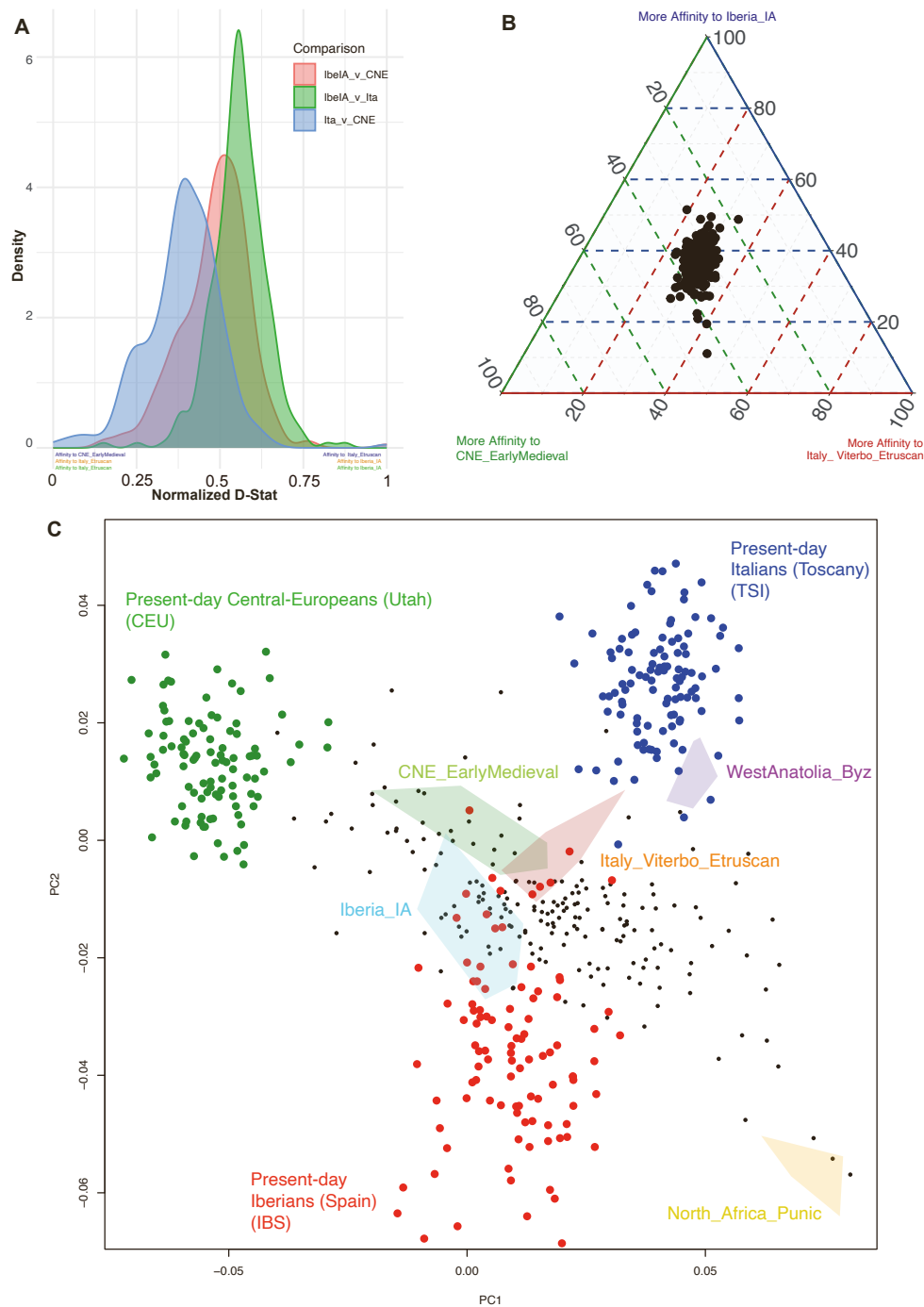


Figure S8. Evaluation of alternative European ancestry sources in individual qpAdm models. **A.** Distribution of f_4 statistics to identify individuals with significantly greater genetic affinity to *CNE_EarlyMedieval* than to *Iberia_IA* or *Italian_Etruscan_Viterbo*. **B.** Ternary plot illustrating ancestry proportions inferred for individuals whose models were reassessed by rotating *Iberia_IA*, *CNE_EarlyMedieval*, and *Italy_Lazio_Viterbo_Etruscan* as potential European sources. **C.** Projection of the newly reported samples onto the Principal Component Analysis (PCA) of European genetic variation using 1000 Genomes Project data. Black dots denote the newly reported samples. (Data S1 section 5; Star Methods “Ancestry Modeling of ancient individuals” Section).

147 **2. ARCHAEOLOGICAL OVERVIEW** (Complementary to **Star Methods “Ancient**
148 **Individuals”** Section).
149 **written by Pablo Carrión, Kyle Harper and Michael McCormick with**
150 **contributions from all other co-authors**
151

152 This section provides a structured overview of the archaeological, historical, and
153 anthropological findings related to the newly reported and studied individuals.
154 Archaeological sites with published but re-sequenced individuals are also included. It follows
155 the standardized format proposed by Olalde & Carrión et al.², ensuring consistency with
156 previous research in the field.
157

158 The **archaeological sites** are presented in alphabetical order, with basic bibliography and site
159 information provided by the excavating and/or regionally expert archaeologists. Some of this
160 information is published here for the first time. The data has been compiled and organized
161 by Pablo Carrion and subsequently reviewed, vetted, and standardized to facilitate its
162 integration into broader archaeogenetic, archaeological, and historical research. Michael
163 McCormick and Kyle Harper reviewed the entries on Córdoba, Lucena, Coracho Basílica,
164 Girona, Pla de l'Horta, and Mérida, Corralón de los Blanes Necropolis. The goal is to
165 maximize the usability of this dataset for researchers interested in assessing the full
166 implications of the present study. At sites (2.7, 2.30), we radiocarbon- or coin-dated a few
167 individuals whose aDNA preservation subsequently proved insufficient or null for genetic
168 analysis. Given their intrinsic archaeological significance, including the light they shed on
169 the chronology of the activity of the burial grounds in question, we have retained them in the
170 relevant archaeological site entry.
171

172 **Geographic coordinates** for each site are available in Table S1. All calibrated radiocarbon
173 dates are reported at two standard deviations (Table S1A). For individuals who have not been
174 directly radiocarbon dated, chronological attribution is based on the archaeological findings
175 of the necropolis, burial context, site-specific funerary traditions, and radiocarbon dates of
176 other associated individuals. These chronological assessments follow interpretations by the
177 excavating team or local experts.
178

179 **Ancestry components** resulting from our genetic analyses have been summarized, where
180 available, for each individual using simplified categorical tags to facilitate interpretation
181 within this archaeological supplement. The index of tags is as follows:

182 Hispano-Roman refers to individuals modeled using the basal three-way model comprising
183 local Iron Age Iberian, Imperial Roman Eastern Mediterranean, and North African (Punic-
184 related) ancestries (see Data S1 Section 5.1). Any individual ancestry of these three is also
185 listed.

186 Central-North European includes individuals whose European ancestry is inferred to have
187 originated in late antiquity north of the Mediterranean region (see Data S1 Section 5.2).

188 West-North European comprises individuals with Iron Age Northwestern European ancestry
189 Central Italian refers to individuals modeled with ancestry traced to the Italian Peninsula (see
190 Data S1 Section 5.3).

191 Central Mediterranean applies to individuals with ancestry originating in the central
192 Mediterranean region (see Data S1 Section 5.3).

The order in which components are listed reflects their relative proportions, with the most prominent component listed first. However, for complete and detailed ancestry estimates, users are advised to consult Table S3A.

Burial orientation information was sometimes ambiguous. Where we could verify that an individual was indeed buried with their head in the west and feet in the east, we have indicated the orientation as ‘W-E’. That arrangement may, however, also be true in other instances where we received the information only as ‘E-W’ and reproduce that here. A similar problem may occur with respect to other orientations.

Sex determination was conducted using –and is reported by– both genetic and anthropological methods. In cases where only the genetic sex (with the corresponding karyotype) is reported, this indicates that the sex could not be determined from the skeletal remains or that the preliminary osteological sex estimation conflicted with the genetic results.

2.1 Almería, Cuevas del Almanzora, Villaricos

Contact person(s): Alicia Rodero & Montserrat Menasanch

Brief Settlement history: Villaricos is the name of a modern coastal district and archaeological site, located in the municipality of Cuevas del Almanzora in the province of Almería. The archaeological site encompasses residential and industrial areas in addition to multiple cemeteries. The site was linked to the town of *Baria*, an important Phoenician-Punic and subsequently Roman city that played a crucial role in maritime trade and regional connectivity; in late antiquity settlement agglomerated around what is known as Cerro Montroy, a higher-elevation site approximately 10 km to the northwest of *Baria*. The strategic position near the coastline provided access to important Mediterranean trade routes, linking it with North Africa, the eastern Mediterranean, and the rest of the Iberian Peninsula³.

In total, 1,842 tombs have been excavated at the site⁴, though much of the documentation is incomplete. Luis Siret, in his 1906 publication *Villaricos y Herrerías. Antigüedades púnicas, romanas, visigóticas y árabes*, described only around 100 tombs⁵. While Villaricos is best known for its extensive, rock-hewn hypogea, primarily built during the Punic period, some of these hypogea were reused in later periods. Materials curated at the Museo Arqueológico Nacional (MAN) include burials radiocarbon-dated to the Roman and Late Antique periods, highlighting the site's prolonged use^{3,6}.

Excavation History: The extensive burials of Villaricos were first explored in the late 19th century, with systematic excavations initiated by Luis Siret in January 1890. His last recorded entry on the site dates to June 1914. Subsequent investigations were carried out by Miriam Astruc and later María José Almagro Gorbea, who continued excavations and the study of materials. Between 1986 and 1991, Montserrat Menasanch and Lauro Olmo conducted further excavations in the Late Roman and Early Medieval settlement of Cerro Montroy, part of the Villaricos complex and located above the Phoenician-Punic tombs. These investigations did not uncover new burials but provided insights into the settlement's evolution following the decline of the Roman Imperial city of Baria and the subsequent establishment of new cemeteries^{7,8}.

Geographical Information: Villaricos is an archaeological site in the province of Almería, southeastern Spain, near the Mediterranean coast. It is situated at the mouth of the Almanzora River (latitude: 37.247, longitude: -1.7768). The landscape surrounding Villaricos is characterized by a combination of coastal plains, river valleys, and rugged hills, which would have provided abundant natural resources. The tallest surrounding hill is Cerro Montroy approximately one kilometer north of the present-day town of Villaricos.

Summary of sampled materials: A total of six burials from two distinct cemetery areas (sectors Q, N and L-M; Figure AO.1) associated with the Imperial Roman settlement of Cerro Montroy were analyzed. These funerary complexes, already classified by Luis Siret as post-4th century, reflect a variety of burial practices and genetic ancestries. The sampled individuals include both single and double inhumations, with graves ranging from simple pits to more elaborate structures lined with stone slabs or masonry. One burial (T1319-I/1) contained a wooden coffin, evidenced by iron nails. Most individuals lacked grave goods,

except for one burial (T321/1), which included a pair of earrings. Radiocarbon dating places these burials between the 1st and 6th centuries CE.

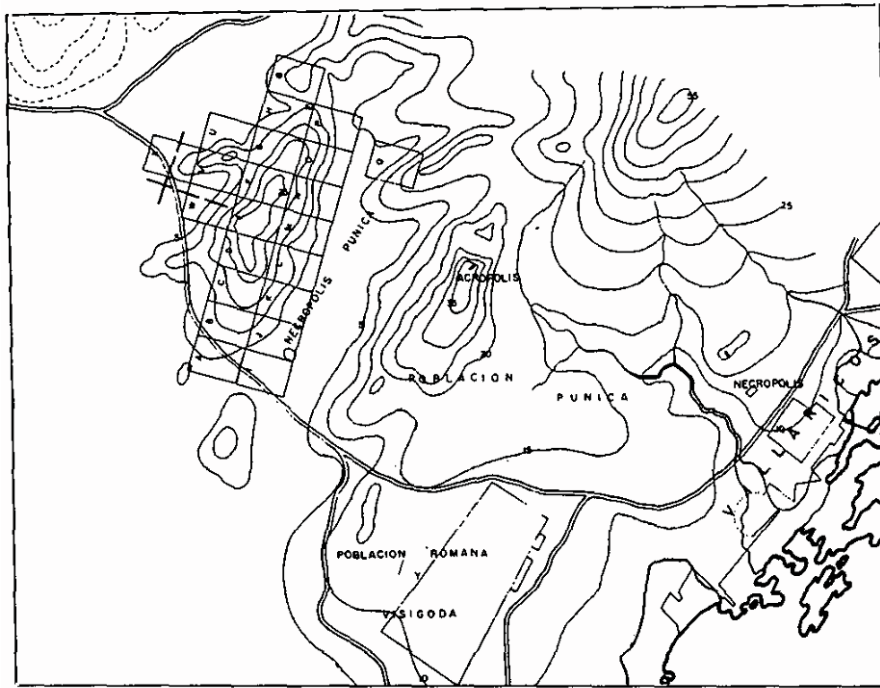


Figure AO.1. Map of the Archaeological site of Villaricos. Extracted from Rodero et al. ³ (Star Methods “Ancient Individuals” Section).

Graves:

- **Genetic Identifier:** I18194. **Grave Identifier:** 1935/4VILL/T66/1. **Grave Type:** Single inhumation in a pit lined and covered with slate slabs. Untraceable orientation. **Skeletal information:** undetermined age. Genetic male (XY karyotype). **Grave goods:** No grave goods. **Dating:** Direct radiocarbon dated to 419-538 cal CE (1605±15 BP, PSUAMS-7736). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I18195. **Grave Identifier:** 1935/4VILL/T67/1. **Grave Type:** Double burial in a masonry grave covered with slabs. Untraceable orientation. **Skeletal information:** Two individuals: an adult and a child, adult sampled. Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Direct radiocarbon dated to 436-581 cal CE (Direct on associated individual 1545±15 BP, PSUAMS-7737). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I18198. **Grave Identifier:** 1935/4VILL/T321/1. **Grave Type:** Individual inhumation in a simple pit. Untraceable orientation. **Skeletal information:** Undetermined age. Genetic female (XX karyotype). **Grave goods:** A pair of earrings. **Dating:** Direct radiocarbon dated to 25-203 cal CE (1930±20 BP, PSUAMS-7738). **Ancestry summary:** North African (Punic-related).

- **Genetic Identifier:** I18399. **Grave Identifier:** 1935/4VILL/T1159/1. **Grave Type:** individual inhumation in a pit partially lined with stone slabs. Untraceable orientation. **Skeletal information:** undetermined age. Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Direct radiocarbon dated to 432-551 cal CE (1570±15 BP, PSUAMS-7742) **Ancestry summary:** Central Italian and North African (Punic-related) admixture.
- **Genetic Identifier:** I18400. **Grave Identifier:** 1935/4VILL/T1263/2. **Grave Type:** individual inhumation in a pit partially lined with stone slabs. Untraceable orientation. **Skeletal information:** undetermined age. Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Direct radiocarbon dated to 261-416 cal CE (1690±20 BP, PSUAMS-7743). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I18401. **Grave Identifier:** 1935/4VILL/T1319-I/1. **Grave Type:** individual inhumation in a wooden coffin (presence of iron nails). Untraceable orientation. **Skeletal information:** undetermined age. Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 400-600 CE. Based on the date and context of other dated individuals of the site. **Ancestry summary:** Imperial Roman Eastern Mediterranean and North African (Punic-related) admixture.

Site-specific Bibliography:

- Almargo Gorbea, M^a J. (1984). La necrópolis de Baria (Almería.). Campañas de 1975-78. *Excavaciones Arqueológicas en España* 129. Madrid, Ministerio de Cultura.
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2.2 Barcelona, Castellar del Valles

Contact person(s): Maite I. Garcia Collado, Juan A. Quiros Castillo, Jordi Roig

Brief Settlement History: The oldest archaeological evidence recovered at Castellar del Vallès dates to the Early and Middle Neolithic ^{9–16}. The site was later occupied during the Iron Age and Late Roman period ¹³. The early medieval settlement, dated to the first half of the 6th century on the basis of ceramic finds, consisted of a small agrarian community that remained active until the 8th century, with at least one recorded short-distance relocation. The excavated structures include sunken-featured buildings, storage facilities, a food preparation area with ovens, a press, a midden, and a possibly irrigated orchard ^{13,17}. Between the late 6th and 7th centuries, the settlement shifted northward by less than 1 km ^{13,14}. The archaeological dating of the necropolis and associated settlements was based on a combination of stratigraphic analysis, typological comparisons of artifacts, and radiocarbon dating ¹⁸.

The cemetery was located east of the initial residential area ^{18,19} and featured a linear layout oriented northwest-southeast. A total of 21 burials were identified, organized into three groups. The burials comprised four types: tegulae burials, mixed-material burials, slab burials, and simple pit graves. A minimum of 33 individuals were identified, most of whom were interred in primary deposits and supine positions. Some secondary deposits included rearticulation of skeletal remains in a reduced area and *tumuli* over earlier burials. No conventional grave goods were recovered, with eggs being the only elements found within the burials.

Excavation History: The archaeological site of Plaça Major de Castellar del Vallès was discovered in the late 1980s by J. M. Coll and J. Roig during a municipal archaeological heritage inventory ¹⁴. However, the first excavation did not take place until 2003, when the town council-initiated development work behind Can Torras, previously used as vegetable gardens. This initial excavation covered approximately 20 m² ^{14,17,20}. In 2005, the construction of an underground car park on an adjacent plot prompted a larger-scale excavation covering 6,750 m² as a mitigation measure ^{17,21}. In 2006, a smaller intervention (360 m²) focused on integrating structures uncovered in previous campaigns ¹⁴. Finally, in 2008, the completion of the area's urban development and the construction of a residential building led to the excavation of an additional 4,000 m² ^{10,13,22}. All these archaeological investigations were conducted by the company Arrago under the direction of J. M. Coll and J. Roig.

Geographic Information: Plaça Major de Castellar del Vallès is an archaeological site located in the main square of the present-day town of Castellar del Vallès, in the western Vallès region, Barcelona province. Originally, the site was considered two separate entities—Plaça Major de Castellar del Vallès and Horts de Can Torras—but subsequent research confirmed that both excavated areas belonged to the same settlement. The site lies at the foot of the Catalan pre-Coastal Mountain range, within the upper Ripoll Valley, less than 1 km from the riverbed. Several seasonal watercourses, such as the Canyelles torrent, traverse the area, ensuring access to fertile land for agricultural activities. The proximity to the mountains also provided access to forest resources and other upland materials.

Summary of Sampled Materials: A minimum of 32 individuals preserved skeletal remains suitable for osteoarchaeological analysis²³. Macroscopic preservation was generally good. The subadult-to-adult ratio in the buried population was 0.35, while the male-to-female ratio was 1.75. Life expectancy at birth was estimated at 26.5 years. Collagen preservation was also favorable, allowing for stable isotope analysis. Carbon and nitrogen isotope ratios from 21 individuals indicate a relatively homogeneous diet, with some individuals consuming only C3 plants, while others showed minor but consistent consumption of C4 crops. Animal protein intake varied from moderate to abundant, with potential contributions from aquatic resources. Ancient DNA sampling was designed to represent all demographic categories and funerary practices, with teeth—preferably molars—being prioritized for analysis.

Graves:

- **Genetic Identifier:** I19877. **Grave Identifier:** PMCV 14-1-109. **Grave Type:** Slab burial. Individual in primary supine position, N-S orientation. **Skeletal information:** Adult (>20 years). Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Hispano-Roman (no North African signal detected). **Additional information:** $\delta^{13}\text{C} = -18.8\text{‰}$, $\delta^{15}\text{N} = 9.0\text{‰}$, %C = 40.5, %N = 13.8, C/N = 3.4, %coll = 1.6
- **Genetic Identifier:** I19879. **Grave Identifier:** PMCV 19-2-141. **Grave Type:** Tegulae burial. Secondary burial. **Skeletal information:** Young adult (22-25 years). Genetic male (XY karyotype). **Grave goods:** egg from a Galliform (uncommon practice). **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Excluded from genome-wide analysis due to low coverage.
- **Genetic Identifier:** I19880. **Grave Identifier:** PMCV 22-2-116. **Grave Type:** Tegulae burial. Secondary burial. **Skeletal information:** Adult (>20 years). Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Hispano-Roman (No Imperial Roman Eastern Mediterranean signal detected) and Central-North European admixture. **Additional information:** $\delta^{13}\text{C} = -18.9\text{‰}$, $\delta^{15}\text{N} = 8.8\text{‰}$, %C = 40.1, %N = 13.3, C/N = 3.5, %coll = 0.9
- **Genetic Identifier:** I19881. **Grave Identifier:** PMCV 43-1-350. **Grave Type:** Slab burial. Individual in primary supine position, NW-SE orientation. **Skeletal information:** Young adult (22-36 years), female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Excluded from

genome-wide analysis due to low coverage. **Additional information:** $\delta^{13}\text{C} = -18.9\text{‰}$, $\delta^{15}\text{N} = 9.0\text{‰}$, $\%C = 41.6$, $\%N = 14.1$, $C/N = 3.4$, $\%coll = 1.7$

- **Genetic Identifier:** I19882. **Grave Identifier:** PMCV 44-1-469/470 #1. **Grave Type:** Tegulae burial. Individual in primary supine position, N-S orientation. **Skeletal information:** Young adult (17-27 years), male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** local Iron Age Iberian. **Additional information:** $\delta^{13}\text{C} = -18.8\text{‰}$, $\delta^{15}\text{N} = 8.9\text{‰}$, $\%C = 41.3$, $\%N = 14.1$, $C/N = 3.4$, $\%coll = 1.2$
- **Genetic Identifier:** I19883. **Grave Identifier:** PMCV 45-1-412. **Grave Type:** Tegulae burial. Individual in primary supine position, NW-SE orientation. **Skeletal information:** Adult (>20 years), male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 437-599 cal CE (1535±20 BP, PSUAMS-10246). **Ancestry summary:** Hispano-Roman (no North African signal detected). **Additional information:** male. $\delta^{13}\text{C} = -19.3\text{‰}$, $\delta^{15}\text{N} = 9.0\text{‰}$, $\%C = 41.6$, $\%N = 14.8$, $C/N = 3.3$, $\%coll = 2.5$
- **Genetic Identifier:** I19884. **Grave Identifier:** PMCV 48-1-353. **Grave Type:** Slab burial. Undetermined position. **Skeletal information:** Adult (>20 years). Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Excluded from genome-wide analysis due to low coverage. **Additional information:** $\delta^{13}\text{C} = -19.0\text{‰}$, $\delta^{15}\text{N} = 9.1\text{‰}$, $\%C = 30.7$, $\%N = 10.8$, $C/N = 3.3$, $\%coll = 1.6$
- **Genetic Identifier:** I19885. **Grave Identifier:** PMCV 49-2-419. **Grave Type:** Tegulae burial. Individual in tumulus on grave (secondary deposit). **Skeletal information:** Adult sp (>20 years). Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Excluded from genome-wide analysis due to low coverage.

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2.3 Barcelona, Sant Llorenç del Munt, Simanya Gran

Contact person(s): Juan Ignacio Morales, María Soto & Artur Cebrià.

Brief Settlement History: Cova Simanya is a karstic cave complex comprising multiple interconnected galleries. The largest of these, Simanya Gran, has evidence of human occupation spanning from the Middle Paleolithic to historical periods ^{24,25}. The human remains analyzed in this study were recovered from two distinct stratigraphic levels, P1 and W1, located in the "Main Gallery" and the "West Gallery" of Simanya Gran, respectively.

Holocene Layer P1 includes material ranging from the Late Neolithic to Late Antiquity, with funerary remains dated to the 5th century CE ^{26,27}. The large quantity of disarticulated human remains found in this layer were likely displaced over time by periodic water flow and sedimentary processes ²⁶.

The W1 level, situated in the West Gallery, has only been partially excavated but exhibits a higher concentration of human remains compared to P1. Notably, ceramic and glass fragments were found alongside the skeletal remains, suggesting a possible funerary context. The preliminary anthropological and spatial analysis of this area supports the hypothesis that it functioned as a burial chamber or dedicated mortuary space. Radiocarbon dating of two individuals, one from level P1 (431 ± 57 cal CE) and another from level W1 (450 ± 61 cal CE), places the burials around the 5th century CE ²⁶.

Excavation History: Archaeological investigations at Simanya Gran commenced in 2020, primarily aimed at reconstructing the site's stratigraphic sequence, with an initial focus on its Pleistocene record. The human remains from levels P1 and W1 were recovered during exploratory surveys conducted in the first excavation campaign ²⁶.

Geographic Information: The Simanya Complex (latitude: 41.6744, longitude: 2.0097, 875 m above sea level) consists of a series of caves aligned along the northwest slope of Montcau, sharing a common speleogenetic history. The complex includes Triangle Cave (or Dry Cave), Simanya Petita, Simanya Gran, Canal Cave (or Torrent Cave), and Angel's Cave. The first three (Triangle, Simanya Petita, and Simanya Gran) are clearly part of the same original karstic system, though physical connection between some galleries remains unconfirmed. This broader assemblage is referred to as Cova Simanya *sensu lato*, with abbreviations ST (Simanya Triangle), SP (Simanya Petita), and SG (Simanya Gran) used for longitudinal galleries, and SPO (Simanya Goose Pass) for the transverse passage linking them. Although Canal and Angel's Caves currently appear as separate entities, they were likely part of the same hydrological system that shaped Cova Simanya ²⁶.

Summary of Sampled Materials: A total of three dental remains, each from a different individual, were selected for ancient DNA analysis. These remains were recovered during the 2020 excavation campaign. Two specimens, SG20.02.54 and SG20.02.50, originate from level P1, while SG20.07.31 was retrieved from level W1 ²⁶. The fieldwork, analyses, and personnel dedication for this site was possible by the financial backing of: RYC2024-048167 (MICIU/AEI/10.13039/501100011033 & ESF+) (J.I.M); SGR2021-01237 (AGAUR-Generalitat de Catalunya); PFR-URV2023_01237 (URV); ARQ001SOLC-244-2025

(Departament de Cultura, Generalitat de Catalunya); and the Maria de Maeztu Units of Excellence programme (CEX2024-01485-M, MICIU/AEI/10.13039/501100011033).

Graves:

- **Genetic Identifier:** I28352. **Grave Identifier:** SG20.02.54, Level P1. **Grave Type:** Commingled remains from potential collective inhumation. **Skeletal information:** 4.5-5.5 years old. Genetic male (XY karyotype). **Grave goods:** unattributable. **Dating:** Archaeologically dated to 377-474 CE. Based on the radiocarbon dating of closely placed individual I28354. **Ancestry summary:** Hispano-Roman .
- **Genetic Identifier:** I28353. **Grave Identifier:** SG20.07.31, Level W1. **Grave Type:** Commingled remains from potential collective inhumation **Skeletal information:** Adult. Genetic female (XX karyotype). **Grave goods:** unattributable. **Dating** Direct radiocarbon dated to 364-468 CE (1630 ± 30 BP, Beta-574953). **Ancestry summary:** Excluded from the analysis due to possible contamination.
- **Genetic Identifier:** I28354. **Grave Identifier:** SG20.02.50, Level P1. **Grave Type:** Commingled remains from potential collective inhumation **Skeletal information:** Adult. Genetic male (XY karyotype). **Grave goods:** unattributable. **Dating:** Direct Radiocarbon dated to 377-474 CE (1640 ± 30 BP, Beta-574953). **Ancestry summary:** Hispano-Roman (no North African signal detected) and Central-North European admixture.

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2.4 Castelló, Vilanova d'Alcolea, Hostalot -*Ildum*

Contact person(s): Paz Calduch Bardoll, Pilar Ulloa Eres & Pablo García Borja.

Brief Settlement History: The Roman remains at Hostalot were first identified by J. Senent Ibáñez in 1923 during his study of the Via Augusta's route between the Sénia and Millars rivers, linking the site to the Roman imperial road station known as *Ildum*. Subsequent research on the Via Augusta's course through the Valencian region reinforced this hypothesis, associating Hostalot with the *mansio Ildum*, as referenced in the Antonine Itinerary, the Vicarello vessels, and the Anonymous of Ravenna ^{28,29}. While the broader function of the site as a *mansio* or roadside station is generally accepted, the specific purpose of some of its buildings remains uncertain. Recent research has reopened the debate on their chronology and function, with new interpretations suggesting they may have served domestic, productive, or even thermal (*balnea*) purposes ³⁰.

Excavation History: The first archaeological excavations took place in 1986 and 1987 under the direction of F. Arasa, aiming to document the perimeter walls of the best-preserved structure, designated as Sector I ^{28,29}. In 1992, a new excavation was prompted by the discovery of a complete Roman milestone during the expansion of the CV-10 highway. Led by P. Ulloa, this intervention covered a 590 m² area adjacent to the roadway ³¹. More recent excavations in 2018, 2021, and 2022 were conducted as part of a local government initiative to preserve and further investigate the site ^{30,32}.

Geographic Information: The Hostalot-*Ildum* archaeological site is located in the municipality of Vilanova d'Alcolea (Castelló), at an elevation of 263 m above sea level (latitude: 40.2297, longitude: 0.0683). The site extends primarily along the southern margin of the Carrasqueta ravine, with remains scattered on both sides of the CV-10 highway. This modern road is believed to follow the historical route of the Via Augusta and the later Camino Real connecting Barcelona and València. The site contains evidence of two distinct periods of occupation, both linked to roadside infrastructure catering to travelers: an earlier Roman phase and a later occupation between the 16th and 19th centuries. The site's name, 'Hostalot', derives from a historic hostel built atop the Roman ruins.

Summary of Sampled Materials: During the 1992 excavations, remains of one skeleton disturbed by agricultural work and another in anatomical connection were discovered/ the latter was a primary burial located in the courtyard of a building identified as the hospitality complex or *hospitium* of the Roman *mansio*, a hostel on the imperial postal road system. Individual I22103 had been interred in a NE-SW oriented pit dug into the natural geological substrate. The skeleton was found in a supine position, with the head slightly tilted to the right, the right arm extended parallel to the body, and the left arm flexed with the hand resting on the pubis ^{30,31}. Given the simplicity of the grave itself, in proximity to a *mansio*, along with the richness of the woman's grave goods, the archaeologists propose that she was a high-status woman who died while traveling. See next for further details.

Graves:

- Genetic Identifier:** I22103. **Grave Identifier:** UE-3006. **Grave Type:** No visible burial construction, individual in supine position, NE-SW orientation. **Skeletal information:** Adult, female (genetic female: XX karyotype). **Grave goods:** glass vase, placed next to her right hand. The vessel is an ellipsoidal, yellowish-green glass cup made with the free-blowing technique, featuring bubbles, interior iridescence, and eight blue-green drops encircling its midsection. Typologically classified as Isings 96b / Foy 13, it was likely produced in the early 5th century. Also, two gold pins positioned on her chest with polyhedral heads and delicate tooling, are markers of elite status and closely parallel those found in high-ranking female burials in Mérida, Málaga, and the Danubian region^{30,31,33}. **Dating:** Direct Radiocarbon dated to 257-409 cal CE (1710± 20 BP, PSUAMS-8812). Radiocarbon test performed from the same tooth material used for the genetic analysis. See OxCal Calibration model below (Figure AO.2). **Ancestry summary:** Central-North European. **Additional Information:** Sister of individual I23273 buried in *Augusta Emerita*, (Corralón de los Blanes necropolis; See Data S1 Section 1.20).

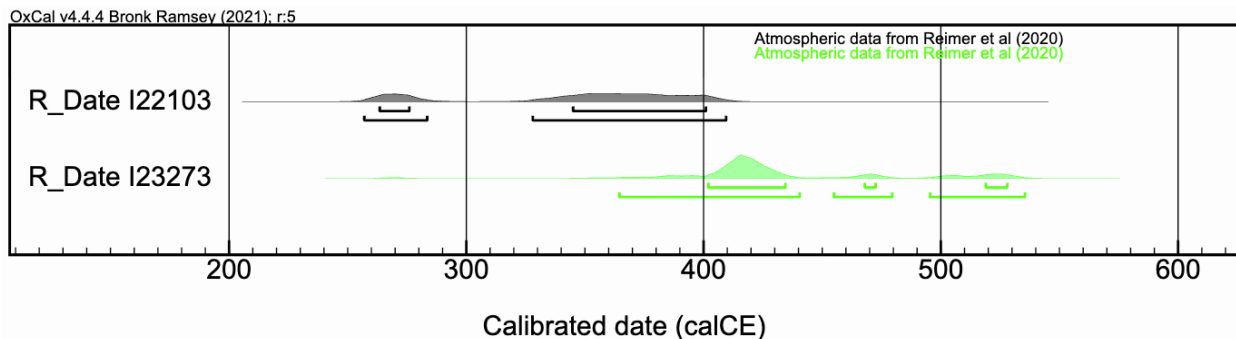


Figure AO.2. OxCal calibrated Radiocarbon Model for I22103 buried in Hostalot -Ildum (Gray) and her brother buried in *Augusta Emerita*, I23273 (Green) (Data S1 Sections 2.4 and 2.20; Data S1 Section 3; Star Methods “Ancient Individuals” and “Kinship Inference” Sections).

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2.5 Córdoba, Lucena, Cortijo Basílica del Coracho

Contact person(s): Archaeology: Daniel Botella Ortega. Anthropology: Juan Pablo Diéguez Ramírez & Ricardo Ortega

Brief Settlement History: The archaeological site consists of a martyrium basilica with multiple phases or cultural layers. It was initially founded during the Constantinian period and underwent modifications during the Byzantine period. In the 6th - 7th centuries, the basilica was adapted for the Mozarabic liturgy before being abandoned in the 8th century. Surrounding the basilica is a large late-antique necropolis containing graves oriented from east to west³⁴. These graves are sometimes covered with stones, flat or curved tiles, or may have no covering at all. Some graves contain multiple individuals, with earlier skeletons often placed at the head or feet of more recently interred individuals. Few grave goods have been recovered³⁴.

Excavation History: The archaeological work was prompted by the construction of the A-45 highway between Lucena and Antequera, specifically in the northern edge of the Lucena Sur-Encinas Reales Norte section. The site was first identified during a surface survey in 2000 by project director Fernando Penedo Cobo. Excavations were conducted in two separate campaigns in 2003 and 2004. Following these excavations, the Provincial Heritage Commission of Córdoba authorized the relocation and reconstruction of the basilica remains on land provided by the Lucena City Council. The remains of the basilica can still be viewed at this location today.

Geographic Information: The site is located in the southern area of the Lucena municipality, within a region known as the "campiña alta cordobesa" (latitude: 37.341, longitude: -4.486). The landscape is characterized by olive groves situated on Triassic marl and gypsum soils, shaped by the nearby Anzur River. The martyrium basilica and its associated necropolis are positioned on one of the rounded hills in this area, situated close to the old Benamejí road and to the east of the ancient Corduba-Malaca route.

Summary of Sampled Materials: The necropolis of Cortijo Coracho is securely dated to late antiquity, specifically between the 4th and 6th centuries CE, based on archaeological evidence, including the discovery of three coins, two of which were less reliable due to their post-depositional context. However, one coin was found in a well-contextualized grave, reinforcing the dating of the earliest burial levels to the ~4th century CE. Additionally, the typology of burial coverings (*tegulae* tiles) and associated ceramics also confirm the chronology of the site's oldest phases. The continued use of the space, with items like small jars suggesting a 6th-century context, further supports this dating. Finally, while later phases of occupation extended into the 7th or 8th century, the core of the necropolis remains situated in late antiquity^{34,35}. The remains of individuals of various ages and sexes were uncovered. Burial 3 (Figure AO.3) contained a range of grave goods, including blue and black glass beads, bone fragments, a perforated shell, jet beads, and other jewelry-related items. Most other graves did not contain any grave goods. Among the subadult graves, Burial 94 (Figure AO.3) contained the remains of a 4-6-year-old female, and Burial 168 (Figure AO.3) held a 10-12-year-old female, both of whom were buried without grave goods. Anthropological

studies have revealed specific conditions in certain graves, such as osteomyelitis in the right tibia and osteophytes in the vertebrae of Burial 34³⁶.

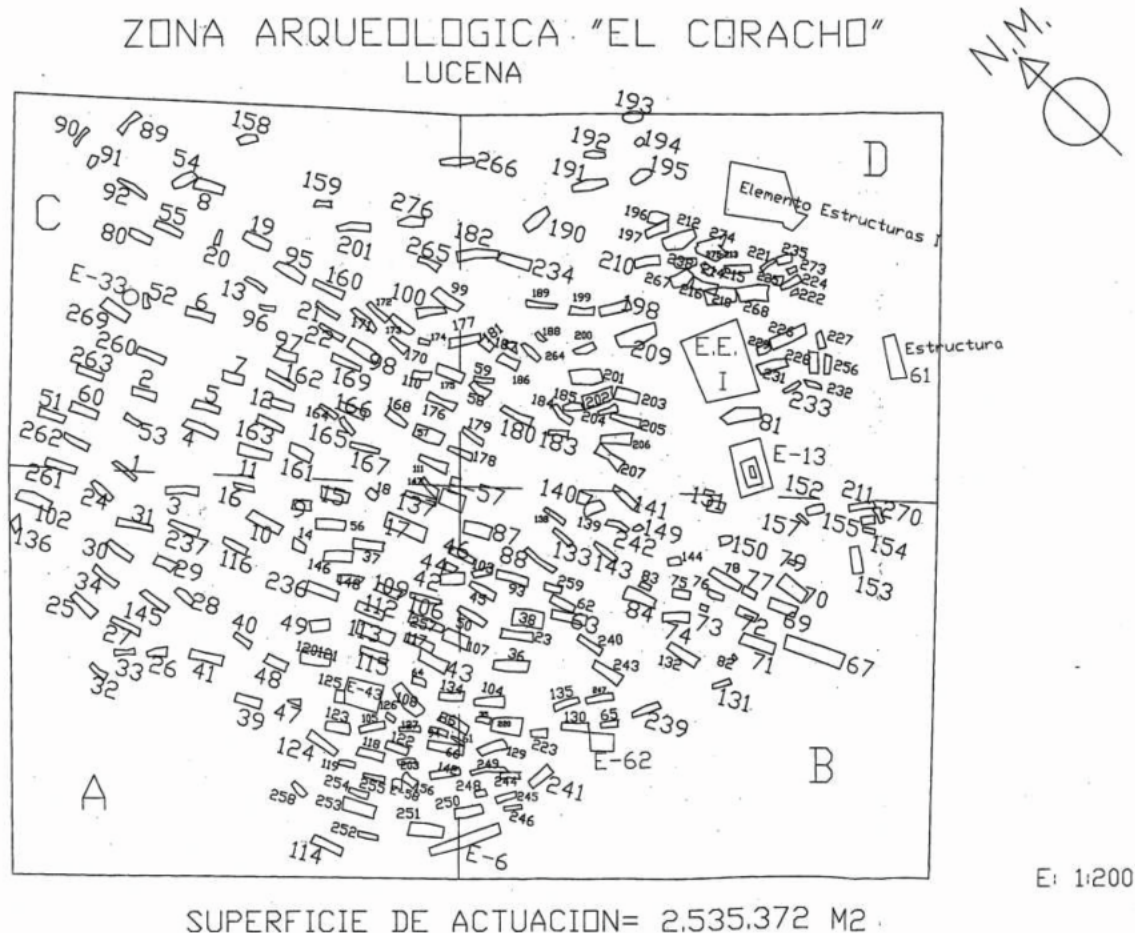


Figure AO.3. Map of the Cortijo Coracho basilica necropolis (Lucena). Figure extracted from Dieguez-Ramirez (2016)³⁴. N.M. stands for “Norte Magnético”, Magnetic North. “Superficie de Actuación”: total extent of the excavated area. (Star Methods “Ancient Individuals” Section).

Graves:

- **Genetic Identifier:** I35803. **Grave Identifier:** Burial 3 (CF 96); plan zone C, ind 1. **Grave Type:** Simple rectangular pit with double burial. Individual 1 is lying on their back, with the bones of individual 2 collected at their feet. Only individual 1 was sampled. Orientation is W-E. **Skeletal information:** Adult > 45 years old, male (genetic male: XY karyotype). **Grave goods:** Blue glass beads for a necklace, black glass beads for a bracelet, a bone piece that could be part of a necklace, a spindle-shaped bone bead, a fish-shaped bone bead, a perforated shell for a necklace, jet beads, amber bead, earring fragment, silver clasp chain, small black glass beads for a necklace, silver threads for bracelets. **Dating:** Archaeologically dated to 400 – 500

CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.

- **Genetic Identifier:** I35804. **Grave Identifier:** Burial 4, plan zone C, ind. 1. **Grave Type:** Simple rectangular pit with double burial. Individual 1 is lying on their back, with the bones of individual 2 at their feet (I35943). Entry for Individual 1. Orientation is W-E. **Skeletal information:** Young Adult, 18-29 years old, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I35806. **Grave Identifier:** Burial 94, plan zone A, ind. 1 (subadult). **Grave Type:** Simple rectangular pit. Double burial, with Individual 1 in supine position, and the individual 2's bones at the feet. This information is for Individual 1. **Skeletal information:** Child, 4-6 years old. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional Information:** Shovel-shaped incisors and Wormian bones.
- **Genetic Identifier:** I35898. **Grave Identifier:** Burial 27, plan zone A, ind. 1. **Grave Type:** Simple oval pit with triple burial, containing two undisturbed inhumations and bones collected at the feet of both. Undisturbed individuals (Individual 1 and Individual 2) lying on their backs, with the bones of the Individual 3 gathered at their feet. Individual 1 sampled. Orientation is W-E. **Skeletal information:** Adult, >30 years old, Male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Joint pathologies.
- **Genetic Identifier:** I35899. **Grave Identifier:** Burial 37, ind. 1, plan zone A. **Grave Type:** Simple trapezoidal pit with a double burial. Individual 1 lying on their back, with the bones of Individual 2 at their feet. Individual 1 sampled. Orientation is W-E. **Skeletal information:** Adult, 20-25 years old, genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I35942. **Grave Identifier:** Burial 5, ind. 2, plan zone C. **Grave Type:** Simple rectangular pit with double burial. Individual 1 is lying on their back, with the bones of Individual 2 at their feet. Individual 2 sampled. Orientation is W-E. **Skeletal information:** Adult, 25-35 years old. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Central-North European, North African (Punic-related) and Imperial Roman Eastern Mediterranean admixture.

- **Genetic Identifier:** I35943. **Grave Identifier:** Burial 64, ind. 1. **Grave Type:** Simple oval pit, covered with well-squared sandstone slabs. Individual lying on their back. Orientation is W-E. **Skeletal information:** Infant, 2-3 years old. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I35944. **Grave Identifier:** Burial 4, plan zone C, ind. 2. **Grave Type:** Simple rectangular pit with double burial. Individual 1 (I35804) is lying on their back, with the bones of the Individual 2 at their feet. This information is for Individual 2. Orientation is W-E. **Skeletal information:** Adult, 25-35 years old, Male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I35945. **Grave Identifier:** Burial 7, ind. 1. **Grave Type:** Simple rectangular pit with an individual buried lying on their back. Orientation is W-E. **Skeletal information:** Adult, >35 years old. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I35946. **Grave Identifier:** Burial 86, ind. 2. **Grave Type:** Simple oval pit covered with sandstone slabs, including reused door hinge elements. Orientation is W-E. **Skeletal information:** Young Adult, 16-25 years old, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Osteoporosis in the hip, skeletal markers associated with pregnancy and childbirth.
- **Genetic Identifier:** I35947. **Grave Identifier:** Burial 231, plan zone D, ind. 2. **Grave Type:** Simple oval pit, covered with well-squared sandstone slabs and vertical brick walls, containing a double burial with individuals side by side lying on their backs. Right individual (individual 2) sampled. Orientation is W-E. **Skeletal information:** Adult, 18-25 years old. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** *Cribra orbitalia*, lower body periostitis.
- **Genetic Identifier:** I35948. **Grave Identifier:** Burial 168, plan zone C, ind. 1. **Grave Type:** Simple square upper pit with vertical brick walls. Lower oval pit. Individual lying on their back, with the bones of the second individual at the feet. Orientation is E-W. **Skeletal information:** Child, 10-12 years old. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 414-540 cal CE (1610±28 BP, CIRAM-14390). **Ancestry summary:** Hispano-Roman.

- 891 • **Genetic Identifier:** I35949. **Grave Identifier:** Burial 27, plan zone A, ind. 2. **Grave**
892 **Type:** Simple oval pit with triple burial, containing two undisturbed inhumations and
893 bones at the feet of both. Undisturbed individuals (Individual 1 and Individual 2)
894 lying on their backs, with the bones of the Individual 3 at the feet. Orientation is W-
895 E. This information is for Individual 2. **Skeletal information:** Adult, 30-35 years old,
896 Female (genetic female: XX karyotype). **Grave goods:** No grave goods found.
897 **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods
898 found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
899
- 900 • **Genetic Identifier:** I36195. **Grave Identifier:** Burial 103, plan zone B, ind. 1. **Grave**
901 **Type:** Simple trapezoidal pit with burial in supine position. Orientation is W-E.
902 **Skeletal information:** Adult, 35-45 years old, Male (genetic male: XY karyotype).
903 **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 416-544
904 cal CE (1602±29 BP, CIRAM-14389). **Ancestry summary:** Imperial Roman Eastern
905 Mediterranean.
906
- 907 • **Genetic Identifier:** I36196. **Grave Identifier:** Burial 25, ind. 1. **Grave Type:**
908 Simple rectangular pit with double burial with individuals laid out side by side. left
909 individual (Individual 1) sampled. Orientation is W-E. **Skeletal information:** Adult,
910 30-40 years old, Male (genetic male: XY karyotype). **Grave goods:** No grave goods
911 found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave
912 goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
913
- 914 • **Genetic Identifier:** I36197. **Grave Identifier:** Burial 35, plan zone B, ind. 1
915 (juvenile). **Grave Type:** Simple oval pit with double burial, Individual 1 laid in
916 supine position, the other individual's skull (Individual 2) placed next to the head of
917 Individual 1, while the rest of the skeleton of Individual 2 is at the feet of Individual
918 1. Individual 1 sampled. Orientation is W-E. **Skeletal information:** Child, 6-10 years
919 old. Genetic female (XX karyotype)). **Grave goods:** No grave goods found. **Dating:**
920 Direct radiocarbon dated to 415-540 cal CE (1609±28 BP, CIRAM-14389). **Ancestry**
921 **summary:** Hispano-Roman.
922
- 923 • **Genetic Identifier:** I36199. **Grave Identifier:** Burial 84, plan zone B 1. **Grave**
924 **Type:** Simple oval pit covered by well-squared sandstone slabs. Double burial, with
925 Individual 1 in a supine position and the skeletal remains of the Individual 2 at the
926 feet, except for Individual 2's skull which appears next to the more recent undisturbed
927 Individual 1. Individual 1 sampled. Orientation is W-E. **Skeletal information:** Adult,
928 25-30 years old, Male (genetic male: XY karyotype). **Grave goods:** No grave goods
929 found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave
930 goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
931 **Additional information:** Schmorl's nodes.
932
- 933 • **Genetic Identifier:** I37206. **Grave Identifier:** Burial 257, plan zone A, ind. 1.
934 **Grave Type:** Simple pit with a brick covering. Double burial, with both individuals
935 in a supine position, left individual (individual 1) sampled. Orientation is W-E.
936 **Skeletal information:** Adult, 20-30 years old, Female (genetic female: XX
937 karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to

400 – 500 CE. Based on the general grave goods found in the stratigraphic layer.
Ancestry summary: Hispano-Roman.

- **Genetic Identifier:** I37207. **Grave Identifier:** Burial 80, plan zone C, ind. 1. **Grave Type:** Simple oval pit. Double burial, with both individuals side by side in a supine position, left individual (individual 1) sampled. Orientation W-E. **Skeletal information:** Adult, 25-30 years old, Male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman **Additional information:** Schmorl's nodes, *ponticulus posticus*.
- **Genetic Identifier:** I37208. **Grave Identifier:** Burial 100, plan zone C, ind. 1. **Grave Type:** Simple oval pit. Double burial, with individuals side by side in a supine position. Left individual (individual 1) sampled. Orientation W-E. **Skeletal information:** Adult, 25-35 years old. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** North African (Punic-related), Central-North European and Imperial Roman Eastern Mediterranean admixture.
- **Genetic Identifier:** I37209. **Grave Identifier:** Burial 205, plan zone D, ind. 1. **Grave Type:** Simple trapezoidal pit with a covering of rectangular flat sandstone slabs resting on a wider and rectangular upper pit. It has fragments of bricks on the north side. The lower rectangular pit has rounded shorter sides. Double burial, with both individuals side by side in a supine position. Left individual (Individual 1) sampled. Orientation is W-E. **Skeletal information:** Adult, 35-45 years old, Female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I37210. **Grave Identifier:** Burial 104, plan zone B, ind. 5 (infant). **Grave Type:** Simple oval pit with 5 burials³⁴, Individual 1 buried in a supine position without a skull, with the remains containing the remains of Individual 5 at the feet. Individual 5 sampled. Orientation is W-E. **Skeletal information:** Child, <12 years old. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Central Italian and North African (Punic-related) admixture.
- **Genetic Identifier:** I37211. **Grave Identifier:** Burial 160, plan zone A, ind 1. **Grave Type:** Small simple square pit. Grave containing only disarticulated bones with the remains of an undetermined number of individuals. Only one individual (Individual 1) sampled. Orientation not applicable. **Skeletal information:** Adult, 35-45 years old, Undetermined sex. **Grave goods:** ceramic jar used for religious rituals³⁴ **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** No model identified.

- **Genetic Identifier:** I37212. **Grave Identifier:** Burial 223, plan zone B, ind. 1. **Grave Type:** A simple rectangular pit with an individual in supine position, oriented E–W. **Skeletal information:** Undetermined age. Genetic male (XY karyotype) **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I37213. **Grave Identifier:** Burial 205, plan zone D, ind. 2. **Grave Type:** A simple trapezoidal pit with oval-shaped shorter sides, covered with well-squared sandstone slabs, supported by rubble on the north side. Double burial, individuals in supine position. Orientation E to W. **Skeletal information:** Adult, Female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** North African (Punic-related) and Central Italian admixture. **Additional information:** Possible osteomyelitis
- **Genetic Identifier:** I37250. **Grave Identifier:** Burial 33, plan zone A, ind. 1. **Grave Type:** Simple oval pit with a stone at the east end covering the feet. Individual buried in a supine position. Orientation W-E. **Skeletal information:** Child 9-10 years old. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I37253. **Grave Identifier:** Burial 25, plan zone A, ind. 2. **Grave Type:** Simple rectangular pit. Double burial, individuals side by side in supine position. Right individual (Individual 2) sampled. Orientation is W-E. **Skeletal information:** Adult, 30-40 years old. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I37254. **Grave Identifier:** Burial 89, plan zone C, ind. 1. **Grave Type:** Simple rectangular pit with remains of tegulae covering. Individual burial in supine position. Orientation from northeast to southwest. **Skeletal information:** Adult, >45 years old, Female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I37255. **Grave Identifier:** Burial 166, plan zone C, ind. 1. **Grave Type:** Simple trapezoidal pit, covered with 4 well-squared rectangular sandstone slabs. Individual burial in supine position. Orientation from W-E. **Skeletal information:** Child, 8-10 years old. Genetic female (XX karyotype) **Grave goods:** 1 jug with red paint on the upper curve and a grid pattern; and 2 bronze earrings. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.

- **Genetic Identifier:** I37256. **Grave Identifier:** Burial 94, plan zone A, ind. 2 (juvenile). **Grave Type:** Simple rectangular pit. Double burial, with Individual 1 in supine position, and Individual 2's bones placed at the feet of Individual 1. Individual 2 sampled. Orientation is W-E. **Skeletal information:** Child, 3-4 years old, Female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional Information:** Shovel-shaped incisors
- **Genetic Identifier:** I37257. **Grave Identifier:** Burial 75, ind. 1. **Grave Type:** Simple oval pit, covered with four rectangular sandstone blocks. Individual buried in a supine position. Orientation is W-E. Head positioned to the west. **Skeletal information:** Child, 4-6 years old. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400 – 500 CE. Based on the general grave goods found in the stratigraphic layer. **Ancestry summary:** Hispano-Roman.

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2.6 Girona, Sarrià de Ter, Pla de l'Horta

Contact person(s): Ana Costa, David Vivó and Neus Coromina

Brief Settlement History: The Pla de l'Horta site, located in Sarrià de Ter (Girona), was active in two main phases: a Roman necropolis (4th century CE)³⁷ and a later Visigothic phase (6th century CE). Strategically situated near the ancient city of *Gerunda* along the Via Augusta, a key Roman thoroughfare, the site's Visigothic phase may have been associated with the nearby late antique fortification (*castellum*) at the hilltop close to Sant Julià de Ramis (~2 km to the north), suggesting links to a military or administrative elite, although these associations require further study. The Visigothic phase lasted for a relatively short period, from the late 5th century to the late 7th century CE, before its abandonment^{38,39}.

Excavation History: Archaeological excavations at Pla de l'Horta were conducted between 2004 and 2006, uncovering a total of 79 burials spanning two distinct chronological phases: 21 graves (2nd - 5th centuries CE) identified as "Roman" and, extending the burial space toward the south, 58 graves identified as Visigothic (6th century CE)⁴⁰ (Figure AO.4). A selection of individuals from both phases were sampled for this study. The Roman-phase burials are thought to be associated with the inhabitants of a nearby *villa* located by the *Via Augusta* (less than ~1 km away) and include *tegulae* tombs and stone-built structures. In contrast, the Visigothic-phase burials, comprising simple pit graves, cist tombs, and a single sarcophagus, yielded numerous personal items such as buckles, brooches, and fibulae, reflecting broader Germanic cultural influences³⁸. While evidence shows that the Sant Julià de Ramis *castellum* was occupied during the Visigothic period³⁸, the contemporary use of the nearby villa remains unstudied, though its continued occupation during this time cannot be ruled out.

Geographic Information: Pla de l'Horta is located in Sarrià de Ter, approximately 4.5 km from modern Girona (Latitude: 42.01656, Longitude: 2.814897). The necropolis is positioned on the eastern slope of Montagut Hill, overlooking a small plain to the west, and lies near a historic ford where a branch of the Via Augusta crossed the Ter River. Situated about 500 meters west of the old town of Sarrià de Ter, the site is close to the medieval Pont Major bridge, which retains Roman foundations. The cemetery occupies gently sloping terrain, with the burials oriented west-east in alignment with late antique and early medieval Christian funerary traditions³⁸.

Summary of Sampled Materials: Human remains were sampled from most of the Visigothic burials. Grave goods, including bronze buckles, fibulae, knives, rings, and beads were found, some of which were associated with Germanic cultural elements³⁸, providing insights into the material cultural background of the inhabitants of the re-used *villa*. Radiocarbon dating of select individuals places their interment between the 4th and 7th centuries CE. The combination of grave goods and burial styles suggests a complex cultural identity at the site, blending Roman traditions with Visigothic and local Iberian influences. Additionally, we reanalyzed individuals I12030, I12032, I12034, I12162, and I12163, originally published in Olalde et al. (2019).

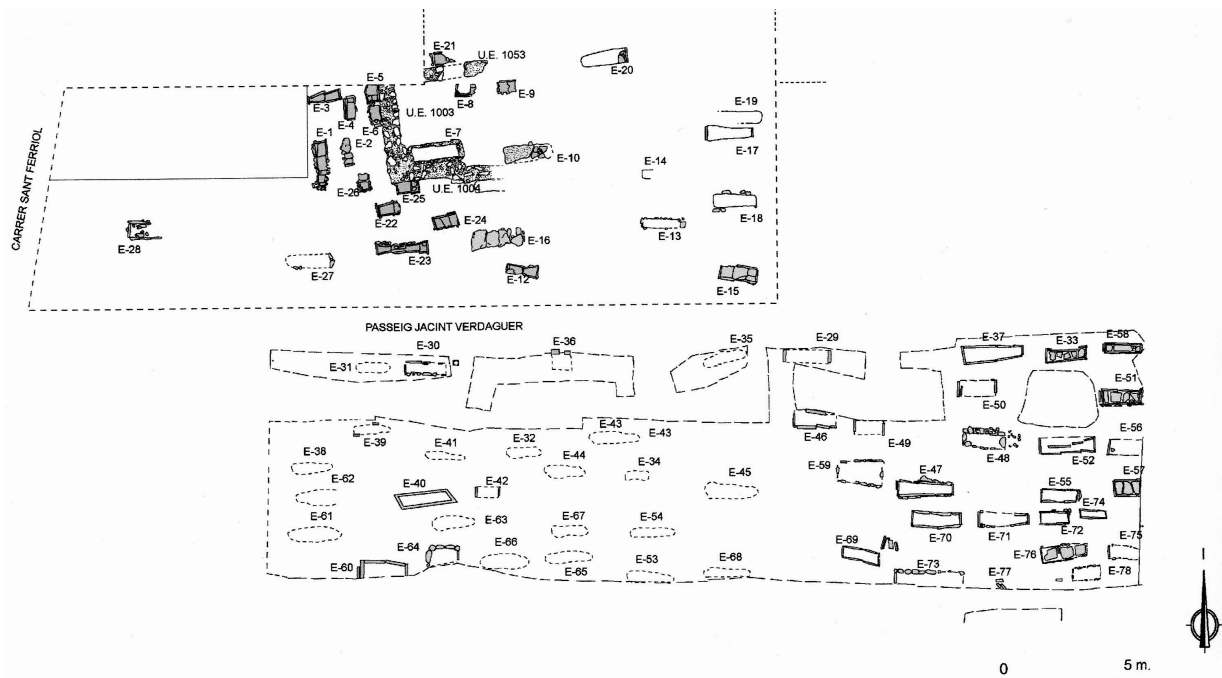


Figure AO.4. Map of the Pla de l'Horta necropolis (Sarrià de Ter). From Llinàs-Pol et al. ³⁸ (Star Methods “Ancient Individuals” Section).

Graves:

- Genetic Identifier:** I12029_enhanced. **Grave Identifier:** PH'06-1144. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Mature adult. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded from the genome-wide analysis due to low coverage. **Additional information:** published in Olalde et al., 2019.
- Genetic Identifier:** I12030_enhanced. **Grave Identifier:** PH'06-1169 E58. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Mature adult. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** published in Olalde et al., 2019.
- Genetic Identifier:** I12031. **Grave Identifier:** PH'06-1172 E59. **Grave Type:** Simple pit with stones and tegulae. Orientation is W-E. **Skeletal information:** Mature adult. Male (genetic male: XY karyotype). **Grave goods:** two bronze buckles, a square bronze piece and an iron plate. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry**

summary: Central-North European and Imperial Roman Eastern Mediterranean admixture. **Additional information:** published in Olalde et al., 2019.

- **Genetic Identifier:** I12032_enhanced. **Grave Identifier:** PH'06-1183 E63. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** two clothing fasteners. **Dating:** Direct radiocarbon dated to 420-556 cal CE (1580±30BP; Beta-608905). **Ancestry summary:** Central-North European and Hispano-Roman (no North African signal detected) admixture. **Additional information:** published in Olalde et al., 2019.
- **Genetic Identifier:** I12033_enhanced. **Grave Identifier:** PH'06-1192 E66. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** two bronze buckles, a bronze ring, two iron knives and an iron punch **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Central-North European and local Iron Age Iberian admixture. **Additional information:** published in Olalde et al 2019.
- **Genetic Identifier:** I12164_enhanced. **Grave Identifier:** NM 11; NPH; E54-1157. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature Adult, female (genetic female: XX karyotype). **Grave goods:** A bronze buckle with glass, bronze fibula, a ring, a punch, an iron buckle and glass beads. **Dating:** Direct radiocarbon dated to 330-433 cal CE (1650 ± 30BP; Beta -541185). **Ancestry summary:** Hispano-Roman (no North African signal detected). **Additional information:** published in Olalde et al., 2019
- **Genetic Identifier:** I13565. **Grave Identifier:** PH'06-1110 E38. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Young adult, female (genetic female: XX karyotype). **Grave goods:** A bronze buckle. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I13571. **Grave Identifier:** PH'06-1119 E41. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult, male (genetic male: XY karyotype). **Grave goods:** A bronze buckle. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Imperial Roman Eastern Mediterranean and_Central-North European.
- **Genetic Identifier:** I13572. **Grave Identifier:** PH'06-1136 E47. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Mature adult, female (genetic female: XX karyotype). **Grave goods:** Two bronze buckles. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman and Central-North European admixture.

- **Genetic Identifier:** I13573. **Grave Identifier:** PH'06-1086 E30. **Grave Type:** Simple pit with stones and tegulae. Orientation is W-E. **Skeletal information:** Mature adult. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300-500 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman (no North African signal detected).
- **Genetic Identifier:** I13574. **Grave Identifier:** PH'06-1042 E17. **Grave Type:** Simple pit with tegulae. Orientation is W-E. **Skeletal information:** Young adult, female (genetic female: XX karyotype). **Grave goods:** A bronze fibula, an iron ring and glass beads. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Central-North European.
- **Genetic Identifier:** I13575. **Grave Identifier:** PH'06-1107 E37. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Mature adult, male (genetic male: XY karyotype). **Grave goods:** A bronze buckle. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I20267. **Grave Identifier:** NM 4b; NPH; E7-1020. **Grave Type:** The burial was a built tomb ('tomba d'obra'), reused by multiple individuals (number unknown). This information is for Individual 1. Orientation is W-E. **Skeletal information:** Adult. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 571-651 cal CE (1450±30 BP, Beta-538218). **Ancestry summary:** Hispano-Roman. **Additional information:** Tomb inside a possible mausoleum.
- **Genetic Identifier:** I20268. **Grave Identifier:** NM 15; NPH; E70-1204. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Mature adult. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** local Iron Age Iberian.
- **Genetic Identifier:** I20269. **Grave Identifier:** NM 16; NPH; E35-1101. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Young adult. Genetic female (XX karyotype). **Grave goods:** Some indeterminate iron pieces. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded from the whole-genome analysis due to contamination. **Additional information:** The skeletal remains of the individual appeared to have been disturbed.

- 1241 • **Genetic Identifier:** I20270. **Grave Identifier:** NM 17; NPH; E32-1092. **Grave**
1242 **Type:** Simple pit. Orientation is W-E. **Skeletal information:** Young adult. Genetic
1243 male (XY karyotype). **Grave goods:** Two bronze buckles, an iron knife, and some
1244 indeterminate iron pieces. **Dating:** Archaeologically dated to 400-550 CE. Based on
1245 the general grave goods found in the stratigraphic layer, and radiocarbon dating of
1246 individuals in the same stratigraphic layer. **Ancestry summary:** Central-North
1247 European, Imperial Roman Eastern Mediterranean and North African (Punic-related)
1248 admixture.
- 1249

1250 • **Genetic Identifier:** I20271. **Grave Identifier:** NM 18; NPH; E29-1083. **Grave**
1251 **Type:** Simple pit with tegulae. Orientation is W-E. **Skeletal information:** Mature
1252 adult, male (genetic male: XY karyotype). **Grave goods:** A bronze buckle, an iron
1253 buckle, 1 clothing fastener and an iron needle. **Dating:** Archaeologically dated to
1254 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and
1255 radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry**
1256 **summary:** Central-North European and Imperial Roman Eastern Mediterranean
1257 admixture.
- 1258

1259 • **Genetic Identifier:** I20273_d. **Grave Identifier:** NM 20; NPH; E53-1154. **Grave**
1260 **Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult, male
1261 (genetic male: XY karyotype). **Grave goods:** A bronze buckle, an iron buckle.
1262 **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods
1263 found in the stratigraphic layer, and radiocarbon dating of individuals in the same
1264 stratigraphic layer. **Ancestry summary:** Central-North European. **Additional**
1265 **information:** Radius pathology.
- 1266

1267 • **Genetic Identifier:** I20382. **Grave Identifier:** NM 1b; NPH; E7-1019. **Grave Type:**
1268 Simple pit burial intrusive into the upper fill of a reused constructed tomb (E7). The
1269 individual was interred in a shallow grave cut into the surface layers of the previously
1270 backfilled structure. **Skeletal information:** Young adult. Genetic male (XY
1271 karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to
1272 571-651 CE, and based on the radiocarbon dating of individuals from the reused E7
1273 tomb (I20267). **Ancestry summary:** local Iron Age Iberian.
- 1274

1275 • **Genetic Identifier:** I20384. **Grave Identifier:** NM 3; NPH; E18-1045. **Grave Type:**
1276 Simple pit burial with peripheral stone slabs, possibly serving as partial lining or
1277 structural reinforcement. Orientation is W-E. **Skeletal information:** Young adult.
1278 Genetic male (XY karyotype). **Grave goods:** A bronze buckle, a bronze piece, two
1279 iron knives, two nails, and a few AE-4 coins. **Dating:** Direct radiocarbon dated to
1280 435-587 cal CE (1545±20 BP, PSUAMS-10248). **Ancestry summary:** Hispano-
1281 Roman (no North African signal detected).
- 1282

1283 • **Genetic Identifier:** I20385. **Grave Identifier:** NM 5b; NPH; E7-1018. **Grave Type:**
1284 The burial was a built tomb ('tomba d'obra'), reused by multiple individuals (number
1285 unknown). This information is for individual 2. Orientation is W-E. **Skeletal**
1286 **information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** No

grave goods found. **Dating:** Direct radiocarbon dated to 605-772 cal CE (1370 ± 30 BP, Beta-538221). **Ancestry summary:** Hispano-Roman.

- **Genetic Identifier:** I20386. **Grave Identifier:** NM 6; NPH; E46-1133. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman (no North African signal detected). **Additional information:** Possible reuse of the tomb.
- **Genetic Identifier:** I20388. **Grave Identifier:** NM 8; NPH; E20-1056. **Grave Type:** Simple pit with tegulae. Orientation is W-E. **Skeletal information:** Adult. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I20389. **Grave Identifier:** NM 9; NPH; E27-1078. **Grave Type:** Simple pit with tegulae. Orientation is W-E. **Skeletal information:** Young adult, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300-500 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I20390. **Grave Identifier:** NM 10b; NPH; E23-1075. **Grave Type:** *Tegulae* tomb. Orientation is W-E. **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** Pottery vase. **Dating:** Direct radiocarbon dated to 254-419 cal CE (1700±30 BP; Beta-538220). **Ancestry summary:** Hispano-Roman (no North African signal detected). **Additional information:** Assigned to Roman archaeological context due to grave goods and stratigraphic layer, confirmed by radiocarbon dating.
- **Genetic Identifier:** I20391. **Grave Identifier:** NM 12; NPH; E11-1025b. **Grave Type:** Simple pit, multiple burial. Orientation is W-E. **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 250-450 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I20392. **Grave Identifier:** NM 13; NPH; E11-1025. **Grave Type:** Simple pit, multiple burial. Orientation is W-E. **Skeletal information:** Advanced adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 250-450 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Central-North European and local Iron

Age Iberian admixture. **Additional information:** Associated to a Roman archaeological context due to stratigraphic layer.

- **Genetic Identifier:** I20393. **Grave Identifier:** NM 14; NPH; E16-1039. **Grave Type:** Simple pit and stone slab covered. Orientation is W-E. **Skeletal information:** Mature adult, female (genetic female: XX karyotype) **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 250-450 CE **Ancestry summary:** Hispano-Roman **Additional information:** Associated to Roman archaeological context due to stratigraphic layer.
- **Genetic Identifier:** I20394. **Grave Identifier:** NM 21; NPH; E52-1151. **Grave Type:** Tegulae tomb. Orientation is W-E. **Skeletal information:** Mature adult, male (genetic male: XY karyotype). **Grave goods:** A bronze buckle. **Dating:** Direct radiocarbon dated to 542-605 cal CE (1505±20 BP, PSUAMS-10249). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I20395. **Grave Identifier:** NM 22; NPH; E51-1147. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Juvenile. Genetic female (XX karyotype). **Grave goods:** An iron buckle. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage.
- **Genetic Identifier:** I20396. **Grave Identifier:** NM 23; NPH; E67-1195. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Central-North European, Imperial Roman Eastern Mediterranean, and North African (Punic-related) admixture.
- **Genetic Identifier:** I20397. **Grave Identifier:** NM 24; NPH; E65-1189. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Advanced adult, female (genetic female: XX karyotype) **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200-450 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Central-North European.
- **Genetic Identifier:** I20398. **Grave Identifier:** NM 25; NPH; E45-1130. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult. Genetic female (XX karyotype). **Grave goods:** An iron buckle. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage.
- **Genetic Identifier:** I20400. **Grave Identifier:** NM 27; NPH; E43-1124. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult, male

(genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-550 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman and Central-North European admixture.

- **Genetic Identifier:** I20401. **Grave Identifier:** NM 28; NPH; E28-1076. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Mature adult. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Central-North European, Imperial Roman Eastern Mediterranean, and North African (Punic-related) admixture.
- **Genetic Identifier:** I20402. **Grave Identifier:** NM 29; NPH; E55-1160. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Mature adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.

Site-specific Bibliography:

Agustí, B. i Llinàs-Pol, J. (2012) Pla de l'Horta i les Goges: dues necròpolis d'època visigoda a l'entorn de *Gerunda*. N. Molist i G. Ripoll (ed.) *Arqueologia funerària al nord-est peninsular (segles VI-XII)*, *Monografies d'Olèrdola* 3.2, MAC, 317-330

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Llinàs-Pol, J., Tarrés Farrés, A., Montalbán Martínez, C., Frigola Triola, J., Merino Serra, J., & Agustí Farjas, B. (2008). Pla de l'Horta (Sarrià de Ter, Girona): una necrópolis con inhumaciones visigodas en la Tarraconense oriental. *Archivo Español de Arqueología*, 81, 289–304. <https://doi.org/10.3989/aespa.2008.v81.53>

2.7 Girona, Sant Julià de Ramis, Les Goges

Contact person(s): Josep Burch, Jordi Sagrera, Jordi Vivo & Neus Coromina

Brief Settlement History: The Goges necropolis, located in Sant Julià de Ramis (Girona), served as a burial ground from the 5th to 8th centuries CE. While no direct evidence of an associated settlement has been identified, archaeological and anthropological analyses suggest a long-term occupation with a predominantly rural character. The demographic profile indicates a relatively high life expectancy for the period, though skeletal markers reveal signs of physical stress and degenerative diseases, reflecting the demanding lifestyles of its inhabitants ^{40,41}. A well-preserved gold coin of King Chindaswinth (*CHIND'SVINI REX*) was recovered from tomb E108, providing a valuable chronological marker linked to the Visigothic period. Burials from various chronologies are spatially dispersed throughout the necropolis, indicating continuous use rather than delimited phases. Simpler pit burials are typically associated with the earlier use of the cemetery during the 6th century. From the later 7th century onward graves with stone slabs become more frequent ⁴⁰.

Excavation History: The necropolis was fully excavated in 1991, uncovering 207 tombs containing the remains of 164 individuals. This excavation provided critical insights into the population structure, health conditions, and burial practices of the local rural community. The study followed a systematic bioarchaeological approach, analyzing age, sex, pathology, and funerary customs. The high level of skeletal preservation allowed for detailed anthropological assessments. Following the excavation, the site was destroyed due to infrastructure development ⁴⁰.

Geographic Information: Les Goges is situated in Sant Julià de Ramis, Girona, within the Congost de Sant Julià de Ramis (Latitude: 42.03366, Longitude: 2.8297), a strategic natural corridor that historically facilitated movement and settlement. The surrounding landscape, characterized by rugged hills and river valleys, likely supported agricultural and pastoral activities, sustaining a small but stable rural community ^{40,41}.

Summary of Sampled Materials: The sampled individuals from Les Goges date between the 5th and 8th centuries CE (Figure AO.5). They were primarily interred in simple pit burials, with some placed in stone slab tombs. While most graves lacked associated grave goods, a few contained items such as coins and personal adornments, offering insights into funerary customs and material culture.

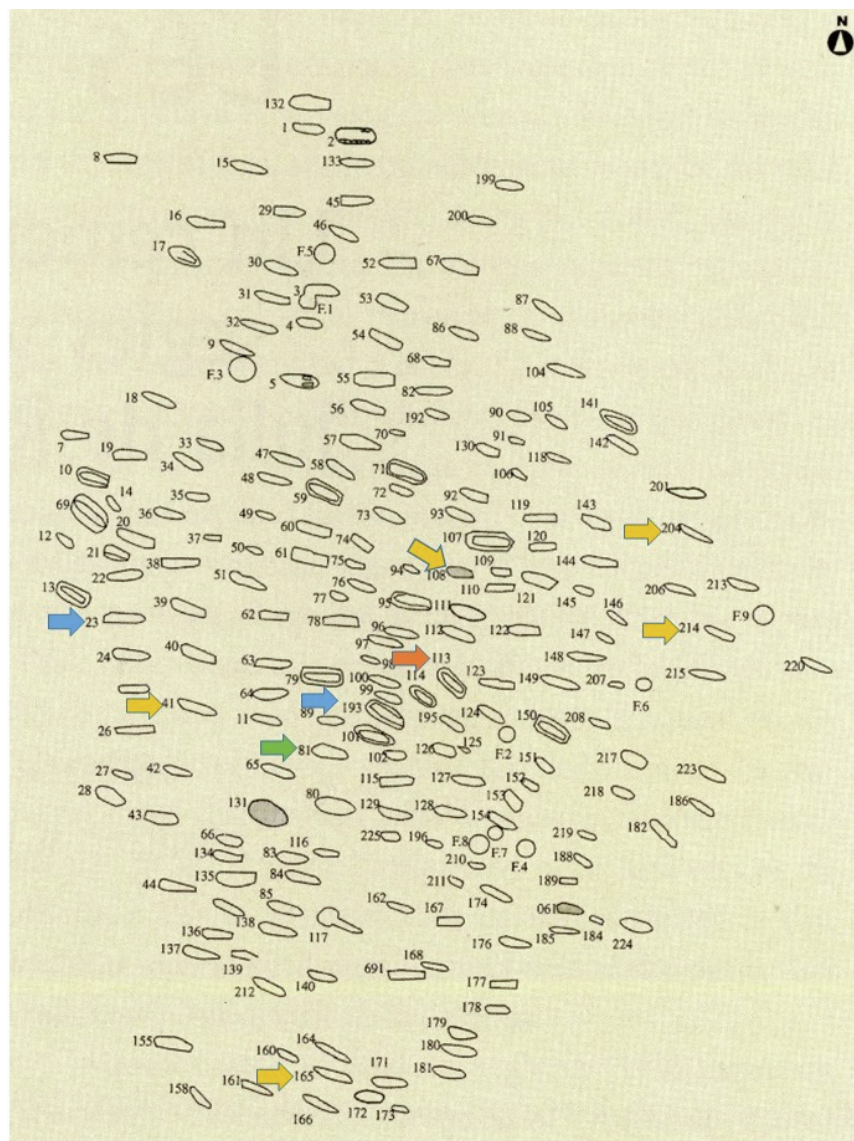


Figure AO.5. Map of Les Goges necropolis (Sant Julià de Ramis). Arrows indicate graves that have been radiocarbon dated. Green: early necropolis (5th century), yellow: 6th to early 7th century, blue: second half of 7th century, orange: later use of the necropolis during the 8th century (Star Methods “Ancient Individuals” Section).

Graves:

- **Genetic Identifier:** I20274. **Grave Identifier:** NM 32; LG'91; E81. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct Radiocarbon dated to 426-575 cal CE (1560±30 BP; Beta-507251). **Ancestry summary:** Imperial Roman Eastern Mediterranean and North African (Punic-related) admixture.

- **Genetic Identifier:** I20275. **Grave Identifier:** NM 34; LG'91; E23. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct Radiocarbon dated to 607-774 cal CE (1360±30 BP; Beta-507250). See below the OxCal Calibration Model (Figure AO.6) **Ancestry summary:** Imperial Roman Eastern Mediterranean.

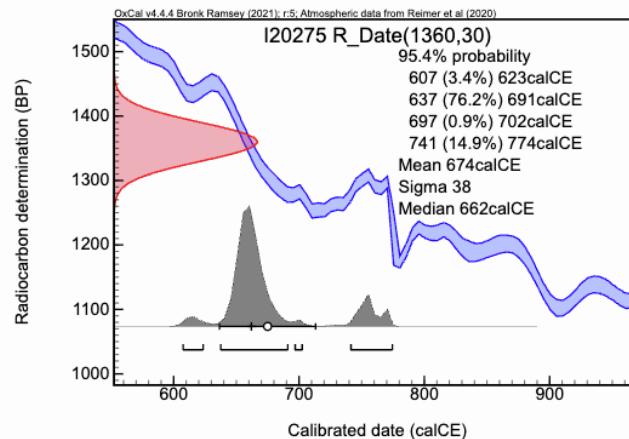


Figure AO.6. OxCal calibrated Radiocarbon Model for I20275 (Star Methods “Ancient Individuals” Section).

- **Genetic Identifier:** I20276. **Grave Identifier:** NM 36; LG'91; E193. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Adult, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct Radiocarbon dated to 607-774 cal CE (1360±30 BP; Beta-507253). **Ancestry summary:** excluded from the genome-wide analysis due to low coverage.
- **Genetic Identifier:** I20278. **Grave Identifier:** NM 39; LG'91; E165. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct Radiocarbon dated to 584-658 cal CE (1430±30 BP; Beta-507252). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I20405. **Grave Identifier:** NM 33; LG'91; E108. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Adult, genetic female (XX karyotype). **Grave goods:** Very well-preserved golden coin of King Chindasvintus (r. 642 - 653). Its obverse legend reads *CHIND'SVINI;Rx* (*Chindasvintus Rex*), and on the reverse, *TARRACO: AVIOx* (*Tarraco Iusto*)⁴². **Dating:** Direct Radiocarbon dated to 564 - 650 cal CE (1460±30 BP; Beta-608907). See below the OxCal Calibration Model (Figure AO.7). **Ancestry summary:** Excluded from the genome wide analysis due to low coverage.

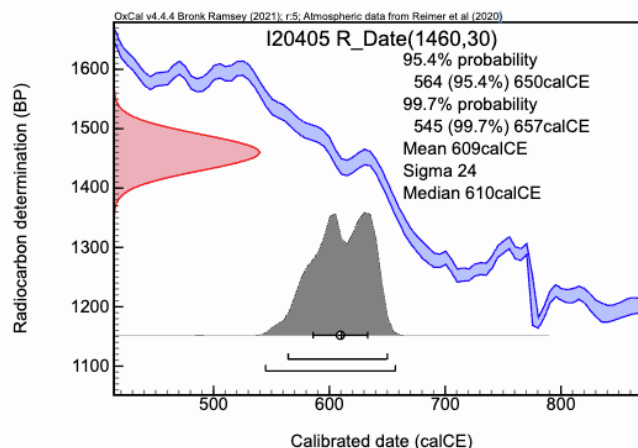


Figure AO.7. OxCal calibrated Radiocarbon Model for I20405 (Star Methods “Ancient Individuals” Section).

Genetic Identifier: I20406. **Grave Identifier:** NM 35; LG'91; E113. **Grave Type:** Stone slab tomb. Orientation is W-E. **Skeletal information:** Juvenile, genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct Radiocarbon dated to 660 - 774 cal CE (1300±30 BP; Beta-608908). **Ancestry summary:** Excluded from the genome wide analysis due to low coverage.

- **Genetic Identifier:** I20407. **Grave Identifier:** NM 38; LG'91; E164. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Adult, genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage.

- **Genetic Identifier:** I20408. **Grave Identifier:** NM 40; LG'91; E26. **Grave Type:** Simple pit. Orientation is W-E. **Skeletal information:** Mature adult, genetic female (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 600-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.

Site-specific Bibliography:

Agustí, B., Casellas, L.E., Foguet, G., Llinàs, J., López, J., Merino, J., Pou, J i Tió, X. (1993) La necròpolis de les Goges (Sant Julià de Ramis, Gironès), *Tribuna d'Arqueologia* 1991-1992, 117-128.

Agustí, B. and Llinàs, J. (2012) Pla de l'Horta i les Goges: dues necròpolis d'època visigoda a l'entorn de Gerunda. N. Molist i G. Ripoll (ed.) *Arqueologia funerària al nord-est peninsular (segles VI-XII)*, *Monografies d'Olèrdola* 3.2, MAC, 317-330

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- 1542 Mestre, A.M. i Agustí, B. (1995) Les condicions de vida de les Goges. Aspectes
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1545 **Monogràfica 16**: 129-136. Centre Investigacions Arqueològiques. Girona.

2.8 Granada, Colomera, Cortijo del Chopo

Contact person(s): Juan Manuel Jiménez Arenas, Elena Vallejo Casas, Paula Chiroso Cañavate.

Brief Settlement History: Cortijo del Chopo is a late Roman necropolis located just north of the modern town of Colomera in the Colomera River valley. It has been suggested that the settlement associated with the necropolis may have been located at Las Mesas, an elevated area near the necropolis. A total of 168 graves have been documented, the majority being pit burials covered with stone slabs, arranged parallel to the natural slope of the terrain. They are thought to range from the 4th to the 7th centuries. Most individuals were found in primary deposits, laid in a supine position, while some reductions were identified at the foot or sides of later burials. Despite extensive looting, approximately half of the tombs still contained personal adornments (rings, earrings, bracelets, pins, beads, and buckles) as well as funerary deposits, including ceramic vessels and pottery fragments. To enhance understanding of the material assemblage, various analytical techniques—such as X-ray fluorescence, lead isotope analysis, and infrared spectroscopy—were applied to selected artifacts ^{43,44}.

Excavation History: The site was first discovered in the late 1980s, when several funerary structures were exposed and subsequently looted. This threat to the site's integrity prompted an emergency archaeological intervention, followed by further excavations aimed at determining the extent and characteristics of the late antique cemetery. The site underwent archaeological interventions in 1986, 1988, and 1989. The first campaign documented the looted tombs and identified 47 burials. During the 1988 and 1989 excavations, an additional 121 burials were uncovered, along with various clothing items and funerary offerings, such as ceramic vessels. The findings from the 1986 excavation were analyzed and published ⁴⁵, whereas the materials from the later campaigns remained unstudied and unpublished. The skeletal remains from 118 of the 168 excavated burials were not subjected to bioarchaeological analysis. Currently, E. Vallejo-Casas's PhD research focuses on the study of a selected portion of this anthropological collection, along with the complete assemblage of grave goods.

Geographic Information: The necropolis is located in Colomera, Granada (latitude: 37.3838, longitude: -3.685). It occupies a rocky escarpment that interrupts the steep descent toward the Colomera River ⁴⁶. The burials are situated between 879 and 886 meters above sea level. To the southeast, the Mingarrón stream flows near the Sierra de los Hornos, while to the southwest, the Los Peñones and Las Mesas hills dominate the landscape. The region contains both perennial and seasonal springs, supporting an economy likely based on livestock, forestry, and dry farming. The site's location in the Colomera Valley places it along a significant communication route connecting Granada with the northern territories toward Jaén ⁴⁷.

Summary of Sampled Materials: Following the excavations, the skeletal remains were deposited in the Archaeological and Ethnological Museum of Granada without undergoing systematic analysis. A comprehensive anthropological study of this unpublished collection is now underway. As part of this research, radiocarbon dating was conducted on five individuals from four prominent burials ^{43,44}, placing their interment between the 6th and

early 8th centuries CE. Ancient DNA analysis was performed on a smaller subset of individuals, selected based on their associated grave goods and the absence of looting evidence at the time of excavation.

Graves:

- **Genetic Identifier:** I32150. **Grave Identifier:** Tumba (32) [3.200] (NMI in the grave: 6). **Grave Type:** Pit burial covered with slabs. Individual in primary supine position. NNW-SSW orientation. **Skeletal information:** Sub-adult, genetic female (XX karyotype). **Grave goods:** beads and a pottery vase. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Imperial Roman Eastern Mediterranean, Central-North European and, North African (Punic-related) admixture.
- **Genetic Identifier:** I32152. **Grave Identifier:** Tumba (33) [3.300]. **Grave Type:** Pit burial covered with slabs. Individual in primary supine position. NNW-SSW orientation. **Skeletal information:** Infant, genetic female (XX karyotype). **Grave goods:** earrings, beads. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I32154. **Grave Identifier:** Tumba (34) [3.400]. (NMI in the grave: 3). **Grave Type:** Pit burial covered with slabs. Individual in primary supine position. NNW-SSW orientation. **Skeletal information:** Adult, genetic female (XX karyotype). **Grave goods:** Bracelet, pottery vase. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I32155. **Grave Identifier:** Tumba 34, Mandibula (2), [3.413], P:37. (NMI in the grave: 3). **Grave Type:** Pit burial covered with slabs. Secondary burial reduced the individual's bones near the feet of subsequent deceased. NNW-SSW orientation. **Skeletal information:** Adult, genetic female (XX karyotype). **Grave goods:** Bracelet, pottery vase. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I32156. **Grave Identifier:** Tumba (35) Individuo 2 [3.503] P:27. (NMI in the grave: 4). **Grave Type:** Pit burial covered with slabs. Individual in primary supine position (lower). NNW-SSW orientation. **Skeletal information:** Adult, female (genetic female: XX karyotype) **Grave goods:** earrings, bracelet. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** local Iron Age Iberian.

- **Genetic Identifier:** I32157. **Grave Identifier:** Tumba (35) Craneo 3 [3.505]. (NMI in the grave: 4). **Grave Type:** Pit burial covered with slabs. Secondary burial reduced the individual's bones near the feet of subsequent deceased. NNW-SSW orientation. **Skeletal information:** Adult, female (genetic female: XX karyotype). **Grave goods:** Earrings, a bracelet. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I32158. **Grave Identifier:** Tumba (35) Craneo 4 [3.506]. (NMI in the grave: 4). **Grave Type:** Pit burial covered with slabs. Individual reduced at the feet of the latest deceased. NNW-SSW orientation. **Skeletal information:** Adult, female (genetic female: XX karyotype). **Grave goods:** Earrings, a bracelet. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I32160. **Grave Identifier:** Tumba (47), [40.005] (1), (NMI in the grave: 2). **Grave Type:** Simple pit burial. Individual in primary supine position. NNW-SSW orientation. **Skeletal information:** Juvenile. Genetic female (XX karyotype). **Grave goods:** Rings, earrings, bracelets, beads. **Dating:** Direct radiocarbon dated to 542-639 cal CE (1499 ± 24 BP; SUERC-122984). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I32162. **Grave Identifier:** Tumbal (47) [40.009] (2) (at least a double burial). **Grave Type:** Simple pit burial. Individual's position is not possible to determine. NNW-SSW orientation. **Skeletal information:** Juvenile. Genetic female (XX karyotype). **Grave goods:** rings, earrings, bracelets, beads. **Dating:** Direct radiocarbon dated to 598-652 cal CE (1432 ± 21 BP; SUERC-122988). **Ancestry summary:** Hispano-Roman (No Imperial Roman Eastern Mediterranean signal detected).

Site-specific Bibliography:

- Mattei, L. (2010). El poblamiento y la evolución del paisaje medieval en el valle de Colomera (Granada) in *Jiménez Puertas, M., Mattei, L. (eds). El paisaje y su dimensión arqueológica. Estudios sobre el sur de la península ibérica en la Edad Media*, pp. 207–46. Salobreña.
- Perez-Torres, C., Ramos-Lizana, M., Toro-Moyano, I. (1989). Necrópolis hispanorromana Cortijo del Chopo (Colomera, Granada). *Crónica del XIX Congreso Arqueológico Nacional. Zaragoza*, pp. 1065–80.
- Pérez-Torres, C., Toro-Moyano, I., (1990). Necrópolis Hispanorromana Cortijo del Chopo (Colomera, Granada). *Anuario Arqueológico de Andalucía* **3**, 253–257.

- 1686 Vallejo-Casas, Elena, et al. (2024a). "Archaeometallurgical characterization of Late Antique
1687 personal adornments. The necropolis of Cortijo del Chopo (Granada, Spain)." *Journal of*
1688 *Archaeological Science: Reports* **55 (2024)**: 104499.
1689
1690 Vallejo-Casas, Elena, et al. (2024b). "Baltic amber in Hispania during late antiquity.
1691 Contacts, networks and exchange." *Oxford Journal of Archaeology* **43.2 (2024)**: 195-216.

2.9 Granada, Montefrío, El Castellón

Contact person(s): Juan Manuel Jiménez Arenas

Brief Settlement History: The area of El Castellón was inhabited since at least the Neolithic period, with nearby sites such as Peña de los Gitanos providing evidence of continuous settlement from the Copper Age to the Bronze Age ⁴⁸. During Late Antiquity, El Castellón was a rural settlement possibly serving as a small agrarian community with defensive elements. The sampled necropolis in El Castellón has been known since the second half of the 19th century. It was first documented by Manuel de Góngora in *Antigüedades Prehistóricas de Andalucía* (1868) and later referenced by Manuel Gómez Moreno and Miguel Tarradell, who all attributed it to a Visigothic context. The presence of a necropolis with a structured layout and burial traditions characteristic of Visigothic and Late Antique Iberia suggests a stable population with enduring ties to the land. Systematic excavations began in 1977, alternating between the necropolis and the associated settlement. These efforts uncovered several domestic structures and a total of 115 tombs over three excavation campaigns (1977, 1980, 1983) (Figure AO.8).

Excavation History: The 1977 excavation uncovered 32 graves, followed by an additional 27 graves in 1980. These campaigns yielded numerous grave goods (including a number of wheel-thrown small funerary jars), though only a portion remain preserved at the Archaeological Museum of Granada. In 1983, 54 more tombs were documented, nine of which had been looted. The tombs at El Castellón follow a consistent construction pattern: pits were dug into the geological substrate, their walls lined with vertical stone slabs, and covered with horizontal slabs. The graves are arranged in roughly parallel rows, allowing pathways in between, with an overall N-S orientation that adapts to the terrain. A wall was also identified at the southern edge of the necropolis, near a tomb, but its function remains uncertain. Burials were primarily inhumations, consisting of individual, double, or triple interments, with some tombs showing evidence of reuse. Infant burials were also documented. Early excavations noted that many graves were empty of skeletal remains (Torres, 1977, 1981), but consolidation and restoration work in 2001-2002 identified human remains in 72 graves ⁴⁹. Notably, two tombs (VII and XV) exhibited evidence of fire. The typology of the graves and the presence of certain grave goods, particularly metal objects and ceramic vessels, suggest a 6th – 7th century CE date, partially overlapping with the Byzantine presence in southeastern Iberia ⁵⁰.

Geographic Information: The necropolis is situated on the western slope of El Castellón hill in Montefrío, Granada (latitude: 37.333611, longitude: -3.975611). It lays in close proximity to a Late Antique settlement. It is also located near significant sites from the Recent Prehistory of southern Iberia, including Los Castillejos de la Peña de los Gitanos.

Summary of Sampled Materials: The grave goods at El Castellón include ceramic jars, some decorated with simple geometric motifs such as parallel lines, comb patterns, or zig zags. Metal adornments were also recovered, including bronze earrings: some plain, others decorated with lines or dots. One of the earrings features a glass paste bead pendant. Additional finds include bronze bracelets, rings, pins, and a needle. Particularly noteworthy is a necklace composed of 106 beads made from jet, glass paste, and clay, recovered from

1760
1761
1762 **Site-specific Bibliography:**
1763

1764 Afonso-Marrero, J.A., Ramos-Cordero, U. (2005) Memoria de las Actuaciones
1765 Arqueológicas de apoyo realizadas durante los años 2001-2002, articuladas dentro del
1766 Proyecto de conservación del yacimiento arqueológico de Las Peñas de los Gitanos,
1767 Montefrío (Granada). *Anuario Arqueológico de Andalucía 2002 (Actividades de Urgencia)*
1768 **Vol. III:** 462-475.
1769

1770 Cámara-Serrano, J.A., Molina-González F., and Afonso-Marrero, J.A. (2005). La cronología
1771 absoluta de Los Castillejos en las Peñas de los Gitanos (Montefrío, Granada). in P. Arias, R.
1772 Ontañón, C. García-Moncó, (eds.). *Actas del III Congreso del Neolítico en la Península*
1773 *Ibérica* **5-8** pp. 841-85. Santander.
1774

1775 Motos-Guirao, E. (1991)- El poblado medieval de “El Castellón” (Montefrío, Granada).
1776 Estudio de sus materiales. *Colección Monográfica Arte y Arqueología* **10**. Granada.
1777

1778 Pedregosa-Megías, R. (2017) Cuatro décadas en silencio: la necrópolis del Castellón o
1779 Castellón (Montefrío, Granada). *Antiquitas* **29**: 125-161.
1780

1781 Punzón Román, J.M. (2004) El mundo funerario rural en la provincia de Granada durante la
1782 Antigüedad tardía. *Editorial de la Universidad de Granada*. Granada.

2.10 Granada, Plaza Einstein

Contact person(s): Juan Manuel Jiménez Arenas

Brief settlement history: A Roman *villa* dating to the early Imperial period was excavated in the urban center of Granada. Following the villa's abandonment, collapse, and silting, the site transitioned into a necropolis beginning in the 4th century CE ⁵².

Excavation History: Archaeological activity in this area was prompted by the construction of Line 1 of the Granada Light Metro, specifically in the Camino de Ronda section. During this phase of construction, archaeological monitoring of earth movements was carried out. This allowed for the identification, delimitation, and documentation of any sedimentary and/or structural evidence of archaeological significance using established excavation techniques. The discovery of grave SEP-049 occurred as part of preventive archaeological interventions during the construction of Line 1. A range of structures and archaeological materials was uncovered, suggesting continuous occupation of the peri-urban area of Granada from the 2nd to the 7th centuries CE, with particularly significant remains from the 4th through the 6th centuries ⁵³.

The excavation was conducted using a "mining" approach, focusing on the detection and excavation of structures and graves revealed during the earth-moving operations. Notable features include Building I, as well as a Paleochristian structural complex (4th-6th centuries CE), which had been repurposed as a burial area. Additionally, two Late Roman structural complexes were identified based on ceramic materials and a coin dating to the 3rd - 4th centuries CE, and a High Imperial period structural complex (2nd-3rd centuries CE) was also recorded. Grave SEP-049 was excavated during the creation of one of the underground parking lot access ramps. The grave was highly disturbed due to modern construction, but measurements recorded its dimensions as 1.40 m in length, 0.90 m in width, and 0.55 m in height. A second grave, SEP-050, with a gabled roof and a W-E orientation, was documented next to SEP-049, though it was not excavated ⁵³. From a functional standpoint, it is proposed that the earliest phase of this site was linked to a production area, possibly associated with a villa or agricultural production complex. After this period, the site seems to have been used as a refuse area before being abandoned and repurposed as a cemetery. Later, the construction of a large structure (possibly a mausoleum or pantheon, which evolved into a place of worship by the 5th century CE) resulted in the reorganization of the necropolis, intensifying its use for burials. During this time, a smaller, less substantial building was also erected, potentially functioning as a Martyrium ⁵⁴.

Geographic Information: The sampled grave (SEP-049) was located near the access ramp to an underground parking lot on Camino de Ronda Street, between PK 1.400 – 1.440, in the urban center of Granada (latitude: 37.1775, longitude: -3.609166667).

Summary of sampled materials: No grave goods were found in SEP-049. The sample was re-sequenced from Olalde et al.¹.

Graves:

- **Genetic Identifier:** I4055_enhanced. **Grave Identifier:** Tumba 49 (SEP-049). **Grave Type:** Pit excavated into the geological substrate with walls made of medium-sized sandstone blocks and covered with the same construction material, all secured with earth. Orientation W-E. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200–500 CE based on its stratigraphic context. The burial was found adjacent to the walls of a Roman-era building of unknown function, within a layer corresponding to the former Roman town ⁵³. **Ancestry summary:** Hispano-Roman. **Additional information:** The grave was lightly disturbed during construction works.

Site-specific Bibliography:

- García-Consuegra Flores, J.M., Rodríguez Aguilera, J., Rodríguez Aguilera, Á., Pérez Tovar, María Jesús (2012) Memoria científica de la actividad arqueológica preventiva mediante control de movimiento de tierras y sondeos arqueológicos de las obras de construcción de la infraestructura y superestructura de vía de la línea 1 metropolitana del metro ligero de Granada. Tramo II: Estadio de la Juventud – Campus de la Salud. Subtramo I: Camino de Ronda. (Mendez Núñez-PK1+800). *Anuario Arqueológico de Andalucía* **2012**: 1-22. (<https://www.juntadeandalucia.es/cultura/tabula/handle/20.500.11947/6831>).
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2.11 Granada, Zafarraya, Necropolis de Las Delicias

Contact person(s): Juan Manuel Jiménez Arenas

Brief settlement history: The Zafarraya region has been occupied since prehistoric times, with evidence of habitation by the El Argar culture. Later, Phoenician traders and Roman military camps were established in the area, reflecting its importance as a strategic crossroads connecting the nearby settlements. During the Roman period, Zafarraya likely functioned as a waypoint for travelers and traders moving through the surrounding mountainous terrain. By Late Antiquity, the site had transitioned into a burial ground ⁵⁴, suggesting a shift in its function as rural centers evolved under Visigothic and Byzantine influence.

Excavation History: Reports of ancient burials in Zafarraya date back to 1871 when several metal artifacts (including a bronze earring, two copper earrings, a copper ear clasp, and a decorated bronze buckle) were entered into the collection of the Archaeological Museum of Granada. However, systematic excavations did not take place until the 1985 and 1986 campaigns, which uncovered a significant number of tombs and burial structures ^{55,56}.

Geographic Information: The necropolis is located within the urban core of Zafarraya town (latitude: 36.95455, longitude: -4.1212594), positioned in a historically significant corridor between inland settlements and coastal trading hubs.

Summary of sampled materials: A total of 28 tombs with built structures and an additional 9 burial pits (termed "*piles*") were identified during the 1985 and 1986 excavations ^{55,56}. Two of the tombs remained unexcavated. The predominant burial type consisted of stone cist graves, created by positioning vertical slabs to form a rectangular enclosure. Some of these were covered with additional slabs, though others lacked a cover, possibly due to ancient looting, agricultural disturbances, or damage during excavation. The majority of graves followed a west-east (W-E) orientation. Two particularly distinct tombs (XIX and XXVI) represented a burial style previously undocumented at the site: individual interments covered with double-sloped *tegulae* roof tiles, a practice characteristic of Late Roman burial traditions. The presence of these tegula-covered burials, along with associated artifacts, suggests the cemetery remained in use well into Late Antiquity. Findings from the necropolis indicate a mix of cultural influences. Handmade ceramic bowls and glass vessels decorated with horizontal striations have been linked to Byzantine material culture, while three fire-gilded copper plates with zig zag motifs found in separate graves further support Byzantine connections. Conversely, a belt buckle inlaid with glass paste and bearing a swastika motif suggests Ostrogothic influence. Additional artifacts, including oval buckles with pins, kidney-shaped buckles, shield-shaped belt fittings, and glass beads, point to a broader Germanic presence among the individuals buried at the site. Archaeological and numismatic evidence suggests that the Zafarraya necropolis was in use from at least the 3rd century CE (confirmed by the discovery of a bronze coin of Emperor Decius in tomb XXIV), until the 7th century CE ^{55,56}, thus spanning the transition from Roman to post-Roman rule. The sample was re-sequenced from Olalde et al. ¹.

1899 **Graves:**

- 1900
- 1901 • **Genetic Identifier:** I3584_enhanced. **Grave Identifier:** Tumba XIX. **Grave Type:**
- 1902 Pit dug into the geological substrate with a heavily deteriorated double-sloped tegulae
- 1903 tile cover. **NMI:** 1. **Orientation** W-E. **Skeletal information:** Adult, male (genetic
- 1904 male: XY karyotype). **Grave goods:** A very rusted iron nail and a ceramic vessel of
- 1905 reddish ocher color, which bears a resemblance to form 45 described by Vegas, but
- 1906 comparable to a vessel found in the necropolis of Aldea de San Esteban (4th century).
- 1907 **Dating:** Archaeologically dated to 300 - 400 CE. Based on the grave goods and
- 1908 stratigraphic layer. **Ancestry summary:** Excluded from the genome-wide analysis
- 1909 due to possible contamination. **Additional information:** Intact tomb.
- 1910
- 1911

1912 **Site-specific Bibliography:**

1913

1914

1915 Ramos-Lizana, M. Toro-Moyano, I., Pérez Torres, C. (1990) Excavación de urgencia en la

1916 necrópolis de las delicias de Ventas de Zafarraya, Alhama de Granada, Granada, segunda

1917 campaña, 1986. *Anuario Arqueológico de Andalucía 1986 (Actividades de Urgencia.)* Vol.

1918 **III:** 258-261.

1919

1920 Punzón-Román, J.M. (2004) El mundo funerario rural en la provincia de Granada durante la

1921 Antigüedad tardía. *Editorial de la Universidad de Granada.* Granada.

1922

1923 Toro-Moyano, I., Ramos-Lizana, M. (1987) Excavación de urgencia en la necrópolis

1924 visigoda de Las Delicias (Ventas de Zafarraya, Alhama de Granada), 1985. *Anuario*

1925 *Arqueológico de Andalucía 1985 (Actividades de Urgencia.)* Vol. **III:** 462-475.

2.12 Guadalajara, Cubillejo de la Sierra

Contact person(s): Maria Luisa Cerdeño, Miguel Ángel Cuadrado

Brief settlement history: Cubillejo de la Sierra is a late antique necropolis. Archaeological surveys in the surrounding area suggest that the only known settlement possibly associated with this necropolis is the Roman villa of La Vega, located at the base of the hill where the cemetery is situated. Although it suffered extensive damage from modern agricultural activities, scattered finds (including mosaic fragments, two column shafts, and a variety of ceramic materials such as black-glazed ware, Gallic *terra sigillata*, Hispanic *terra sigillata*, and *Terra Sigillata Hispanica Tardia* (T.S.H.T., late Hispanic *terra sigillata*)) indicate a long period of occupation, spanning from the late Republican period through Late Antiquity, making it the most plausible residential or economic hub associated with the cemetery ⁵⁷.

Excavation History: The discovery of the late antique cemetery at Cubillejo de la Sierra was unexpected but has provided valuable new insights into the region's settlement patterns during this period. The necropolis was first identified in 2006 during excavations at the basically adjacent Celtiberian oppidum of Los Rodiles and its surrounding landscape, an area known for its multi-period archaeological sites ⁵⁸. To date, 22 graves have been excavated, though the distribution of visible surface features suggests a much larger burial ground, potentially containing more than 250 graves ⁵⁹.

Geographic Information: The cemetery is located in Cubillejo de la Sierra, near Molina de Aragón (latitude: 40.887, longitude: -1.7765). It extends across the southern spur of Loma Gorda, covering both the flat hilltop and the eastern slope near the hermitage. The site sits at an elevation of 1,140 meters above sea level in a highly eroded landscape with exposed limestone outcrops. At the base of the hill, the Arroyo de la Vega flows, forming the upper reaches of the Piedra River.

Summary of sampled materials: The grave goods recovered from the site reflect the modest material wealth typical of a rural community. Finds include a small number of fibulae, bronze buckles, belt clips, rings, small iron knives, and necklace beads made of various materials. The preliminary analysis of burial structures and associated artifacts suggests a 6th - 7th century CE date for the necropolis, though precise chronological resolution remains challenging. The typology of bronze objects closely resembles those from other contemporary burial sites, such as the necropolis of Cacera de las Ranas in Aranjuez ⁶⁰. In that site, shield-shaped ribbons were dated to the 6th century, while rigid plate belt buckles were attributed to the early 7th century ⁶⁰. Based on these comparisons, the Cubillejo cemetery has been tentatively placed within phases II (530–580 CE) and III (580–640 CE) of the Visigothic necropolises in Guadalajara ^{57,60}.

Graves:

- **Genetic Identifier:** I19665. **Grave Identifier:** EV-2006; Cata 8F; T-1. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:**

- 1973 <50 years old. Genetic female (XX karyotype). **Grave goods:** a small rectangular
 1974 bronze buckle, 20x10mm, with a pin and four hemispherical rivets at the corners, two
 1975 bronze shield-shaped appliqués, fragments of an iron knife blade, and other small
 1976 items. **Dating:** Archaeologically dated to 500-700 CE. Based on the context of
 1977 archaeological findings, radiocarbon dates of individuals in the same site and
 1978 archaeological layer. **Ancestry summary:** Central-North European, Central Italian
 1979 and North African (Punic Related) admixture. **Additional information:** The grave
 1980 was well-preserved, though the skeleton was incomplete.
- 1981
- 1982 • **Genetic Identifier:** I19666. **Grave Identifier:** EV'14; Cata 8F-8E; T-2. **Grave**
 1983 **Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave
 1984 surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:**
 1985 Adult (over 25 years old), female (genetic female: XX karyotype) **Grave goods:** a
 1986 belt plate with a rectangular heel, a shield-shaped base pin, and two perforated plates.
 1987 **Dating:** Archaeologically dated to 500-700 CE. Based on the context of
 1988 archaeological findings, radiocarbon dates of individuals in the same site, and
 1989 archaeological layer. **Ancestry summary:** Hispano-Roman (No Imperial Roman
 1990 Eastern Mediterranean signal detected). **Additional information:** The surface soil
 1991 had been disturbed.
- 1992
- 1993 • **Genetic Identifier:** I19667. **Grave Identifier:** EV'14; Cata 1E; T-4. **Grave Type:**
 1994 Presence of nails indicate the deceased was placed in a wooden coffin. Grave
 1995 surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:**
 1996 Adult (between 31 and 59 years old), female (genetic female: XX karyotype). **Grave**
 1997 **goods:** a 26mm bronze oval buckle with a curved pin, a 13mm diameter bronze ring
 1998 with a small hanging loop, and a cylindrical ceramic bead. **Dating:** Direct
 1999 radiocarbon dated to 569-643 cal CE (1470±20 BP, PSUAMS-9708). **Ancestry**
 2000 **summary:** Imperial Roman Eastern Mediterranean and Central-North European
 2001 admixture. **Additional information:** The foot of the grave was disturbed when grave
 2002 6 was placed above it.
- 2003
- 2004 • **Genetic Identifier:** I19668. **Grave Identifier:** EV'14; Cata 1E-2E; T-5. **Grave**
 2005 **Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave
 2006 surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:**
 2007 Adult (between 35 and 45 years old), female (genetic female: XX karyotype). **Grave**
 2008 **goods:** a 36mm diameter iron circular buckle with a fused pin, a deformed bronze
 2009 ring with open ends, and various small bronze fragments. **Dating:** Archaeologically
 2010 dated to 500-700 CE. Based on the context of archaeological findings, radiocarbon
 2011 dates of individuals in the same site, and archaeological layer. **Ancestry summary:**
 2012 Hispano-Roman. **Additional information:** Some stone slabs were slightly disturbed.
- 2013
- 2014 • **Genetic Identifier:** I19669. **Grave Identifier:** EV'14; Cata 1E-2E; T-6. **Grave**
 2015 **Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave
 2016 surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:**
 2017 Adult (elderly), male (genetic male: XY karyotype). **Grave goods:** a belt buckle with
 2018 a rigid plate, a curved heel, and a shield-shaped base pin with perforated plates on the
 2019 back, measuring 130x45mm and 2mm thick, a 20mm diameter bronze ring and a

cylindrical blue glass bead with a white zigzag pattern. **Dating:** Archaeologically dated to 500-700 CE. Based on the context of archaeological findings, radiocarbon dates of individuals in the same site, and archaeological layer. **Ancestry summary:** Central-North European and Hispano-Roman admixture. **Additional information:** The skeleton was incomplete, with the grave superimposed over T-4.

- **Genetic Identifier:** I19670. **Grave Identifier:** EV'17; Cata 2B-2C; T-16. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:** Adult (between 35 and 55 years old), male (genetic male: XY karyotype). **Grave goods:** an 88mm iron chisel and a 10mm diameter iron rod. **Dating:** Direct radiocarbon dated to 561-641 cal CE (1480±20 BP, PSUAMS-10215). **Ancestry summary:** Hispano-Roman. **Additional information:** held children's phalanges in his right hand and a vertebra in his left hand. The stone slabs were disordered, but the skeleton was complete and well-preserved.
- **Genetic Identifier:** I19671. **Grave Identifier:** EV'2014; Cata 3-9D; T-7. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:** Adult (about 20 years old), male (genetic male: XY karyotype). **Grave goods:** two fragments of a small yellow glass container. **Dating:** Archaeologically dated to 500-700 CE. Based on the context of archaeological findings, radiocarbon dates of individuals in the same site, and archaeological layer. **Ancestry summary:** Central-North European and North African (Punic-related) admixture. **Additional information:** The grave was disturbed at the surface, and the skeleton was incomplete.
- **Genetic Identifier:** I19672. **Grave Identifier:** EV'17; Cata 4E; T-13. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:** Adult, male (genetic male: XY karyotype) **Grave goods:** radial head of a bronze fibula with five molded appendages, and both decorated; the plate measures 33mm in diameter. **Dating:** Direct radiocarbon dated to 646-772 cal CE (1350±20 BP, PSUAMS-9709). **Ancestry summary:** Hispano-Roman. **Additional information:** The surface was disturbed, and the skeleton was complete but very deteriorated.
- **Genetic Identifier:** I19673. **Grave Identifier:** EV'17; Cata 4C-6C; T-19. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:** Adult (between 16-20 years old), female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the context of archaeological findings, radiocarbon dates of individuals in the same site, and archaeological layer. **Ancestry summary:** Hispano-Roman and central Mediterranean admixture. **Additional information:** The grave was well-preserved, and the woman's height was estimated at 1.59 meters.

- **Genetic Identifier:** I19674. **Grave Identifier:** EV'17; Cata 7B; T-15. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:** Adult (around 20 years old), male (genetic male: XY karyotype). **Grave goods:** A highly deteriorated bronze coin measuring 20 mm in diameter and 2 mm in thickness. The ring of a buckle, 7 mm thick, with a notch where the pin would be inserted. A mini bronze buckle with an oval ring and a pin thickened at the tip. A bronze shield-shaped applique with a central rib, measuring 23 mm in length and 3 mm in thickness. A bronze washer with a diameter of 27 mm. A bronze rod with a preserved length of 61 mm. The distal bronze fitting of a knife sheath, with a preserved length of 20 mm. An iron knife, heavily oxidized, with a straight back and flat tang, measuring 140 mm in preserved length and 19 mm in blade width. Another iron knife, heavily oxidized, with a straight back and slightly curved edge, measuring 130 mm in preserved length and 20 mm in blade width. **Dating:** Archaeologically dated to 500-700 CE. Based on the context of archaeological findings, radiocarbon dates of individuals in the same site, and archaeological layer. **Ancestry summary:** Excluded from the genome wide analysis due to coverage. **Additional information:** The grave was disturbed at the surface, and the skeleton was incomplete.
- **Genetic Identifier:** I19675. **Grave Identifier:** EV'17; Cata 12C; T-18a. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. Part of a double burial with T-18b (next entry), whether sequential or simultaneous is uncertain. **Skeletal information:** Adult, between 18-20 years old, female (genetic female: XX karyotype). **Grave goods:** All grave goods were placed on the lower skeleton (T-18b / I19676). **Dating:** Direct radiocarbon dated to 594-650 cal CE (1440±20 BP, PSUAMS-9710). **Ancestry summary:** Hispano-Roman. **Additional information:** The upper skeleton is from a double burial, either superimposed or simultaneous.
- **Genetic Identifier:** I19676. **Grave Identifier:** EV'17; Cata 12C; T-18b. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:** Adult (between 18-20 years old), female (genetic female: XX karyotype). **Grave goods:** a fragment of a ceramic jug with a thickness of 6 mm. A radial-headed fibula with 5 appendages, a short bridge, and a long foot, with fabric attached, measuring 84 mm in length and 15 mm in height. A bronze earring with a barrel-shaped pendant, measuring 25 mm in diameter. 200 necklace beads made of various materials and shapes (bronze, Baltic amber, black paste, blue paste, green paste). **Dating:** Archaeologically dated to 500-700 CE. Based on the context of archaeological findings, radiocarbon dates of individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** This is the lower skeleton from the previously described double burial.
- **Genetic Identifier:** I19677. **Grave Identifier:** EV'17; Cata 13C; T-28. **Grave Type:** Presence of nails indicate the deceased was placed in a wooden coffin. Grave surrounded by large stone slabs (cist-like). E-W orientation. **Skeletal information:** Very incomplete skeleton, undetermined age, male (genetic male: XY karyotype).

Grave goods: Two identical bronze buttons with conical heads decorated with incised petal-like lines and perforated tabs for attachment, measuring 13 mm in diameter and 15 mm in total length. A folded and fragmented bronze sheet, 4 mm wide. Two small tubular tuff beads, measuring 37 mm and 30 mm in length, and 10 mm in diameter. **Dating:** Archaeologically dated to 500-700 CE. Based on the context of archaeological findings, radiocarbon dates of individuals in the same site, and archaeological layer. **Ancestry summary:** Excluded from the genome wide analysis due to contamination. **Additional information:** Presence of an infant's talus bone. Stone slabs were disturbed, and the skeleton was incomplete.

Site-specific Bibliography:

Cerdeño, M. L., Sagardoy, T., Chordá, M., & Gamo, E. (2008). Fortificaciones celtibéricas frente a Roma: El oppidum de Los Rodiles (Cubillejo de la Sierra, Guadalajara)/Celtiberian Hill Forts facing Roman invasion. The oppidum of Los Rodiles (Cubillejo de la Sierra, Guadalajara). *Complutum*, **19(1)**, 173.

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Daza-Pardo, E., & Catalán-Ramos, R. (2009). Las necrópolis de época visigoda en la provincia de Guadalajara. Una revisión crítica. GAUSAC. *Publicació del Grup d'Estudis Locals de Sant Cugat del Vallès*, (**34-35**), 131-143.

2.13 Guadalajara, Gualda, El Tesoro-Carramantiel

Contact person(s): Miguel Ángel Cuadrado Prieto

Brief settlement history: The site of El Tesoro-Carramantiel comprises a small rural village and its associated necropolis, occupied during Late Antiquity, most likely between the 7th and 8th centuries CE. The archaeological evidence suggests a community engaged in subsistence farming, with a modest material culture indicative of a self-sufficient, agrarian lifestyle. The settlement's location near the Tagus River and within the rugged landscape of La Alcarria suggests it may have been part of a network of rural enclaves that persisted following the decline of Roman rule in the Iberian Peninsula. The site's occupation timeframe places it within a period marked by the fragmentation of Visigothic rule and the early phases of Islamic influence in the region. The presence of both domestic structures and an established burial ground indicates a stable, long-term occupation, likely centered on local agricultural production and pastoralism ⁶¹⁻⁶³.

Excavation History: The excavation of El Tesoro-Carramantiel began in 1992, prompted by the illegal disturbance of two tombs. Over the course of five archaeological campaigns, researchers documented and excavated 35 graves carved into the sandstone bedrock, many of which had been subjected to past looting. Additionally, several structures from the associated village, situated approximately 200 meters from the necropolis, were identified, offering further insights into the daily life of its inhabitants.

Geographic Information: The site is located in the Barranco Grande (latitude: 40.6809, longitude: -2.6869), a deep gorge that descends directly into the Tagus River, in the La Alcarria region of south-central Guadalajara province. This landscape is characterized by steep slopes and limited arable land that would have posed challenges for intensive agriculture but may have also provided natural protection, access to fresh water and pasture.

Summary of sampled materials: The majority of the excavated graves contained individual burials, although evidence suggests that some tombs were reused, with bones from earlier interments carefully relocated to the foot of the grave. Grave goods were scarce, consisting primarily of iron knife blades and modest personal adornments made of silver and bronze, reflecting the economic constraints of the community. The anthropological analysis ⁶⁴ determined the sex and age of several individuals, as well as signs of pathological conditions and trauma. Notably, some skeletal remains exhibited dark coloration and other indicators of indirect heat exposure, suggesting that the bones may have been affected by a fire in the area. Whether this was the result of ritual activity, an accidental fire, or a later disturbance remains uncertain.

Graves:

- **Genetic Identifier:** I19659. **Grave Identifier:** Tumba 4. **Grave Type:** Rectangular grave pit carved in sandstone. NE-SW orientation. **Skeletal information:** Bones without anatomical connection due to clandestine disturbance. Adult (around 20 years old), height 162.06 cm. Genetic male (XY karyotype). **Grave goods:** incomplete iron

knife blade with a triangular cross-section found mixed with the disturbed bones.
Dating: Direct radiocarbon dated to 670-774 cal CE (1285±20 BP, PSUAMS-9703).
Ancestry summary: Hispano-Roman. **Additional information:** tomb raided during August 1992.

- **Genetic Identifier:** I19660. **Grave Identifier:** Tumba 10. **Grave Type:** Rectangular pit carved in sandstone with a headrest carved at the top; slab partially covering the headrest; individual in primary supine position with arms extended along the body and head tilted to the left; orientation SE-NW. **Skeletal information:** Subadult (between 14-15 years old), height 164.62 ± 6.90 cm. Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 650-800 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** local Iron Age Iberian. **Additional information:** Incomplete bilateral and symmetrical lumbarization of the first sacral vertebra; possible traumatic dislocation of the right shoulder joint; agenesis of the third molar.
- **Genetic Identifier:** I19661. **Grave Identifier:** Tumba 11. **Grave Type:** Rectangular pit carved in sandstone with a headrest carved at the head end; slab partially covering the center, with smaller stones underneath; individual in primary supine position with arms extended along the body, head tilted on the chest; orientation SE-NW. **Skeletal information:** Adult (between 43.3-58.1 years old), height 160.36 ± 6.90 cm. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 650-800 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Osteoarthritis.
- **Genetic Identifier:** I19662. **Grave Identifier:** Tumba 14. **Grave Type:** Rectangular pit carved in sandstone with a perimeter recess to fit a large covering slab; individual in primary supine position with arms crossed on the chest; orientation SE-NW. **Skeletal information:** Juvenile (around 12 years old ± 36 months). Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 650-800 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Arthritic edges on the joint surfaces of the first two cervical vertebrae; possible fusion of two ribs.
- **Genetic Identifier:** I19663. **Grave Identifier:** Tumba 16. **Grave Type:** Rectangular pit carved in sandstone; individual in primary supine position with the only preserved arm on the abdomen; orientation SE-NW. **Skeletal information:** Adult (between 24-29 years old), female (genetic female: XX karyotype), height 155.42 ± 5.92 cm. **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 772-974 cal CE (1160±20 BP, PSUAMS-9707). See below OxCal Calibration Model (Figure AO.9) **Ancestry summary:** Hispano-Roman. **Additional information:** Osteoma on the skull; squatting marks; well-developed finger muscles, suggesting possible washerwoman.

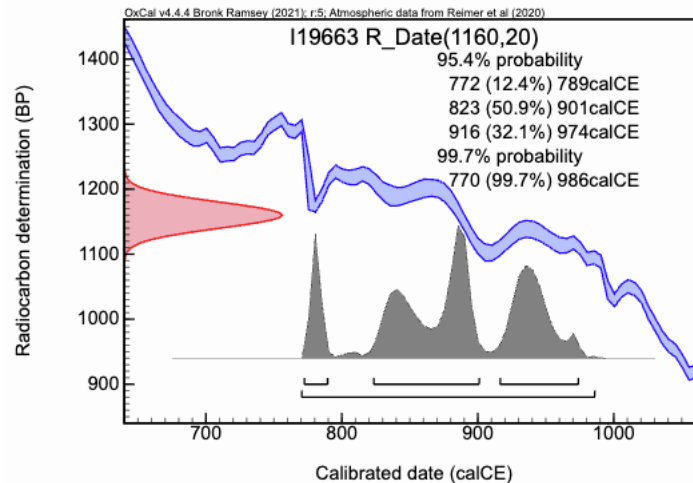


Figure AO.9. OxCal calibrated Radiocarbon Model for I19663 (Star Methods “Ancient Individuals” Section).

- **Genetic Identifier:** I19664. **Grave Identifier:** Tumba 29. **Grave Type:** Rectangular pit carved in sandstone, part of a set of two on a promontory with a quadrangular perimeter recess to fit slabs over both; headrest carved at the head end and large broken slab covering the feet and another in the center; individual in primary supine position missing the skull with arms extended along the body; orientation NE-SW. **Skeletal information:** Adult (between 25.7-30.6 years old), male (genetic male: XY karyotype), height 167.02 ± 6.90 cm. **Grave goods:** Half of a bronze lyriiform belt plate, decorated. **Dating:** Archaeologically dated to 650-800 CE. Based on the context of archaeological findings, radiocarbon dates of individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Head end looted with skull removed; possible trauma to the left shoulder during puberty.

Site-specific Bibliography:

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- 2269 Gomez-Perez, José Luis (2006) Yacimiento de El Tesoro–Carramantiel (Gualda-
2270 Guadalajara) Estudio antropológico. *Ayudas a la investigación histórica Junta de*
2271 *Comunidades de Castilla–La Mancha.*

2.14 Guadalajara, Illana, El Soto

Contact person(s): Miguel Ángel Cuadrado, José Martínez Peñarroya & Consuelo Vara Izquierdo.

Brief settlement history: The El Soto necropolis remained unknown until an irrigation trench was dug within the namesake housing development, uncovering a burial constructed with stone slabs ⁶⁵. The region has a long history of human occupation, with evidence of prehistoric, Roman, and Visigothic activity. However, prior to the discovery of this necropolis, no significant early medieval funerary sites had been documented in the immediate vicinity. Notably, the Visigothic city of Reccopolis (founded by King Leovigild in the mid-6th century CE) lies approximately 20 km upstream, highlighting the region's strategic significance during the late Visigothic period. The site's discovery owes much to the property owner's decision to report the find to cultural heritage authorities in Guadalajara. Subsequent excavation confirmed the presence of a necropolis, though part of it had already been destroyed by a neighboring landowner ⁶⁵. Despite this damage, the grave goods recovered offer valuable insights into the material culture and burial practices of the final phase of the Visigothic monarchy in Hispania ⁶⁶.

Excavation History: Archaeological work proceeded in two phases. The first phase involved monitoring construction work for a single-family home near the initial burial site. No evidence of additional habitation or burials was found within the excavation area, establishing the necropolis' eastern boundary. The foundation trench, measuring 10 meters square with an intersecting trench in its eastern half, extended to a depth of one meter, revealing a gravel stratum beneath clayey sands ⁶⁵.

The second phase focused on the excavation of the funerary structure itself. Investigation of the burial section exposed by the earlier irrigation trench dig showed that this disturbance had displaced some skeletal remains, which, according to the initial discoverer, had not been entirely reburied. The grave was characterized by a mound of mortar debris, stones, and broken tile fragments. Interestingly, a denticulated lamina, likely from a nearby prehistoric deposit, was found within the fill ⁶⁵. The tomb itself was a cist constructed of gypsum slabs, originally sealed with a single large cover slab. This cover was broken during trenching activity but retained traces of mortar, confirming it had been intentionally sealed in ⁶⁵.

Geographic Information: This development sits atop a promontory in Illana (Guadalajara), separate from the historic urban center (latitude: 40.1837, longitude: -2.9088). The current road network does not directly reflect the transport routes that once connected settlements within the Visigothic Kingdom of Hispania. Visigothic communications relied on a key axis linking northeastern (Zaragoza) and southwestern (Mérida) cities. *Toletum*, the kingdom's capital, occupied a strategic location on the central plateau, with the Tagus River acting as a major artery for movement and trade. The promontory where the El Soto necropolis is located overlooks this river, which would have provided a natural route between eastern and western regions of the plateau. The surrounding landscape is characterized by clay-rich conglomerates and expansive moorlands to the north and west, extending toward Estremera (Madrid). To the east, the Tagus flows past mid-sized elevations near Illana, intersecting with terrestrial routes that connected Pastrana (to the north) and Tarancón (to the south, in Cuenca

province). This location likely functioned as a regional hub, bridging overland routes (such as the Complutum-Segóbriga corridor) with river transport networks (linking Recópolis and Toletum).

Summary of sampled materials: Although excavation was limited, the material recovered from El Soto offers crucial chronological and cultural data. The primary archaeological feature (a single well-preserved grave) yielded significant, though relatively sparse, finds. Skeletal remains consisted of eight cranial fragments, approximately thirty limb bone fragments, fifty rib fragments, and fifteen vertebrae ⁶⁵. A notable grave good associated with the burial was a gold tremissis, found within 25 cm of undisturbed sediment near the head of the individual. The obverse of the coin shows a bust holding a cross, inscribed with *IND.IN.H.E. EGICA REX?* and marked by upper interpuncts. The reverse displays a central cross accompanied by the inscription *CORDOBAPATRICIA*, separated by a smaller cross. ^{65,66}. This well-preserved coin, though exhibiting minor edge wear and partial graffito, was minted in Córdoba between 687 and 700 CE, during the reigns of Égica and Witiza. Coins from this period were soon issued bearing the names of both Égica and his co-ruler and successor Witiza—an epigraphic change that appears by the final years of the 7th century CE. Consequently, this provides a *terminus post quem* for the burial around the 690s CE. Based on this numismatic evidence, the burial likely took place in the last decade of the 7th century CE, situating the necropolis within the final decades of the Visigothic Kingdom ⁶⁵. However, although less probable, some degree of coin circulation into the early 8th century cannot be ruled out. This possibility is consistent with the broader radiocarbon dating range and should be taken into consideration when interpreting the chronology of the burial ^{65,66}.

Graves:

- **Genetic Identifier:** I19658. **Grave Identifier:** Tumba 1. **Grave Type:** Stone slab construction, SW-NE orientation. **Skeletal information:** unknown age. Genetic female (XX karyotype). **Grave goods:** Gold tremissis. **Dating:** Direct radiocarbon dated to 655-774 cal CE (1325 ± 20 BP, PSUAMS-9702). Archaeological goods suggest that the individual dates to the second half of the 7th century CE. **Ancestry summary:** Central-North European.

Site-specific Bibliography:

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2363 2.15 Madrid – Toledo, Illescas, Boadilla

2364
2365 Contact person(s): Maite I. Garcia-Collado, Raúl Catalán

2366
2367 **Brief settlement history:** Boadilla (consisting of both a cemetery and residential areas)
2368 spans a long occupational sequence. Before the early medieval phase, there is material
2369 evidence of Bronze ^{67,68}, Iron ⁶⁷ and Roman age occupations ⁶⁹.

2370
2371 The beginning of the early medieval settlement (sampled for this study) is dated to the last
2372 quarter of the 5th century, and it was inhabited probably until the middle of the 8th century.
2373 Domestic and productive areas were located north of Boadilla stream, while funerary areas
2374 were restricted to the south of the river. Residential areas were organized in family plots,
2375 each one composed of a main domestic building with sunken floors or based on stone banks,
2376 silos and other productive structures, such as water wells, cooking ovens or a kiln. Plots were
2377 divided by fences or wide empty areas interpreted as gardens, enclosures or spaces for other
2378 agrarian tasks.

2379
2380 The late antique cemetery was made up of 181 burials, although it is likely that the original
2381 number was greater. It had a roughly rectangular outline. Burials were oriented
2382 predominantly in west-east direction, and they never cut each other. Five different types of
2383 burials were recorded: simple pits, slabs burials, wall burials, burials made with reused
2384 building materials and burials in mixed materials. The total number of individuals identified
2385 was 226. The majority were found in primary deposits and in supine position, but there were
2386 also reductions, an ossuary and several undetermined secondary deposits. Around 20% of the
2387 individuals were buried with grave goods, including clothing items (fibulae, belt plates,
2388 buckles, buttons), jewelry (earrings, necklace beads, rings), tools (knives, tweezers, an
2389 arrowhead) and in one case a pottery container. Based on the typology and chronology of
2390 grave goods, the cemetery's use spans two main phases. The first phase, from approximately
2391 490 to 530 CE, is characterized by earlier forms of personal adornment and dress accessories,
2392 including buckles with annular bases and articulated belt fittings. The second phase, dated
2393 between 530 and 630 CE, reflects a shift toward simpler funerary assemblages, particularly
2394 among female burials, where earrings and rings become more frequent while fibulae and
2395 large belt plaques disappear. This transition likely reflects broader cultural changes across
2396 the Iberian Peninsula during the 6th and early 7th centuries ⁷⁰.

2397
2398 Finally, it is important to mention several items recovered in the residential area and the
2399 necropolis, as they reflect the access of some of the inhabitants to restricted goods, such as
2400 imported African pottery, amphorae, and a rock crystal belt buckle, a very uncommon type
2401 usually related to high-status individuals (comparable to those recovered in the Frankish
2402 necropolis of Saint Diziers, France).

2403
2404 **Excavation History:** The first early medieval evidence in this area was a burial found in
2405 1994 ⁷¹ during the monitoring for the installation of a natural gas pipe for supplying the
2406 industrial park La Arboleda. During the first decade of the 21st century, a new industrial park
2407 was promoted northeast of La Arboleda. This led to the discovery of the cemetery of Boadilla,
2408 covering about 3000 m², which was excavated between 2005 and 2008 by the company J. M.
2409 Rojas Arqueología under the direction of G. Garrido and J. Perera ⁷⁰. Likewise, two new

residential areas were promoted north of Boadilla stream. The district west of road A-42 is named Alameda del Señorío. Many of these plots revealed archaeological remains of different chronologies. Excavations were carried out in several of them, but only the results from plots R-23, R-24 and R-30 (approximately 2.5 ha), excavated between 2007 and 2008⁶⁸, are public. East of road A-42 a vast area was surveyed for the development of a new residential zone in 2004. Immediately north of Boadilla stream the early medieval settlement of Cárcavas was discovered, including at least one burial⁶⁷.

Geographic Information: The archaeological site of Boadilla consists of a cemetery located north of the town of Illescas, in the province of Toledo, just 4 km south of the border with the region of Madrid. Its coordinates are latitude: 40.4081, longitude: -3.8839 and it is 585 meters above sea level. However, Boadilla belongs to a vaster settlement which extends up to 1 km around the cemetery. Boadilla is halfway between Toledo (35 km south) and Madrid (32 km north), 54 km southwest of the Roman city of Complutum (current Alcalá de Henares). The site is located in an area dominated by flatlands with a few small hills. The Boadilla stream flows in the west-east direction and it separates the cemetery from the settlement. In the area there are many other seasonal water courses. This landscape would have been suitable for cereal cultivation. In the surroundings there are still some patches of holm oak meadows, which probably were greater in the past.

Summary of sampled materials: A minimum number of 172 individuals preserved skeletal remains for archaeological analysis⁷². Macroscopic preservation was very poor and certainly biased any studies. The subadult to adult ratio of the buried population was 0.37, which is probably underestimating the proportion of subadults due to poor preservation, and the male to female ratio 0.25. Life expectancy at birth was calculated to be 35.2 years, although this data should be taken with caution due to preservation issues. In contrast, the quality of the collagen recovered was good. Carbon and nitrogen stable isotope ratios of 77 individuals revealed a very homogeneous diet predominantly based on C3 plants with small but consistent contribution of C4 crops, restricted but quite variable proportions of animal protein and no aquatic resources. Sampling for ancient DNA analysis was aimed at representing a variety of demographic categories, funerary rituals and diets. Teeth, preferentially molars, were sampled.

Graves:

- **Genetic Identifier:** I19888. **Grave Identifier:** BOA 017-1. **Grave Type:** Burial in mixed materials. Individual in primary supine position, W-E orientation. **Skeletal information:** Adult (>20 years old). Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded from the genome wide analysis due to unreliable mtDNA results, making it impossible to test mtDNA contamination. **Additional information:** $\delta^{13}\text{C} = -18.4\text{‰}$, $\delta^{15}\text{N} = 10.2\text{‰}$, $\% \text{C} = 34.0$, $\% \text{N} = 12.9$, $\text{C/N} = 3.1$, $\% \text{coll} = 3.4$

- 2456 • **Genetic Identifier:** I19889. **Grave Identifier:** BOA 018-1. **Grave Type:** Slabs

2457 burial. Secondary burial. Bones gathered in the pit ('*Osario*'). **Skeletal information:**

2458 Adult (>20 years old), female (genetic female: XX karyotype). **Grave goods:** belt

2459 plate, necklace items. **Dating:** Archaeologically dated to 490-570 CE. based on the

2460 associated grave goods — notably a very uncommon glass bead, as well as a couple

2461 of bronze fibulae and a belt buckle, and radiocarbon dating of individuals in the same

2462 stratigraphic layer. **Ancestry summary:** Hispano-Roman (No Imperial Roman

2463 Eastern Mediterranean signal detected) and Central-North European admixture.

2464 **Additional information:** $\delta^{13}\text{C} = -18.0\text{‰}$, $\delta^{15}\text{N} = 12.1\text{‰}$, %C = 43.6, %N = 16.6, C/N

2465 = 3.1, %coll = 4.9

2466
- 2467 • **Genetic Identifier:** I19891. **Grave Identifier:** BOA 047-1. **Grave Type:** Burial

2468 made with reused building materials. Individual in primary supine position, W-E

2469 orientation. **Skeletal information:** Adult (>20 years old). Genetic male (XY

2470 karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to

2471 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and

2472 radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry**

2473 **summary:** Excluded from the genome wide analysis due to low coverage.

2474 **Additional information:** $\delta^{13}\text{C} = -18.3\text{‰}$, $\delta^{15}\text{N} = 11.3\text{‰}$, %C = 40.9, %N = 15.1, C/N

2475 = 3.2, %coll = 4.7

2476
- 2477 • **Genetic Identifier:** I19892. **Grave Identifier:** BOA 049-1. **Grave Type:** Simple pit

2478 burial. Individual in primary supine position, W-E orientation. **Skeletal information:**

2479 Adult (>20 years old). Genetic male (XY karyotype). **Grave goods:** No grave goods

2480 found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave

2481 goods found in the stratigraphic layer, and radiocarbon dating of individuals in the

2482 same stratigraphic layer. **Ancestry summary:** Excluded from the genome wide

2483 analysis due to low coverage.

2484
- 2485 • **Genetic Identifier:** I19894. **Grave Identifier:** BOA 053-1. **Grave Type:** Simple pit

2486 burial. Undetermined position. **Skeletal information:** Adult (>20 years old). Genetic

2487 male (XY karyotype). **Grave goods:** No grave goods found. **Dating:**

2488 Archaeologically dated to 500-700 CE. Based on the general grave goods found in

2489 the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic

2490 layer. **Ancestry summary:** Excluded from the genome wide analysis due to low

2491 coverage.

2492
- 2493 • **Genetic Identifier:** I19895. **Grave Identifier:** BOA 068-1. **Grave Type:** Simple pit

2494 burial. Individual in primary supine position, W-E orientation. **Skeletal information:**

2495 Adult (>20 years old), female (genetic female: XX karyotype). **Grave goods:** No

2496 grave goods were recovered, but evidence of ancient plundering suggests that the

2497 tomb may originally have contained significant items. **Dating:** Archaeologically

2498 dated to 500-700 CE. Based on the general grave goods found in the stratigraphic

2499 layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry**

2500 **summary:** Central-North European. **Additional information:** $\delta^{13}\text{C} = -18.8\text{‰}$, $\delta^{15}\text{N}$

2501 = 10.2‰, %C = 15.0, %N = 5.7, C/N = 3.1, %coll = 0.6. Raided tomb.

2502

- 2503 • **Genetic Identifier:** I19896. **Grave Identifier:** BOA 086-1. **Grave Type:** Simple pit
 2504 burial. Individual in primary supine position, W-E orientation. **Skeletal information:**
 2505 Adult (>20 years old). Genetic male (XY karyotype). **Grave goods:** No grave goods
 2506 found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave
 2507 goods found in the stratigraphic layer, and radiocarbon dating of individuals in the
 2508 same stratigraphic layer. **Ancestry summary:** Hispano-Roman and Central-North
 2509 European admixture. **Additional information:** $\delta^{13}\text{C} = -20.5\text{‰}$, $\delta^{15}\text{N} = 8.7\text{‰}$, $\%C =$
 2510 43.7 , $\%N = 15.8$, $C/N = 3.2$, $\%coll = 5.8$
 2511
- 2512 • **Genetic Identifier:** I19897. **Grave Identifier:** BOA 094-1. **Grave Type:** Simple pit
 2513 burial. Individual in primary supine position, W-E orientation. **Skeletal information:**
 2514 Adult (>20 years old), female (genetic female: XX karyotype). **Grave goods:** ring.
 2515 **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods
 2516 found in the stratigraphic layer, and radiocarbon dating of individuals in the same
 2517 stratigraphic layer. **Ancestry summary:** Hispano-Roman.
 2518
- 2519 • **Genetic Identifier:** I19898. **Grave Identifier:** BOA 105-4. **Grave Type:** Simple pit
 2520 burial. Secondary burial, bones gathered. **Skeletal information:** Adult (>20 years
 2521 old). Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:**
 2522 Direct radiocarbon dated to 605-662 cal CE (1400 ± 20 BP, PSUAMS-10247).
 2523 **Ancestry summary:** Hispano-Roman. **Additional information:** $\delta^{13}\text{C} = -18.6\text{‰}$,
 2524 $\delta^{15}\text{N} = 10.2\text{‰}$, $\%C = 43.5$, $\%N = 14.8$, $C/N = 3.4$, $\%coll = 5.6$
 2525
- 2526 • **Genetic Identifier:** I19899. **Grave Identifier:** BOA 112-1. **Grave Type:** Simple pit
 2527 burial. Individual in primary supine position, W-E orientation. **Skeletal information:**
 2528 Adult (>20 years old), female (genetic female: XX karyotype). **Grave goods:** No
 2529 grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the
 2530 general grave goods found in the stratigraphic layer, and radiocarbon dating of
 2531 individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman (no
 2532 Imperial Roman Eastern Mediterranean signal detected). **Additional information:**
 2533 $\delta^{13}\text{C} = -18.7\text{‰}$, $\delta^{15}\text{N} = 10.8\text{‰}$, $\%C = 39.8$, $\%N = 15.6$, $C/N = 3.0$, $\%coll = 8.2$
 2534
- 2535 • **Genetic Identifier:** I19900. **Grave Identifier:** BOA 131-1. **Grave Type:** Simple pit
 2536 burial. Individual in primary supine position, W-E orientation. **Skeletal information:**
 2537 Adult (>20 years old), female (genetic female: XX karyotype). **Grave goods:**
 2538 earrings. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave
 2539 goods found in the stratigraphic layer, and radiocarbon dating of individuals in the
 2540 same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
 2541
- 2542 • **Genetic Identifier:** I19903. **Grave Identifier:** BOA 160-1. **Grave Type:** Slabs
 2543 burial. Individual in primary supine position, W-E orientation. **Skeletal information:**
 2544 Adult (between 21-36 years old), male (genetic male: XY karyotype). **Grave goods:**
 2545 No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the
 2546 general grave goods found in the stratigraphic layer, and radiocarbon dating of
 2547 individuals in the same stratigraphic layer. **Ancestry summary:** Excluded of the
 2548 genome wide analysis due to possible contamination. **Additional information:** $\delta^{13}\text{C}$
 2549 $= -18.4\text{‰}$, $\delta^{15}\text{N} = 8.9\text{‰}$, $\%C = 39.3$, $\%N = 13.8$, $C/N = 3.3$, $\%coll = 7.6$.

- **Genetic Identifier:** I19904. **Grave Identifier:** BOA 166A-1. **Grave Type:** Simple pit burial. Individual in primary supine position, W-E orientation. **Skeletal information:** Adult (>20 years old), probably male. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Central-North European and local Iron Age Iberian admixture. **Additional information:** $\delta^{13}\text{C} = -18.3\text{‰}$, $\delta^{15}\text{N} = 10.3\text{‰}$, $\%C = 39.7$, $\%N = 15.0$, $C/N = 3.1$, $\%coll = 7.9$
- **Genetic Identifier:** I19906. **Grave Identifier:** BOA 182-1. **Grave Type:** Simple pit burial. Individual in primary supine position, W-E orientation. **Skeletal information:** Adult (>20 years old). Genetic male (XY karyotype). **Grave goods:** necklace items. **Dating:** Archaeologically dated to 500-700 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded of the genome wide analysis due to low coverage. **Additional information:** $\delta^{13}\text{C} = -17.2\text{‰}$, $\delta^{15}\text{N} = 11.1\text{‰}$, $\%C = 38.6$, $\%N = 13.6$, $C/N = 3.3$, $\%coll = 2.1$

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2.16 Málaga, Acinipo

Contact person(s): Juan Manuel Jiménez Arenas, José Manuel Castaño.

Brief settlement history: The archaeological site of Acinipo, located in Ronda, Málaga, has been recognized by scholars since at least the 17th century. It was among the earliest Roman cities in the province of Baetica to be identified by humanist scholars under its original name, thanks to historical sources and its well-preserved architectural remains. The presence of a remarkably intact Roman theater attracted academic interest early on, but systematic archaeological investigations did not commence until the latter half of the 20th century.

Initial research efforts focused primarily on the theater and its cultural and chronological context ⁷³. Subsequent excavations expanded to other key civic structures, including the forum and the baths, further refining our understanding of Acinipo's development as a Roman city ^{74,75}.

Excavations soon revealed that Acinipo's occupation extended well beyond the Roman period. Investigations into earlier layers, first suggested by surface finds, led to the establishment of a research project aimed at uncovering the site's pre-Roman phases ⁷⁶. Between 1987 and 1990, three excavation campaigns were conducted on the eastern spur of the Ronda la Vieja plateau, establishing a stratigraphic sequence that spans from the Late Copper Age through the early Roman period. These findings confirmed the site's continuous occupation from approximately 3200 - 2200 BCE through to Late Antiquity (5th–7th centuries CE), with particularly significant phases during the Late Bronze Age and the Iberian period (key precursors to Acinipo's Roman urbanization) ⁷⁷. Despite extensive research within the plateau's topographic limits, investigations into the broader settlement area remained limited. Indirect references had long suggested the existence of Roman-era necropolises beyond the urban core (one to the north and another to the south) ⁷⁸. However, systematic archaeological work on these burial sites was not undertaken until the early 21st century, when accidental discoveries confirmed their presence.

Excavation history: In 2004, agricultural activity in the southern necropolis of Acinipo led to the discovery of a cluster of graves. Subsequent excavations documented 48 burial features within a 500-square-meter area ^{78,79}. These comprised both cremation and inhumation burials, with varying degrees of preservation due to ongoing agricultural activity and natural geomorphological processes. The clay-rich geological substrate contributed to the displacement of some burial contexts, further complicating stratigraphic interpretation.

Geographical information: The southern necropolis of Acinipo is situated on the southeastern slope of the Mesa de Ronda la Vieja (latitude: 36.8322, longitude: -5.2364), a limestone plateau that reaches an elevation of approximately 950 meters above sea level. This elevated position dominates the surrounding landscape of the Surco Intrabético depression, providing both strategic and environmental advantages. The necropolis itself is located slightly lower, at around 900 meters above sea level, in an area characterized by sandstones and clays from the La Mina formation, overlaid by the limestones of the Las Mesas formation, which form the bedrock of the Acinipo settlement. In antiquity, Acinipo was the principal urban center of the region, exerting administrative and economic influence

over surrounding communities. Its location on an elevated plateau allowed for clear territorial control and integration into broader trade and communication networks. The site's proximity to key overland routes facilitated connections with the Baetican hinterland and the Mediterranean coast, reinforcing its strategic role in regional settlement patterns.

Summary of sampled material: Excavations identified three primary burial types, reflecting a diversity of funerary practices involving both cremation and inhumation^{78,79}. Cremated remains were interred in painted ceramic urns of clear Iberian tradition, as well as in locally sourced limestone cinerary urns. The two documented inhumations (T-13 and T-37, from which the analyzed sample originated) consisted of simple earth-cut graves, covered with flat tegulae tiles. The associated grave goods (bronze tweezers and a mirror) suggest that these individuals were female. The artifacts were likely placed alongside the deceased within wooden coffins or biers, of which only iron nails remain as evidence. The graves were oriented east-west, with the head positioned at the western end. In addition to these primary burials, several features were identified as likely cremation pyres (*bustum* or *ustrinum*), characterized by concentrated ash deposits, charcoal, fragmented bone, and occasional metal artifacts such as nails. Some of these features were capped with pitched tegulae, indicating formalized funerary treatment. Based on ceramic typologies and associated material culture, the southern sector of the Acinipo necropolis has been securely dated to the 1st–2nd centuries CE. The location of these graves relative to the southern gate of the city and the absence of later intrusions further support this chronology⁷⁹.

Graves:

- **Genetic Identifier:** I23156. **Grave Identifier:** AC-04-N5; Tumba 13 (T-13); 039. **Grave Type:** Grave with flat tegulae cover and possible burial in a coffin or wooden platforms (presence of nails). **Orientation:** E-W. **Skeletal information:** Undetermined age. Genetic female (XX karyotype). **Grave goods:** Tongs and mirror. **Dating:** Direct radiocarbon dated to 32-206 cal CE (1920±20, UGAMS-74277). **Ancestry summary:** Hispano-Roman.

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2.17 Málaga, Estepona, Necrópolis Arroyo Vaquero

Contact person(s): Ildefonso Navarro Luengo, José Suárez Padilla, Juan Manuel Jiménez Arenas

Brief Settlement History: The Arroyo Vaquero site (Estepona, Málaga, Spain) is believed to be a Late Roman villa, a classification first proposed during early excavations. However, comprehensive studies of the functionality of the site remain limited ⁸⁰. While the site had been known for some time, archaeological interventions only began in the late 20th century during the construction of a housing development. The initial excavation focused on two distinct areas: one containing architectural structures and another comprising funerary features. The architectural remains include walls, some enclosing a room paved with *opus signinum*. In another sector, the remains of a deteriorated mosaic were uncovered, beneath which a burial was documented.

The funerary area revealed a total of 33 tombs, of which 24 were excavated. The burial techniques, associated rituals, and the limited grave goods suggested that this was a Hispano-Visigothic necropolis. Additionally, knapped stone tools and handmade ceramics were documented, pointing to earlier occupation during the Late Bronze Age.

In 2001, an archaeological intervention was conducted in the northern sector of the site due to the expansion of the N-340 highway. This work uncovered a series of masonry structures and a pool, which was filled in the late 6th or early 7th century CE ⁸¹. The dating was supported by material finds, including several fragments of TSA D amphorae (Hayes Form 99), an Atlante X C4-type oil lamp (Bonifay Type 56, n.22), and numerous slow-wheel-turned cooking vessels characteristic of this period.

A subsequent excavation in 2006 revealed an additional sector of the Early Medieval necropolis, yielding 69 more graves ⁸¹. Immediately west of the necropolis, several large pits were excavated, filled with abundant coarse pottery fragments, both wheel-turned and slow-wheel-turned, dating to the late 6th and early 7th centuries CE. A new construction project prompted further archaeological work, which included cleaning and reassessing previously excavated areas ⁸².

Excavation History: The Arroyo Vaquero necropolis consists of 95 documented graves from multiple excavation campaigns. The majority (84) are simple earth-cut graves, while others exhibit more complex construction techniques, including one lined with bricks, eight with rubble linings, and two defined by vertical stone slabs. The 2006 excavation significantly expanded knowledge of the site, uncovering 69 new burials. Although the spatial organization remains unclear, a concentration of more elaborate graves in the northern sector suggests a degree of internal structuring. This pattern, common in Late Antique cemeteries ⁸³, has been tentatively interpreted as reflecting family groupings or social stratification.

Anthropological analysis supports the hypothesis that these burials represent "family pantheons" (constructions for communal burying of a family) as no discernible patterns based

on sex or age were identified. Instead, burial spaces were shared by both adults and subadults, irrespective of gender.

The necropolis is broadly dated to the 6th and 7th centuries CE, situating it within the Hispano-Visigothic cultural sphere. This chronology is primarily based on the typology of the graves and associated artifacts, which align with other Late Antique necropolises and settlements in the western Mediterranean. The review of all available data suggests that the necropolis developed around a Christian place of worship, possibly repurposing a sector of the *pars urbana* of a Late Roman villa. Its eventual abandonment appears to have coincided with that of the associated settlement, likely extending into the 9th century based on more recent excavations.

Geographic Information: The Arroyo Vaquero necropolis is situated in the municipality of Estepona, between the Arroyo Vaquero and Arroyo Enmedio streams. It is bordered to the north by the A-7 highway, to the south by a private road, to the west by the access road to the Arroyo Vaquero urbanization, and to the east by adjacent properties (latitude: 36.4222, longitude: -5.2163). The site is accessed via PK 155 of the A-7, which connects to the urbanization's access road.

The geological substrate consists of Pliocene deposits and Jurassic limestone formations. The soil is a semi-compact beige-greenish sandy sediment, overlaid by an alluvial layer of reddish-yellow sand mixed with gravel and small stones. The Roman occupation layer is situated directly above this geological horizon.

Summary of Sampled Materials: The burial goods include two small ceramic jugs, likely associated with post-mortem baptismal rituals. One, found in Grave G15, is made of yellowish clay with a single handle (now missing), a slightly convex base, and a pear-shaped body. It has been classified as a variant of Izquierdo's Form 16. The second, found in Grave H, is made of whitish clay, with a single handle extending from the rim to the body's midpoint, a slightly convex base, and a pear-shaped form. Both vessels were placed at the pelvis of the deceased ⁸¹. Personal adornments recovered from the necropolis include 14 simple bronze earrings from various contexts (E12, I12, G10, I14, G33, I7, F16), a double bronze bracelet from G10, three small bronze pins from F8, a bronze bracelet from I7, and three bronze rings from N23, G8, and G10. Additionally, an iron ring was found in I12, and a gold ring in G10. These artifacts provide further insights into the burial customs and social identity of the individuals interred within the necropolis ⁸¹.

Graves:

- **Genetic Identifier:** I23157. **Grave Identifier:** ARVI-06 No. 143; UE 9-3; Sondeo F; Tumba 19. **Grave Type:** Simple pit dug into the geological substrate and partially delineated by masonry. Remains of inhumations and an ossuary located at the feet. MNI: 4. Orientation W-E. **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same

site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Intact tomb.

- **Genetic Identifier:** I23158. **Grave Identifier:** ARVI-06 No. 272; UE 17; Sondeo E; Tumba 12-2. **Grave Type:** Simple pit dug into the geological substrate. Remains of inhumations and an ossuary located at the feet. MNI: 4. Orientation W-E. **Skeletal information:** Unknown age, male (genetic male: XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** Possibly excavated previously.
- **Genetic Identifier:** I23159. **Grave Identifier:** ARVI-06 No. 430; UE 6; Sondeo G; Tumba 29. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs, filled with construction material and small stones. Remains of inhumations and an ossuary. MNI: 3. Orientation W-E. **Skeletal information:** Adult, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from the genome wide analysis due to contamination. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23162. **Grave Identifier:** ARVI-06 No. 456; UE 15; Sondeo G; Tumba 38. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs, although some are missing. Remains of inhumations and an ossuary at the feet. MNI: 3. Orientation W-E. **Skeletal information:** Subadult. Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Direct radiocarbon dated to 600-652 cal CE (1430±20 BP, PSUAMS-10251). **Ancestry summary:** Hispano-Roman (no North African signal detected). **Additional information:** Possible looted tomb.
- **Genetic Identifier:** I23163. **Grave Identifier:** ARVI-06 No. 457; UE 15; Sondeo G; Tumba 35. **Grave Type:** Simple pit dug into the rock, covered with stone slabs, although some are missing. Inhumation and an ossuary at the feet. NMI: 3. Orientation W-E. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano Roman (no North African signal detected) and Central-North European admixture. **Additional information:** Bony callus on the right fibula. Possible looted tomb.
- **Genetic Identifier:** I23165. **Grave Identifier:** ARVI-06 No. 475; UE 18; Sondeo G; Tumba 41. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs mixed with construction materials: bricks and decorated tiles. Remains of an inhumation. NMI: 1. Orientation W-E. **Skeletal information:** Young Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods

of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Intact tomb.

- **Genetic Identifier:** I23166. **Grave Identifier:** ARVI-06 No. 482; UE 23; Sondeo G; Tumba 46. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs mixed with construction materials: bricks and decorated tiles. Remains of multiple inhumations. MNI: 3. Orientation W-E. **Skeletal information:** Advanced adult, female (genetic female XX). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Central Mediterranean and North African (Punic-related) admixture. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23167. **Grave Identifier:** ARVI-06 No. 492; UE 6; Sondeo I; Tumba 74. **Grave Type:** Simple pit dug into the geological substrate, covered with large stone slabs. Remains of an inhumation. MNI: 1. Orientation W-E. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Imperial Roman Eastern Mediterranean and North African (Punic-related) admixture. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23168. **Grave Identifier:** ARVI-06 No. 517; UE 9; Sondeo G; Tumba 32-3. **Grave Type:** Simple pit dug into the geological substrate, covered with large stone slabs and smaller stones. Remains of multiple inhumations. Orientation W-E. **Skeletal information:** Subadult. Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23169. **Grave Identifier:** ARVI-06 No. 527; UE 6; Sondeo D; Tumba 2-1. **Grave Type:** Simple pit dug in the geological substrate. Remains of inhumation and an ossuary located at the feet. MNI: 2. Orientation W-E. **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23170. **Grave Identifier:** ARVI-06 No. 532; UE 25; Sondeo G; Tumba ?. **Grave Type:** Simple pit dug into the geological substrate, without the cover preserved. Remains of inhumation. MNI: 1. Orientation W-E. **Skeletal information:** Advanced adult. Genetic male (XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** Possible excavated previously.

- **Genetic Identifier:** I23171. **Grave Identifier:** ARVI-06 No. 542; UE 6; Sondeo G; Tumba 29-2. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs mixed with construction material and small stones. Inhumations remains and an ossuary. NMI: 3. Orientation W-E. **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Imperial Roman Eastern Mediterranean and North African (Punic-related) admixture. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23173. **Grave Identifier:** ARVI-06 No. 556; UE 23; Sondeo G; Tumba 26. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs mixed with construction materials: bricks and decorated tiles. Remains of inhumations. NMI: 3. Orientation W-E. **Skeletal information:** Unknown age, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23174. **Grave Identifier:** ARVI-06 No. 557; UE 23; Sondeo G; Tumba 46-2. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs mixed with construction materials: bricks and decorated tiles. Remains of inhumations. MNI: 3. Orientation W-E. **Skeletal information:** Unknown age, male (genetic male: XY karyotype). **Grave goods:** No grave goods. **Dating:** Direct radiocarbon dated to 432-561 cal CE (1565±20 BP, PSUAMS-10325). **Ancestry summary:** Hispano-Roman. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23175. **Grave Identifier:** ARVI-06 No. 572; UE 9; Sondeo G; Tumba 32. **Grave Type:** Simple pit dug into the rock, covered with large slabs and smaller stones. Remains of inhumations and an ossuary located at the feet. MNI: 3. Orientation W-E. **Skeletal information:** Unknown age, male (genetic male: XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 416-700 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Intact tomb.
- **Genetic Identifier:** I23179. **Grave Identifier:** ARVI-06 No. 604; UE 8; Sondeo G; Tumba 31. **Grave Type:** Simple pit dug into the geological substrate, covered with stone slabs mixed with construction materials. Remains of inhumations. MNI: 3. Orientation W-E. **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** Bronze ring and a fragment of glassware in the ossuary. **Dating:** Archaeologically dated to 416-700 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman **Additional information:** Intact tomb.

Site-specific Bibliography:

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2.18 Málaga, Calle Rosarito

Contact person(s): Juan Manuel Jiménez Arenas & Sonia López Chamizo

Brief settlement history: The city of Malaca has a history that spans over two millennia. It was originally founded by Phoenician traders in the 8th century BCE, who established a commercial hub known as MLK, strategically positioned to control maritime trade routes between the eastern Mediterranean and the Atlantic. Malaca transitioned into Carthaginian control during the 6th century BCE, integrating into the broader Punic trading system. The city's prominence continued after the Second Punic War (218–201 BCE), when it fell under Roman rule as part of the province of Hispania Ulterior. By the 1st century BCE, Strabo (Geography III, 4, 2) described Malaca as having a Phoenician layout, highlighting its enduring pre-Roman urban structure despite the city's increasing Romanization. This period saw the establishment of significant public and private buildings, roads, and aqueducts, as well as the expansion of necropolises outside the city limits, following Roman funerary customs. The Western Necropolis of Malaca, in particular, emerged as a key burial ground, maintaining continuity in use from the 6th century BCE through the 5th century CE. The city retained its importance into Late Antiquity, experiencing transformations associated with the decline of Roman authority and the Visigothic period.

Excavation History: The excavation at Calle Rosarito in the municipality of Málaga was conducted in 2011 by Arqueosur Estudio de Arqueología S.L. The intervention was part of urban development works that uncovered remains associated with the Western Necropolis ⁸⁴.

Geographic Information: The necropolis is located on the western bank of the Guadalmedina River (latitude: 36.4222, longitude: -5.2163), with this body of water serving as a liminal space between the realm of the living and the dead ⁸⁴. The burial is located in the municipality of Málaga.

Summary of sampled materials: Tomb No. 6, discovered on Rosarito Street, is believed to belong to Roman imperial phase of one of the necropolises in the city of Malaga ⁸⁴. The Western Necropolis of Malaca is a space with a funerary tradition that dates back to the 6th century BCE and persists until the 5th century CE. Over almost 1000 years of sacred use, it incorporated different burial rites and afterlife beliefs, with its endurance not occurring by chance. The burial exhibits distinctive architectural features that allow us to explore both the internal structural aspects and monument-like signaling elements ⁸⁴.

Graves:

- **Genetic Identifier:** I26172. **Grave Identifier:** Calle Rosarito. **Grave Type:** Evenly spaced nails found within the pit suggest wooden coffin burial. Tegulae added. E-W orientation, **Skeletal information:** Adult, >60 years old, Female (genetic female: XX karyotype). **Grave goods:** Four oil lamps (A Dressel-28 type lamp, with a smooth surface and a molded margin separating the disc, was documented near the face. Another Dressel 28 lamp with vine leaves and grape clusters decoration on the margin was found. A completely fragmented Dressel 28 lamp was documented near the left hip). A Levantine jug (In the lower part of the tomb, a

ceramic jug, possibly of Syrian-Palestinian, Cypriot, or Anatolian coast production). Four glass pieces (Each hand held a glass vessel: an Isings 102 type bottle in the left hand and an Isings 68-type bottle form in the right. Next to them, an Isings 82 unguentarium and another Isings 102 bottle were placed). A handled ceramic plaque. A shell (*Acanthocardia aculeata*). Ritualistic metal nails (near the head, heart, and feet, possibly apotropaic). **Dating:** Direct radiocarbon dated to 126-232 cal CE (1865±20 BP, PSUAMS-9811). **Ancestry summary:** Central Mediterranean. **Additional information:** The woman was interred inside a wooden coffin, indicated by the evenly spaced nails found within the pit. Tegulae with a gabled roof were placed on the coffin, covered with soil, and later, a mound made of rubble masonry was added. The careful funeral ritual bestowed upon this individual by her community likely involved body preparation, perhaps through purification and dressing in a highly significant attire. While fabric remnants haven't been preserved, numerous glass elements have been documented, ranging from the neck to the feet, serving as decorative "strass" enriching the attire. Similarly, the treatment of the body included hairstyling, with a bun held by 3 *acus crinales*. Within the coffin, various items were placed to accompany the deceased on her journey to the afterlife. These pieces were arranged in specific locations, suggesting adherence to particular ritual procedures. Outside the coffin, two stones, faunal bone remains, a mortar, and two more oil lamps were positioned. The dating of the burial is supported by the chronologies of ceramic pieces, placing the ensemble between the late 2nd century and early 3rd century CE. Osteological study of the skeleton reveals that the individual was an elderly woman above 60 years old. Throughout her life, she experienced various traumatic events leaving traces on her bones. Notable are signs of malnutrition or poor nutrient absorption, congenital-idiopathic diseases, and potential infectious disease from zoonosis⁸⁴.

Site-specific Bibliography:

López-Chamizo, S., (2023): The tomb of Rosarito: A biographical approach. *Conference paper in International Congress on Roman Bioarchaeology (ICORB) October 2023. Session 3: Children, Childhood and Caregiving.*

López-Chamizo, S., (2025). Caring for the dead, understanding the living: bioarchaeology of care in a 2nd–3rd century CE burial from Roman Malaca. *Journal of Archaeological Science: Reports* **66** (2025): 105254.

2.19 Málaga, Pizarra, Castillejos de Quintana

Contact person(s): Francisca Rengel Castro, Enrique Viguera, Virgilio Martínez Enamorado & Juan Manuel Jiménez Arenas

Brief settlement history: The Castillejos de Quintana archaeological site is a fortified hilltop settlement featuring two walled enclosures constructed in the 9th century. Occupation at the site spans from the 7th to the 10th century, with its earliest phase dating to the Visigothic period, as indicated by ceramic material recovered in situ from one of the graves (T5)⁸⁵. The site is referenced in Arabic sources as Santa María de Bobastro, aligning with a broader political strategy which involved several fortifications in the region (like Santa María, Santa Eulalia, and San Pedro, all named after Christian saints). Castillejos de Quintana played a pivotal role during the rebellion (*fitna*) of ‘Umar ibn Ḥaṣṣūn and his sons against the Umayyad emirate (880–927), forming part of the insurgent stronghold centered at Bobastro (Las Mesas de Villaverde, Ardales, Málaga). Its eventual decline and abandonment appear to coincide with the Umayyad campaign that brought the region back under Cordoban control in 921.

Excavation history: Archaeological investigations began in 2020, initially focusing on the clearance of prehistoric tombs in the Gibralmora mountains (located a few kilometers from the early medieval necropolis) alongside a preliminary survey of visible structures at Castillejos de Quintana. These included elements of the Visigothic-Andalusian hilltop settlement and its associated necropolis. Excavations revealed four rock-cut tombs, all oriented eastward, which had suffered repeated looting⁸⁵. Further work in 2022 expanded the known necropolis, uncovering 13 additional tombs of varying sizes, as well as structural remains, including walls, domestic buildings, and what may have been a mosque⁸⁵.

Geographic information: Castillejos de Quintana is located in the Gibralmora mountains within the municipality of Pizarra, Málaga province (latitude: 36.7649, longitude: -4.7089). Situated at an elevation of over 400 meters above the Guadalhorce River, the site occupies a strategic position in Algarbía, the historical region of western Málaga known during the Andalusian period as *Algarb al-Andalus*. The entire settlement, including its defensive and domestic architecture, is carved directly into the Miocene calcarenite and conglomerate bedrock, creating a distinctive landscape reminiscent of Bobastro, the principal base of ‘Umar ibn Ḥaṣṣūn’s rebellion against the Umayyads.

Summary of sampled materials: The material record from Castillejos de Quintana includes significant ceramic assemblages corresponding to two primary occupational phases: Visigothic (7th - 8th century) and Andalusian (8th - 10th century)⁸⁵. The necropolis is dominated by Visigothic ceramics, pointing to an early Christian occupation preceding the Islamic conquest (pre-711). Andalusian ceramics are also present, primarily dating to the early Islamic period, with no evidence of later *caliphal* material (post-929), reinforcing the hypothesis that the site was abandoned following the Umayyad reconquest in 921. Additional finds from the tombs include Visigothic-period belt buckles and various other metal artifacts. The graves of the older sections of the necropolis, indicated by the presence of Visigothic-type goods (which are previous to the arrival of Andalusian style grave goods), were sampled for this study⁸⁵.

Graves:

- **Genetic Identifier:** I29760. **Grave Identifier:** Grave I, Individual 1. **Grave Type:** Grave excavated in the rock layer. **Skeletal information:** Adult (between 40 and 49 years old), female (genetic female: XX karyotype). **Grave goods:** Funeral jar. **Dating:** Archaeologically dated to 650-800 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** Caries and osteoarthritis. Raided tomb.
- **Genetic Identifier:** I29761. **Grave Identifier:** Tumba F, Individuo 1. **Grave Type:** Grave excavated in the rock layer. **Skeletal information:** Adult (between 40 and 52 years old), male (genetic male: XY karyotype). **Grave goods:** Jar parts, amorphous ceramic pieces, roof tiles. **Dating:** Direct radiocarbon dated to 677-873 cal CE (1250±20, UGAMS-74283). **Ancestry summary:** Hispano-Roman and Central-North European admixture. **Additional information:** Enthesopathy. Raided tomb.
- **Genetic Identifier:** I29762. **Grave Identifier:** Tumba H, Individuo 1. **Grave Type:** Grave excavated in the rock layer. **Skeletal information:** Adult (between 35 and 51 years old), female (genetic female: XX karyotype). **Grave goods:** Medieval metal ring. Ceramic and tile fragments **Dating:** Archaeologically dated to 650-800 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Caries. Raided tomb.
- **Genetic Identifier:** I29764. **Grave Identifier:** Grave I, Individual 2. **Grave Type:** Grave excavated in the rock layer. **Skeletal information:** Adult (between 20 and 22 years old), between 1.53 and 1.60 meters tall, female (genetic female: XX karyotype). **Grave goods:** Ceramic fragments **Dating:** Archaeologically dated to 650-800 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Orbital sieve. Raided tomb.
- **Genetic Identifier:** I29896. **Grave Identifier:** Grave G, M3. **Grave Type:** Grave excavated in the rock layer **Skeletal information:** Adult (between 20 to 41 years old), male (genetic male: XY karyotype). **Grave goods:** Fragments of ceramics and tiles. **Dating:** Archaeologically dated to 650-800 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Raided tomb.

Site-specific Bibliography:

Martínez-Enamorado, V. y Rengel-Castro F. (2024). En el corazón de la Algarbía. Un estudio arqueológico de la sierra de Gibrilmora (Pizarra, Málaga): Necrópolis prehistórica de Luna y poblado altomedieval de Castillejos de Quintana/Santa María de Bobastro. *Cádiz: Ayuntamiento de Pizarra/Edit. La Serranía*. 540 pp. ISBN: 978-84-127829-4-3.

2.20 Mérida, Corralón de los Blanes Necropolis

Contact person(s): Macarena Bustamante Álvarez, Celia Chaves, Javier Heras Mora, Juan Manuel Jiménez Arenas

Brief settlement history: The city of Mérida stands on the ruins of *Augusta Emerita*, the westernmost provincial capital of the Roman Empire. Founded around 25 BCE by Emperor Augustus, it was designated the administrative center of the newly created province of Lusitania. Over the centuries, Augusta Emerita grew into a major political, economic, and cultural hub, boasting monumental public spaces, including two large forums, temples, bath complexes, extensive aqueducts, and impressive entertainment structures such as the Roman Theater, Amphitheater, and Circus. The city was briefly governed by Otho before his rise to the imperial throne in 69 CE. Subsequent periods of urban renewal, particularly under the Flavian dynasty and later Hispanic emperors, reinforced its importance. Unlike many cities that experienced decline in the 3rd century, Augusta Emerita thrived, benefitting from administrative restructuring under Diocletian. It became the seat of the *Vicarius* of Hispania, overseeing governance across the Iberian Peninsula and parts of North Africa. This role fostered ongoing social, economic, and religious dynamism, cementing Augusta Emerita's cosmopolitan character until the empire's collapse. The city's wealth and strategic significance likely made it a key target during the Migration Period of the 5th century, as competing powers vied for control over Hispania. Mérida subsequently became a center of power for the Suevi, a Germanic group that played a major role in the region's post-Roman transformations ⁸⁶.

Excavation history: In 2005, preventive excavations began at the site known as *Corralón de los Blanes*. The work was carried out in advance of a planned urban development project for residential, commercial, and underground parking facilities over an area of half a hectare. By 2007, only about 60% of the site had been excavated, and the project remains unfinished.

Despite this, the finds have been exceptional ⁸⁷. Excavations have reached depths exceeding 12 meters, revealing an archaeological sequence spanning 900 years, from the earliest occupation levels at the foundation of *Augusta Emerita* to the 9th century, when parts of the site were repurposed for silo storage during the Islamic Emirate period.

The earliest Roman features include monumental mausoleums, some preserved up to five meters in height. The necropolis continued to serve as a burial ground for several centuries, with cremation and inhumation practices documented until at least the 3rd century. By the 4th century, funerary use ceased, and the area transitioned into an extramural zone, subsequently used as a dumping ground ⁸⁸.

Throughout the site's history, episodes of deep landfilling and waste accumulation reshaped the topography, modifying slopes and leveling uneven terrain. This process was particularly pronounced in the late 4th century, when extensive urban refuse deposits were cleared to make way for a complex of industrial and storage buildings, potentially including a religious structure linked to Eastern or mystery cults ⁸⁸. This complex was abandoned and violently destroyed in the early 5th century. The dramatic nature of its destruction is underscored by the presence of human remains trapped beneath the collapsed structures, left unburied.

Stratigraphic evidence, material culture, and coin finds suggest this event coincided with an assault on the city, resulting in the looting and devastation of its peripheral districts.

Following this destruction, the area saw renewed use as a burial ground along a road leading from one of the city gates. These later graves, primarily inhumations, generally share continuity in ritual and form with earlier burials but include high-status grave goods, such as gold and silver jewelry and metal fittings from funerary attire. The individuals interred here are of particular historical interest, as they are associated with the Great Migration Period ³³.

Geographic information: The site is located at 41 Almendralejo Street in Mérida, the present-day capital of Extremadura (latitude: 38.9202, longitude: -6.3447). Today the city is bisected by the Guadiana River, one of the principal waterways of the Iberian Peninsula. The Roman city occupied a vast area, extending across multiple promontories on the river's left bank. Its extension spread beyond the urban core, encompassing districts on the opposite shore and surrounding plains. To the north, the settlement also reached the Albarregas stream, a tributary of the Guadiana. Roman-era cemeteries, (like El Corralón de los Blanes), were typically situated along major roads leading out of the city.

Summary of sampled materials: The sampled individuals from the El Corralón de los Blanes site represent a diverse mortuary landscape spanning the 3rd to 6th centuries CE (i.e., Roman to Suebian periods), featuring a variety of burial types and associated grave goods ^{87,88} (Figure AO.10). It is noteworthy that the individuals buried here who display Germanic ancestry date from the first generations of the newcomers' settlement in Iberia: the latest radiocarbon-dated individual's interval runs from 408 to 537 cal CE, and a number of individuals are radiocarbon dated substantially earlier. Special attention is given to the so-called "Suebian Princesses" ^{87,89}, young female burials (of which 3 preserved enough DNA to be studied in-depth), distinguished by their high-status grave goods (Figure AO.10).

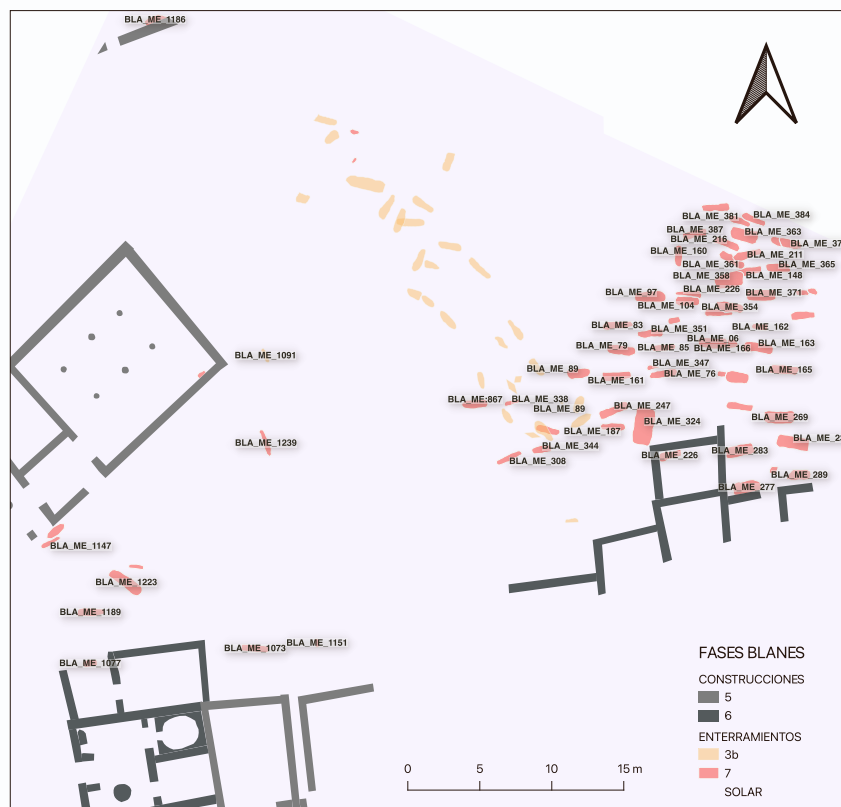


Figure AO.10. Map of El Corralón de los Blanes phase 7 necropolis (Mérida) (Star Methods “Ancient Individuals” Section).

Graves:

- Genetic Identifier:** I23272. **Grave Identifier:** BLA-ME-76; 8101. **Grave Type:** Inhumation in wooden coffin with perinatal between legs. W-E orientation. **Skeletal information:** Adult, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated 400-500 CE. Based on, radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Central-North European. **Additional information:** Burial of a woman and a perinatal individual in fetal position between the legs. No grave goods found, including costume elements. Supine decubitus, with the arms extended on the hips and a perinatal-fetal- individual between the legs (8101_077), in poor state of preservation, although the skull can be seen with the face down. Lower jaw of the adult: second right premolar and first left premolar missing (closed jaw). It lacks wisdom teeth. Upper jaw with complete dentition, wisdom teeth not developed. It presents dental calculus.
- Genetic Identifier:** I23273. **Grave Identifier:** BLA-ME-79; 8101. **Grave Type:** Burial in wooden container, unknown orientation. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** Iron plaque at the head. **Dating:** Direct radiocarbon dated to 364-535 cal CE (1645±20 BP, PSUAMS-8844). **Ancestry**

summary: Central-North European. **Additional information:** Brother of Individual I22103 in the Vilanova d'Alcolea site. Right arm over the chest. Left arm over the hip. Right leg over left leg. Retains the kneecaps. Metal nails form a possible container found by the left clavicle, left arm and next to left tibia, also next to right femur. Complete dentition, wisdom teeth included. Very worn teeth.

- **Genetic Identifier:** I23276. **Grave Identifier:** BLA-ME-85; 8101. **Grave Type:** Burial in wooden coffin, W-E orientation. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** Iron plaque at the head. **Dating:** Archaeologically dated to 400-500 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** Central-North European, Imperial Roman and North African (Punic-related) admixture. **Additional information:** Right humerus on chest. Right hand under femur. Left hand on left femur. The patella is preserved. Lower jaw dislocated. Molar crowns very worn. Wisdom tooth present. Right tibia displaced to the left. Coffin nail next to the left humerus, left hand and right femur and iron plate at the head. Supine decubitus. See also next.
- **Genetic Identifier:** I23278. **Grave Identifier:** BLA-ME-95; 8101. **Grave Type:** Secondary burial, with the bones gathered in a reduced space ('*Osario*'). **Skeletal information:** Subadult (adolescent). Genetic female (XX karyotype)). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200-300 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman (no North African signal detected). **Additional information:** Secondary burial, bones placed in situ without a clearly defined pit structure in which two human skulls and long bones (such as 6 femurs, 2 fibulas and 5 tibias, 2 ulnae and 2 radii) have been identified, as well as a coxal bone, 3 hips, ribs. One of the skulls belongs to an adolescent individual, which preserves only the upper jaw - the wisdom tooth is missing - and the frontal bone. Secondary deposition
- **Genetic Identifier:** I23280. **Grave Identifier:** BLA-ME-103; 8101. **Grave Type:** Burial in wooden coffin with gabled tegulae cover. W-E orientation. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Central-North European. **Additional information:** Bones displaced from their anatomical position. Skull turned to the left. Displaced lower jaw. Displaced ribs, arms and hands. Shoulder blades above the hip. No personal ornaments or costume elements found.
- **Genetic Identifier:** I23283. **Grave Identifier:** BLA-ME-161; 8101. **Grave Type:** Burial in wooden container. W-E orientation. **Skeletal information:** Subadult (adolescent, between 13 and 16 years old). Genetic female (XX karyotype). **Grave goods:** Elite ornaments (gold earrings with prism top). **Dating:** Direct radiocarbon dated to 254-418 cal CE (1700±29 BP, CIRAM-14413). **Ancestry summary:** Central-North European. **Additional information:** Displaced bones. Lower jaw

displaced with respect to the rest of the skull. Rib bones, vertebrae, hip bones collected. Possible metabolic pathology in femurs (*cribra femoralis*). Grave goods indicating elite status ("Suebian Princess").

- **Genetic Identifier:** I23284. **Grave Identifier:** BLA-ME-163; 8101. **Grave Type:** Inhumation in simple grave NE-SW Orientation. **Skeletal information:** Adult (between 30 and 45 years old), female (genetic female: XX karyotype). **Grave goods:** Elite (aristocratic dress/jewelry assemblage, comprising gold pins and ornamental gold beads/sequins '*cuentas*'). **Dating:** Direct radiocarbon dated to 255-417 cal CE (1702±28 BP, CIRAM-14411). **Ancestry summary:** Central-North European, Imperial Roman Eastern Mediterranean and North African (Punic-related) admixture. **Additional information:** Arms arranged along the torso. Right hand on right hip and left hand at the center of the hip. Skull turned to the right. Sternum is preserved. No patella. Ribs in bad condition, as well as femurs. Age about 38-39 years. Simple fossa with the particularity of a recess or "flange" in her feet. Supine decubitus.
- **Genetic Identifier:** I23288. **Grave Identifier:** BLA-ME-312; 8101. **Grave Type:** Inhumation in simple grave. N-S orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 254-420 cal CE (1694±30 BP, CIRAM-14414). **Ancestry summary:** Hispano-Roman and Central-North European admixture. **Additional information:** Fragmented skull turned to the right. Fragmented mandible, both lower and upper jaw. Arms along the trunk, with left hand on the hip. Legs extended. Epiphyses not attached to the diaphysis.
- **Genetic Identifier:** I23289. **Grave Identifier:** BLA-ME-1091; 8102. **Grave Type:** Partially obliterated inhumation. Unknown orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from genome-wide analysis due to low coverage. **Additional information:** Burial next to the NE corner of building A4, damaged by construction machinery. Only the trunk and extremities are preserved, not the skull and left arm. It presents fused vertebrae. The epiphyses of the femur (head and knee) are still unfused. No ornament or costume elements found.
- **Genetic Identifier:** I23752. **Grave Identifier:** BLA-ME-190; 8101. **Grave Type:** Inhumation in simple grave with tegulae cover. W-E orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Imperial Roman Eastern Mediterranean. **Additional information:** Possible skull fracture. Head turned to the left. Arms at the sides of the trunk. Left forearm higher than the right. No wisdom teeth. Very worn dental crowns. One of the molars has caries on the side. The sutures of the skull, especially a parietal, seem to have suffered a fracture. Supine decubitus. No ornament or costume elements found.

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- **Genetic Identifier:** I23753. **Grave Identifier:** BLA-ME-211; 8101. **Grave Type:** Burial in a simple grave. W-E orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 364-535 cal CE (1645±20 BP, PSUAMS-8844). **Ancestry summary:** Central-North European. **Additional information:** Legs parallel. Skull turned to the right. Right ulna over the left humerus. Radius and ulna arched under the hip, as well as the hand. Right hand on hip. Left foot up and right foot turned to the left. No wisdom teeth and very worn teeth. Indeterminate adult. Supine decubitus.
- **Genetic Identifier:** I23754. **Grave Identifier:** BLA-ME-226; 8101. **Grave Type:** Pitched roof-like covering made of tiles, with two-column grave marker. W-E orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 408-537 cal CE (1625±20 BP, PSUAMS-10253). **Ancestry summary:** Central-North European. **Additional information:** Arms along the trunk. Right leg flexed to the left. Sternum and patellae preserved. Right hand under right leg. Fragmented skull. Lower dentition missing two right molars (closed socket). Left wisdom tooth. First molar extracted. Very worn dentition. Indeterminate adult. Supine decubitus. No ornament or costume elements found.
- **Genetic Identifier:** I23755. **Grave Identifier:** BLA-ME-233; 8101. **Grave Type:** Burial in wooden container, delimited with ceramic and marble fragments. NE-SW Orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 259-415 cal CE (1695±20 BP, PSUAMS-10254). **Ancestry summary:** Imperial Roman Eastern Mediterranean, Central-North European and North African. (Punic-related) admixture. **Additional information:** Arms along the body, with hands on the femur. Skull very deteriorated, turned to the left. Supine decubitus. No ornament or costume elements found.
- **Genetic Identifier:** I23757. **Grave Identifier:** BLA-ME-249; 8101. **Grave Type:** Burial in a single grave with a gable roof. NE-SW Orientation. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200-300 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from genome-wide analysis due to low coverage. **Additional information:** Very worn teeth. Supine decubitus
- **Genetic Identifier:** I23758. **Grave Identifier:** BLA-ME-279; 8101. **Grave Type:** Burial in simple grave (the pit size is doubled, but only one individual was found in the pit). W-E orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Central-North European and

Imperial Roman Eastern Mediterranean admixture. **Additional information:** Supine decubitus. No ornament or costume elements found.

- **Genetic Identifier:** I23761. **Grave Identifier:** BLA-ME-287; 8101. **Grave Type:** Burial in a single grave with a gable roof. W-E orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Central-North European, Imperial Roman Eastern Mediterranean, and North African. (Punic-related) admixture. **Additional information:** Arms parallel to the trunk with hands on hips. Left leg flexed. Crowns very worn, and wisdom teeth are developed. Adult. Orientation: W-E. Supine decubitus. No ornament or costume elements found.
- **Genetic Identifier:** I23762. **Grave Identifier:** BLA-ME-301; 8101. **Grave Type:** Burial in wooden container. NE-SW orientation. **Skeletal information:** Adult. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200-300 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman (no Imperial Roman Eastern Mediterranean signal detected). **Additional information:** Head turned to the left. Curved spine. Only the proximal portion (closest to the shoulder) of the left humerus is preserved, the rest of the arm bones were not found. Hands on the hip. Some nails, some with remains of wood. The right hip is not preserved. Right radius and ulna not complete. Possible joint degenerative process observed at the head left humerus. Part of the sternum is preserved. All molars of the lower jaw are missing (closed sockets). No ornament or costume elements found.
- **Genetic Identifier:** I23763. **Grave Identifier:** BLA-ME-305; 8101. **Grave Type:** Inhumation in simple grave. SE-NW orientation (head facing northwest). **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman (no Imperial Roman Eastern Mediterranean signal detected). **Additional information:** The head rests on fragments of brick. Very worn dentition. No ornament or costume elements found.
- **Genetic Identifier:** I23764. **Grave Identifier:** BLA-ME-308; 8101. **Grave Type:** Inhumation possibly in wooden container. NW-SE orientation. **Skeletal information:** Adult (between 45 and 50 years old), male (genetic male: XY karyotype). **Grave goods:** hobnails found indicating the presence of boots placed by the side of leg. **Dating:** Archaeologically dated to 400-500 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** local Iron Age Iberian. **Additional information:** Head turned backwards. Arms parallel to the trunk and hands on femurs. Feet together turned to the right. Two nails, two iron objects and an "iron plate with spikes". Concretion of iron hobnails found parallel to the left tibia

indicating boots (possible *caligae*). Fragmented brick under the spine. Very worn and decayed dentition. Healed traumatic pathology in left hand. Possibly military, the presence of hobnails by the leg indicating possible *caligae* (military sandals).

- **Genetic Identifier:** I23765. **Grave Identifier:** BLA-ME-310; 8101. **Grave Type:** Simple semi-deep burial. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200-300 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** local Iron Age Iberian. **Additional information:** No ornament or costume elements found.
- **Genetic Identifier:** I23766. **Grave Identifier:** BLA-ME-331; 8101. **Grave Type:** Burial in wooden container inside *tegulae* cist with a flat cover. W-E orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 405-537 cal CE (1630±20 BP, PSUAMS-10255). **Ancestry summary:** Central-North European. **Additional information:** The skull and torso were displaced from their original anatomical position and appeared 'piled up'. The legs, however, remained in their original position, parallel to each other. The diaphyses were disarticulated, implying post-mortem disturbance or decomposition leading to the disconnection of skeletal elements. No ornament or costume elements found.
- **Genetic Identifier:** I23768. **Grave Identifier:** BLA-ME-347; 8101. **Grave Type:** Single grave burial, partially preserved. **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200-300 CE. **Ancestry summary:** Hispano-Roman. **Additional information:** Partially missing because cut by a later burial. No ornament or costume elements found.
- **Genetic Identifier:** I23770. **Grave Identifier:** BLA-ME-1147; 8102. **Grave Type:** Burial in a simple grave. NE-SW orientation. **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Inhumation in south corner of building A4. Right arm above the hip. In general, very deteriorated remains in a pit excavated in the collapsed building. No ornament or costume elements found.
- **Genetic Identifier:** I23771. **Grave Identifier:** BLA-ME-1189; 8102. **Grave Type:** Burial in a wooden container in a simple grave. W-E orientation. **Skeletal information:** Adult (between 30 and 40 years old), female (genetic female: XX karyotype). **Grave goods:** Elite ornament/dress (necklace and gold pins)^{30,33}. **Dating:** Direct radiocarbon dated to 254-416 cal CE (1703±28 BP, CIRAM-14412). **Ancestry summary:** Central-North European and Imperial Roman Eastern Mediterranean admixture. **Additional information:** Skeleton with many bones displaced from their original anatomical position; only the legs in their normal location. Skull displaced and turned to the right (south), as well as the jaw - upside down. Arms arranged

approximately next to the trunk and under the pelvis. Nails at the head, waist and feet. Fairly complete dentition, although with significant signs of wear. Rounded and open hip (female). Rounded ridge under the neck/skull. Adult based on cranial sutures and dental wear. Burial under a later road. Skeletal height: 1.51 m Supine decubitus. Grave goods indicating aristocracy (“Suebian Princess”).

- **Genetic Identifier:** I23772. **Grave Identifier:** BLA-ME-1222; 8102. **Grave Type:** Inhumation in wooden container box in a grave with tegulae cover. NW-SE orientation. **Skeletal information:** Adult, between 35 and 45 years old. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Central-North European. **Additional information:** Trench burial with three tegulae protecting the body. The skull faces SW, mandible displaced. Arms parallel to the trunk and hands under the hips. Legs straight and parallel. Supine decubitus. Inhumation without grave goods or costume elements. The burial pit is adjacent and touching the limits of grave of individual I23771 . (BLA-ME-1189; 8102).
- **Genetic Identifier:** I23773. **Grave Identifier:** BLA-ME-1348; 8102. **Grave Type:** Inhumation in simple grave (incomplete). Unknown orientation. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 215-326 cal CE (1800±20 BP, PSUAMS-10256). **Ancestry summary:** North African (Punic-related).
- **Genetic Identifier:** I24953. **Grave Identifier:** BLA-ME-1151; 8102. **Grave Type:** Secondary burial in ceramic container. **Skeletal information:** Advanced adult. Genetic male (XY karyotype)). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Secondary inhumation in which the smaller bones are collected in an amphora). There is wear in teeth and vertebrae and robust bones (advanced age?). The skull is not preserved; the hip is very fragmented and, due to its size, it was not included in the container. No ornament or costume elements found.
- **Genetic Identifier:** I24954. **Grave Identifier:** BLA-ME-1186; 8102. **Grave Type:** Inhumation in stone cist. E-W orientation (head facing towards the west). **Skeletal information:** Adult (age range 18-45, probably between 22-29 years old). Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from genome-wide analysis due to possible contamination. **Additional information:** Burial in the northern corner of a collapsed building, delimited by stone blocks laid directly over a decommissioned *opus signinum* floor. Incomplete skeleton. The upper extremities (affected and altered by roots) and the lower extremities of both legs (cut by later construction works) are missing. Slight green stain on ribs testify to a bronze object. The skull appears disarticulated with respect to the vertebrae, of which the cervical ones are missing. The mandible is also missing. In

the preserved teeth, the crowns are worn. Dry bone (*post-mortem*) fractures in the right radial epiphysis, left ulna distal epiphysis; right femur in external condyle and tibia. Skeletal height: 1.30 m. Age range 18-45 (22-29 years), from the degree of closure of the cranial sutures and the characteristics of the symphysis pubis. No ornament or costume elements found.

- **Genetic Identifier:** I28351. **Grave Identifier:** 8101-UE 285. **Grave Type:** Burial in a simple grave. W-E orientation. **Skeletal information:** Subadult, unknown sex. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-500 CE. Based on radiocarbon dates and grave goods of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from genome-wide analysis due to low coverage. **Additional information:** Skull bones fragmented and "piled up". Missing hip and left femur. Wisdom tooth in socket. Interior calculus. Very worn. No ornament or costume elements found.

- **Genetic Identifier:** I28455. **Grave Identifier:** 8101-UE 160. **Grave Type:** Inhumation in simple grave, N-S orientation. **Skeletal information:** Infant (between 8 and 10 years old), female. **Grave goods:** elite costume (fibulae, *lamellae*, pendant). **Dating:** Archaeologically dated to 400-500 CE. Based on archaeological findings, radiocarbon dates of other individuals in the same site and archaeological layer. **Ancestry summary:** Excluded from genome-wide analysis due to low coverage. **Additional information:** Subadult burial, arms along the body. Hands under the pelvis. Legs arched. Good state of preservation. Unattached patella. Part of the sternum is preserved. Skull very deteriorated. Supine decubitus.

Site-specific Bibliography:

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2.21 Segovia, Fresno de Cantespino, Necrópolis de Castiltierra

Contact person(s): Andrés Carretero, Teresa Espinosa, Sergio Vidal Álvarez, Paula Pagés Alonso & Beatriz Campderá Gutiérrez

Brief settlement history: The Late Antique necropolis of Castiltierra is one of the largest and most well-documented burial sites from this period in Iberia, with a chronological range spanning from the late 5th century to the early 8th century. It is situated between the Roman-era cities of Confluencia and Tiermes, in a region that experienced significant demographic and sociopolitical transformations following the crisis of the 4th century. As Roman administrative structures weakened, local populations shifted towards smaller, rural settlements, relying on necropolises such as Castiltierra and the nearby Duratón for burial practices⁹⁰.

Although primarily known for its necropolis, Castiltierra also gained attention for the discovery of grave goods, a small portion of them consisted of gold and silver artifacts. Some of these objects, from Julio Martínez Santa-Olalla's excavation phase, dating from the Visigothic period, were sent to Germany for study and restoration in the 1930s but were never returned.

Excavation history: The necropolis was discovered by chance during road construction in the 1920s, leading to looting and grave destruction. Systematic excavations began in the 1930s under the co-direction of Emilio Camps and Joaquín María Navascués, with campaigns in 1932, 1934, and 1935. After the Spanish Civil War, two additional excavation campaigns took place: a brief one in 1940 and a more extensive investigation in 1941 led by Julio Martínez Santa-Olalla.

Geographic information: The necropolis is located within the municipality of Fresno de Cantespino, approximately 1 km from the modern village of Castiltierra, in northeastern Segovia province (latitude: 41.3852, longitude: -3.5323). The terrain is relatively flat but lies at a high elevation due to its proximity to the Sierra de Ayllón. The burial area is extensive—J. Werner estimated its size at a minimum of 800m x 300m, while Santa-Olalla's 1941 excavation covered approximately 1,700m². The site sits on clay-rich soil⁹⁰.

Summary of sampled materials: The analyzed remains originate from Santa-Olalla's 1941 excavation. Unfortunately, skeletal sampling, handling, and storage practices at the time did not adhere to modern scientific standards. The individuals included in this study are represented solely by lower jaws, which had been stored together in a box with minimal associated archaeological context.

Graves:

- **Genetic Identifier:** I18408. **Grave Identifier:** 1973/58/CAS/C42/1688a: 30 L-F (4le). **Grave Type:** Untraceable. **Skeletal information:** Untraceable. Genetic male (XY karyotype). **Grave goods:** Untraceable. **Dating:** Archaeologically dated to 500-600 CE. Based on the archaeological findings of the excavated stratigraphic layer. **Ancestry summary:** Hispano-Roman.

- **Genetic Identifier:** I18411. **Grave Identifier:** 1973/58/CAS/C42/1695: 30 L-F (4le). **Grave Type:** Untraceable. **Skeletal information:** Untraceable. Genetic male (XY karyotype). **Grave goods:** Untraceable. **Dating** Archaeologically dated to 500-600 CE. Based on the archaeological findings of the excavated stratigraphic layer. **Ancestry summary:** Hispano-Roman.

Site-specific Bibliography:

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Janira, J.; Robledo Sanz, R.; Angulo, B.; Trancho Gayo, G. J. y López – Bueis, I. (2000). Biometría e indicadores de actividad muscular en las extremidades inferiores de la población visigoda de Castiltierra, *Boletín del Museo Arqueológico Nacional*, **1 – 2**, pp: 197 - 214.

2.22 Tarragona, Amposta, Mas Cabiscol-Finca Jornet

Contact person(s): Josep Maria Vergès (sampling and dating) / Samuel Sardà Seuma (Project manager)

Brief settlement history: The Mas Cabiscol-Finca Jornet archaeological site is currently under re-interpretation. Based on documented features, such as the coexistence of inhumation and cremation practices, tumulus graves, and ceramic typologies, the site was initially attributed to the Late Bronze Age and Early Iron Age, approximately between 800 and 600 BCE^{91–93}. However, concerns about potential inaccuracies stemming from the 1968 excavation, carried out by a group of local enthusiasts, led to a reassessment of the ceramic assemblage. A critical reassessment of the ceramic materials has provided new chronological insights, particularly regarding the necropolis's later phases. The presence of three small Phoenician wheel-made pottery fragments had previously suggested a date around 600 BCE. However, a reanalysis of these ceramics indicates a later date (around 500 BCE or later) based on the identification of an ancient B-type amphora (Py, 1990: 534), likely an A-MGR1 amphora⁹⁴. The rim, specifically classified as A-MGR bd1 or bd2 (most likely the former), aligns with a chronology between 600 and 500 BCE⁹⁵.

As part of this re-evaluation, bone samples (primarily dental remains) were selected for radiocarbon dating to refine the chronology of the inhumations. The inhumations date to the Roman and Late Antique periods, with calibrated dates of 129–244 CE and 574–657 CE (95.4% confidence interval). These findings indicate that the Mas Cabiscol-Finca Jornet burials (Amposta) correspond to Roman and Late Antique funerary practices. This suggests that while the area was originally used as a burial ground during the Early Iron Age (evidenced by funerary urns and ceramic vessels curated at the Museum of the Terres de l'Ebre) it was later repurposed as a cemetery in subsequent periods.

Excavation History: The site was discovered and excavated in March 1968 by archaeologist Francesc Esteve Gálvez and his team of local collaborators. They documented a tumulus necropolis featuring both inhumation and cremation burials. The site first came to light during agricultural activities when a tractor's plow unearthed stone alignments, along with a skull and other human remains. A total of 11 graves were excavated, including Grave 7, which was identified as a circular funerary structure with stone arrangements. Grave 4 was particularly notable, as it contained a substantial layer of burnt soil, suggesting an in-situ cremation⁹¹.

Geographic Information: The Mas Cabiscol-Finca Jornet site (Amposta, Montsià, Tarragona) (latitude: 40.6837, longitude: 0.5408) is situated at an elevation of 101 meters, covering an area of nearly 500 square meters⁹³. It is positioned on the right bank of the Ebro River, approximately 3 km from its course, at the western base of Montsià hill. The site offers a clear view of the natural corridor between the Sierra del Montsià and the Sierra de Freginals, which connects to the Uldecona valley. It is hypothesized that this necropolis served as the burial ground for the neighboring Early Iron Age settlement of Lo Tapà (Amposta, Montsià), located about 500 meters southwest⁹⁴.

Summary of sampled materials: The skeletal remains recovered from the site are curated at the Museu del Montsià (Amposta) under registration numbers 1141 and 1144. These remains belong to at least three individuals, all of whom, based on excavation data, appear to have been interred in Grave 7 (Esteve, 2000). The selected samples for the present study consist exclusively of dental remains—two associated with registration number 1141 and one with number 1144.

The funerary structures documented in the 1968 excavation align with burial traditions characteristic of the Late Bronze Age and Early Iron Age in the Ebro Valley. Grave 7, in particular, exhibits the typical layout of a flat circular mound, featuring horizontally arranged stones with a central vertical marker stone indicating the urn's location. The associated funerary urns were handmade, some displaying grooved decoration, and were placed in simple pits or loculi without stone cists. Ceramic fragments recovered outside the graves were interpreted as possible offering vessels⁹³. These characteristics closely resemble those of Early Iron Age necropolises such as Sebes and Els Castellons (Flix)^{93,96,97}, Coll del Moro (Gandesa)⁹⁸, and La Pedrera (Vallfogona de Balaguer-Térmens)⁹⁹.

The documentation of Grave 7, from which the dental samples used in the present genomic study were derived, is particularly significant. This tumulus burial contained evidence of inhumations alongside ceramic vessels typical of the Early Iron Age⁹¹. Initial interpretations suggested that these inhumations may have belonged to a Late Bronze Age burial tradition, akin to Tumulus 27 in the Castellet II necropolis (Mequinenza)¹⁰⁰. However, radiocarbon dating conducted in 2020 now indicates that this mound was likely reused as a funerary structure in the Roman period.

Graves:

- **Genetic Identifier:** I27078. **Grave Identifier:** Finca Jornet (Amposta); FJ-M2 (FJ-1144). **Grave Type:** Slab burial in a reused tumulus grave. **Skeletal information:** Adult (>20 years old). Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 129-244 cal CE (1840±20 BP, PSUAMS-13134). **Ancestry summary:** local Iron Age Iberian.

Site-specific Bibliography:

Belarte, C., Malgosa, A., Noguera, J., Piga, G., Olmos, P. (2013): Las necrópolis protohistóricas tumulares de Cataluña meridional: el ejemplo de Sebes (Flix, Tarragona), *Trabajos de Prehistoria*, Vol. 70. 2: 295-314.

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2.23 Tarragona, Reus / La Canonja, Antigons

Contact person(s): Josep Maria Vergès

Brief settlement history: The Roman villa of Antigons was established around the mid-2nd century BCE and is believed to have belonged to an influential individual or family from *Tarraco*. The site comprises three distinct areas: the central sector, which features a luxurious residential complex, including a nymphaeum adorned with marble statues of the goddess Cybele and the god Bacchus; the northern sector, where a pottery workshop with two large kilns produced amphorae, jars, dolia, and building materials such as roof tiles and antefixes; and the southern sector, which functioned as a service and storage area, containing rooms, dolia, small storage pits, and cisterns, some likely related to winemaking¹⁰¹. This sector also housed the site's wastewater drainage system. By the 4th or 5th century CE, several rooms and sewer structures in the southern sector were abandoned or repurposed, and the area transitioned into a necropolis with various inhumation graves. This funerary use persisted until the 6th century CE^{102,103}.

Excavation History: The first documented mention of the site appears in "Tarragona Monumental" (1849) by Joan Francesc Albiñana and Andreu de Bofarull, which describes architectural remains, tombs, and artifacts. Nearly a century later, on October 19, 1951, Salvador Vilaseca reported the discovery of a Roman-era necropolis during agricultural activities to the Tarragona Monuments Commission. Further findings were made in 1968 by Ramon Capdevila, who uncovered millstone remains, and in 1970, in collaboration with Salvador Vilaseca, he identified mosaic tesserae and a column fragment. In the summer of 1976, Rodolfo Cortés, a professor at the University Delegation of Tarragona, led an excavation with archaeology students, uncovering two Late Roman tombs.

Between 1977 and 1978, during the construction of the NANTA feed factory, a salvage excavation was carried out by members of the Archaeological Research Group of the Reus Museum under the direction of Lluïsa Vilaseca. This intervention unearthed numerous inhumations, including burials in amphorae and graves constructed with tegulae, bricks, or stone slabs. The human remains analyzed in this study originate from these graves.

Between November 2008 and February 2009, during the expansion of the Mercat del Camp facilities, an archaeological intervention was conducted by Cota 64 in two phases, directed by Iban Cabrelles and Gema Ortega^{102,103}. This excavation provided new insights into the northwestern perimeter of the villa. Key discoveries included an underground water channel from the early imperial period, built using *opus caementicium*, along with a ceramic kiln, two silos, and 21 graves. The villa's agricultural facilities were abandoned by the 3rd-4th centuries CE, after which the area served as a necropolis during the 5th-6th centuries CE.

The 21 graves excavated in 2009 were classified into four types: simple pit inhumations with double-pitched tegulae covers (UF 1003, 1034, 1035, 1040, and 1042); simple pit inhumations with irregular stone covers (UF 1012, 1013, 1014, 1017, 1021, and 1032); simple pit inhumations without covers (UF 1015, 1018, 1027, and 1033); and cist inhumations constructed with stone slabs (UF 1007, 1009, 1010, 1011, and 1029)¹⁰¹.

An anthropological analysis of six individuals from UF 1009, 1012, 1013, 1014, and 1017, conducted by Joaquin Baixarias, identified five adult males and one adult female, aged between 30 and 50 years, except for UF 1009, which contained two children aged 3.5 and 4 years. The adult skeletons exhibited pathological conditions such as osteoarthritis, ossifying myositis, bone wear, and degenerative joint disease, indicating physically demanding labor¹⁰¹. This suggests they were lower-status individuals engaged in rural labor in the Tarraco region¹⁰¹.

Geographical information: The Roman villa of Antigons is situated on the Camp de Tarragona plain (latitude: 41.126, Longitude: 1.179), approximately 4 kilometers from the modern coastline and 6 kilometers west of the city of Tarragona. The site occupies a small hill at an elevation of 40 to 50 meters above sea level, positioned on the left bank of the Boella ravine, a seasonal watercourse located about 500 meters west of the villa. Traditionally, the surrounding area has been used for dry farming, primarily for vineyards.

Summary of sampled materials: The human remains analyzed in this study originate from the 1977-1978 excavations and are housed at the Museum of Reus. Unfortunately, the lack of specific references in the museum's documentation has made it impossible to correlate these remains with the limited available excavation records, including planimetric and photographic data from the 1977-1978 interventions. However, data from the 2009 excavations in another section of the same necropolis provide some contextual insights regarding grave typology and the anthropological profiles of the individuals buried there. These more recent remains were not included in this study as they were not accessible for analysis.

Graves:

- **Genetic Identifier:** I19795. **Grave Identifier:** MR-3424-A. **Grave Type:** untraceable. **Skeletal information:** Untraceable. Genetic male (XY karyotype). **Grave goods:** Untraceable. **Dating:** Archaeologically dated to 250-500 CE. Based on the stratigraphic layer and the radiocarbon dating of other individuals of the site. **Ancestry summary:** Central-North European, Imperial Roman Eastern Mediterranean and North African (Punic related) admixture.
- **Genetic Identifier:** I19796. **Grave Identifier:** MR-3424-B. **Grave Type:** untraceable **Skeletal information:** Untraceable. Genetic female (XX karyotype). **Grave goods:** Untraceable. **Dating:** Direct radiocarbon dated to 245-378 cal CE (1745±20 BP, PSUAMS-10234). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I19797. **Grave Identifier:** MR-3424-C. **Grave Type:** Untraceable. **Skeletal information:** Untraceable. Genetic male (XY karyotype). **Grave goods:** Untraceable. **Dating:** Archaeologically dated to 250-500 CE. Based on the stratigraphic layer and the radiocarbon dating of other individuals of the site. **Ancestry summary:** Excluded from genome wide analysis due to low coverage.

- **Genetic Identifier:** I19798. **Grave Identifier:** MR-3424-D. **Grave Type:** untraceable **Skeletal information:** Untraceable. Genetic female (XX karyotype). **Grave goods:** Untraceable. **Dating:** Archaeologically dated to 250-500 CE. Based on the stratigraphic layer and the radiocarbon dating of other individuals of the site. **Ancestry summary:** Hispano-Roman and Central-North European admixture.
- **Genetic Identifier:** I19799. **Grave Identifier:** MR-3424-E. **Grave Type:** untraceable. **Skeletal information:** Untraceable. Genetic male (XY karyotype). **Grave goods:** Untraceable **Dating:** Archaeologically dated to 250-500 CE. Based on the stratigraphic layer and the radiocarbon dating of other individuals of the site. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I35495. **Grave Identifier:** MR-3424-H. **Grave Type:** untraceable. **Skeletal information:** Untraceable. Genetic female (XX karyotype). **Grave goods:** Untraceable. **Dating:** Direct radiocarbon dated to 594-650 cal CE (1440±20 BP, PSUAMS-10235). **Ancestry summary:** Hispano-Roman.

Site-specific Bibliography:

Cabrelles, Iban (2008). Memòria de la intervenció arqueològica realitzada a la vil·la dels Antigons, Reus, Baix Camp. Cota 64. *Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural: qmem11510.*

Ortega, Gema (2009). Memòria de la intervenció arqueològica realitzada a la vil·la dels Antigons ubicat al CIM El Camp, Reus, Baix Camp. Cota 64. *Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural: qmem10452.*

Prevosti, M.; Jàrrega, J. (2014). Ager Tarraconensis 4. Els Antigons, una vil·la senyorial del Camp de Tarragona. *Col·lecció Documenta 16. Institut d'Estudis Catalans / Institut Català d'Arqueologia Clàssica.* Tarragona.

2.24 Tarragona, Cambrils

2.24.1 Els Masos

Contact person(s): Josep Maria Vergès

Brief settlement history: The site is situated in an area traditionally used for dry farming. Excavations revealed the remains of a residential complex, likely the central hub of an agricultural estate. The villa featured a luxurious residential sector, including a peristyle, private baths, and elaborate decorations such as painted frescoes, mosaics, and marble elements. Founded in the mid-1st century CE, the settlement remained occupied until the late 3rd or early 4th century CE, when it was ultimately abandoned¹⁰⁴. However, radiocarbon dating of burials found at the site suggests that it was reoccupied at some point during the Early Medieval period.

Excavation History: The site was first investigated in October 1999 during the construction of a water pipeline supplying the Ponent residential areas. This excavation, directed by Ester Ramon (CODEX-Arqueologia i Patrimoni), identified several architectural structures that highlighted the significance of the settlement^{104,105}. Subsequent large-scale excavations were conducted in 2005 and 2006 during the construction of the A-34 highway. Led by Pèir Còts (SICOM INFORMÀTICA SL), these investigations uncovered approximately 20,000 square meters of archaeological remains^{106,107}.

Geographic Information: The site is located on the coastal plain, approximately 20 kilometers southwest of Tarragona (latitude: 41.0673, longitude: 1.0079), on the left bank of the Riudecanyes stream, about 2 kilometers from the present-day coastline, within the municipality of Cambrils (Baix Camp).

Summary of sampled materials: Three individuals housed in the Museum of Cambrils were sampled for this study, identified as a father-mother-daughter trio. Their burials postdate the site's abandonment, as confirmed by radiocarbon dating. The funerary practices suggest a pre-Islamic Christian context. However, due to the unavailability of the excavation report, specific details regarding the graves remain unknown.

Graves:

- **Genetic Identifier:** I29524. **Grave Identifier:** 3012. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic female (XX karyotype), **Grave goods:** untraceable. **Dating:** Direct radiocarbon dated to 671-774 cal CE (1280±20, UGAMS-74278). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I29525. **Grave Identifier:** 3076. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype), **Grave goods:** untraceable. **Dating:** Archaeologically dated to 650 - 800 CE. Based on the radiocarbon dating of closely buried individual I29524. **Ancestry summary:** Hispano-Roman.

- **Genetic Identifier:** I29526. **Grave Identifier:** 3256. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic female (XX karyotype), **Grave goods:** untraceable. **Dating:** Archaeologically dated to 650 - 800 CE. Based on the radiocarbon dating of closely buried individual I29524. **Ancestry summary:** Hispano-Roman.

Site-specific Bibliography:

Camarasa, V. (2002). Memòria de la intervenció arqueològica realitzada a la vil·la dels Masos, Cambrils, Baix Camp. ATICS. *Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural: qmem3776.* <http://hdl.handle.net/10687/427406>

Còts, P. (2005). Memòria de les prospeccions realitzades a la vil·la dels Masos, Cambrils, Baix Camp. SICOM INFORMÀTICA SL. *Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural: qmem5482.* <http://hdl.handle.net/10687/122465>

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Ramon, E. (1999). Memòria de la intervenció arqueològica realitzada a la vil·la dels Masos, Cambrils, Baix Camp. CODEX – ARQUEOLOGIA I PATRIMONI. *Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural: qmem2895.* <http://hdl.handle.net/10687/452877>

2.24.2 La Mineta

Contact person(s): Josep Maria Vergès

Brief settlement history: During the Roman period, the area where this rescue excavation took place was within the boundaries of the *Ager Tarraconensis*, the territory under the socio-economic influence of *Tarraco*. The site consists of a Late Antique necropolis where 33 graves have been identified¹⁰⁸. The burials were carried out using various methods, including amphorae, double-pitched *tegulae* structures, stone slab covers, and simple pit inhumations. Most of the graves were oriented NW-SE. While no direct evidence of a settlement has been excavated, it is likely that this necropolis was associated with a nearby villa, the remains of which have yet to be investigated.

Geographic Information: La Mineta is situated on the coastal plain at an elevation of 30 meters above sea level (latitude: 41.0794, longitude: 1.0466), approximately 1.5 kilometers from the current coastline. The site lies between the Alforja stream and the Mare de Déu del Camí ravine, near the town of Cambrils (Baix Camp), about 17 kilometers southwest of Tarragona. The site derives its name from an old water mine in the area, though historically, the region has been primarily dedicated to dry farming.

Excavation History: The site was first identified in 2000 during the construction of a stormwater drain, which led to the discovery of 15 Late Antique graves. In 2004, a subsequent phase of urban development necessitated an archaeological survey, during which 18 additional graves were uncovered.

The graves documented in the 2000 excavation were primarily simple pit burials covered with double-pitched *tegulae* or stone slabs, along with other reused materials. The skeletal remains were consistently oriented NW-SE and were devoid of grave goods. As with the broader necropolis, these burials are likely associated with an unexcavated Roman villa in the vicinity.

The 18 graves uncovered during the 2004 excavation followed similar burial practices. The majority were oriented NW-SE, with two inhumations in amphorae (UF5 and UF7), one in a double-pitched *tegulae* structure (UF18), eight covered with stone slabs (UF1, UF2, UF8, UF9, UF10, UF15, UF16, UF17), and seven in simple pit burials (UF6, UF11, UF12, UF13, UF14)¹⁰⁸.

Summary of sampled materials: The samples analyzed in this study originate from the 2000 excavation. However, due to the absence of an excavation report, it is not possible to determine the specific burial type for each sampled individual.

Graves:

- **Genetic Identifier:** I29575. **Grave Identifier:** UE223. **Grave Type:** Untraceable. **Skeletal information:** Untraceable. **Grave goods:** Untraceable. Genetic male (XY

karyotype). **Dating:** Direct radiocarbon dated to 549-638 cal CE (1490±20, UGAMS-74281). **Ancestry summary:** Hispano-Roman.

- **Genetic Identifier:** I29628. **Grave Identifier:** UE211. **Grave Type:** Untraceable. **Skeletal information:** Untraceable. Genetic female (XX karyotype). **Grave goods:** Untraceable. **Dating:** Archaeologically dated to 500 - 650 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I29629. **Grave Identifier:** UE224. **Grave Type:** Untraceable. **Skeletal information:** Untraceable. Genetic male (XY karyotype). **Grave goods:** Untraceable. **Dating:** Archaeologically dated to 500 - 650 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** Hispano-Roman.

Site-specific Bibliography:

García, M. (2004). Memòria de la delimitació arqueològica realitzada amb motiu de la tercera fase de urbanització de la U.A.6 en el sector sud. CODEX - ARQUEOLOGIA I PATRIMONI. *Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural: qmem5339*. <http://hdl.handle.net/10687/440826>

2.24.3 Voltants de la Torre Bargallona

Contact person(s): Josep Maria Vergès

Brief settlement history: The site at Voltants de la Torre Bargallona consist in functional constructions related to agricultural practices, probably serving the nearby Roman settlement, located approximately 250 meters away (though this settlement remains unexcavated). The most important structures are a large field of silos, likely used for storing agricultural surplus, which were decommissioned between the 5th and 8th centuries CE. In addition to the silos, the site contains sand extraction pits, water wells, combustion structures, and ten human inhumations. The site shows evidence of later activity from the 14th to the 18th centuries CE.

A total of nearly 300 excavated features have been identified and categorized into three main functional groups based on their morphology. The first group consists of irregularly shaped pits, interpreted as sand extraction features. The second group comprises pear-shaped pits, with openings ranging from 60 to 150 cm in diameter and depths between 50 and 180 cm, interpreted as storage silos. The third group, likely water wells, features openings averaging 70 cm in diameter with undetermined depths, as they were excavated only to 2.30 meters.

Geographic Information: The site, known as *Voltants de la Torre Bargallona*, is situated on the coastal plain, approximately 15 kilometers southwest of Tarragona and 2 kilometers from the present-day coastline (Latitude: 41.089, Longitude: 1.0904). The area, which has historically been dedicated to dry farming, falls within the municipality of Cambrils (Baix Camp).

Excavation History: Between April and October 2006, a preventive archaeological intervention was conducted in response to the construction of the A-34 highway along the Cambrils–Vilaseca–Salou section (from PK 1143 to PK 1151). The excavation was directed by Montse Corominas Vidal from ATICS SL. During the initial phase, archaeological survey trenches were used to define the area of interest. Following this, the site was divided into three excavation zones where extensive excavations were carried out named Camp 1, 2 and 3¹⁰⁹.

Summary of sampled materials: The site's occupation can be divided into two distinct chronological phases. The first phase is represented by 143 silos containing diagnostic ceramic material, including fragments of African amphorae (*Keay 62A* and *Late Roman C*), African Red Slip Ware (*Hayes 91* and *Hayes 61*), and locally produced imitations of imported ceramics. These findings indicate that the site was abandoned between the 5th and 8th centuries CE. The second phase comprises ten structures containing Catalan blue-and-green glazed ceramics, manganese-painted pottery, and medieval gray wares, suggesting abandonment between the 14th and 18th centuries. An additional 41 structures could not be dated due to an absence of associated material culture.

A total of ten human inhumations were recovered. Two burials from Camp 1 (*UE 23.01* and *UE 23.02*) correspond to a perinatal individual and an infant (3–6 months), respectively, both interred in amphorae. Individual *23.01* was placed inside an Eastern Mediterranean amphora

(*LRA*), dated between 380 and 650 CE. Individual 23.02, positioned supine and oriented NW-SE, was buried in a late Roman amphora (Vidal, 2007).

In Camp 1, a skull (*TBAR R-30 Camp 1*) belonging to a 10–13-year-old individual was recovered from the fill of a circular feature measuring 1.46 meters in diameter and 2.15 meters deep. This feature also contained the remains of five dogs, construction ceramics, and fragments of common ware with reduced firing.

In Camp 2, two simple pit graves (*Grave 23* and *Grave 41*) were documented. *Grave 23*, oriented N-S, contained two individuals (23*A*, aged 13–14 years, and 23*B*, aged 15–16 years), interred in a superimposed manner. Displacement of 23*B*'s skull and mandible suggests that this individual had already been in a skeletal state when 23*A* was buried. *Grave 41*, oriented SW-NE, contained three individuals (41*A*, aged 25–35 years; 41*B*, of undetermined age; and 41*C*, an infant aged 1–1.5 years). The long bones of 41*A* had been collected and repositioned between the legs of 41*B* to accommodate additional remains. The infant (41*C*) was placed in a supine position atop 41*B*.

In Camp 3, two individuals were found. *TBAR IND 15A-I*, aged 14–16 years, was recovered in a prone position with no apparent funerary structure. *TBAR 15B.01* (corresponding to *TBAR IND.2*), aged 14–15 years, was found in a supine position, interred within a silo.

Osteological analysis revealed evidence of enthesopathies on the forearms and legs of both adult and subadult individuals, suggesting sustained engagement in physically demanding activities. The anthropological study of individuals from Camp 1 (excluding *TBAR R-30 Camp 1*) and Camp 2 was conducted by Thaïs Fadrique from *Antropòlegs*. The individuals from Camp 3, along with *TBAR R-30 Camp 1*, were analyzed by Thaïs Fadrique, Alba Núñez, and Assumpció Malgosa from the Osteobiography Research Group (*GROB*) at the Autonomous University of Barcelona (Vidal, 2007).

Graves:

- **Genetic Identifier:** I29537. **Grave Identifier:** Ind 15A-1 (Camp 3). **Grave Type:** Single burial in Prone decubitus position without any apparent pit or funerary structure. **Skeletal information:** Subadult (between 14-16 years old). Genetic male (XY karyotype). **Grave goods:** No grave goods. **Dating:** Archaeologically dated to 400 - 650 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this stratigraphical layer. **Ancestry summary:** Hispano-Roman and Central-North European admixture.
- **Genetic Identifier:** I29538. **Grave Identifier:** Ind 23A (Camp 2). **Grave Type:** Double burial in simple pit, oriented S-N. Individual in supine decubitus positioned on top of another body deposited some time before. **Skeletal information:** Subadult (between 13-14 years old), female (genetic female: XX karyotype). **Grave goods:** An earring. **Dating:** Archaeologically dated to 400 - 650 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this

stratigraphical layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** dental hypoplasia.

- **Genetic Identifier:** I29539. **Grave Identifier:** Ind 23B (Camp 2). **Grave Type:** Double burial in simple pit, oriented S-N. individual in supine decubitus. The skull was displaced when the second individual was placed. **Skeletal information:** Subadult (between 15-16 years old), female (genetic female: XX karyotype). **Grave goods:** No grave goods **Dating:** Archaeologically dated to 400 - 650 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this stratigraphical layer. **Ancestry summary:** Hispano-Roman and Central-North European admixture. **Additional information:** slight dental hypoplasia.
- **Genetic Identifier:** I29540. **Grave Identifier:** Ind 41A (Camp 2). **Grave Type:** triple burial in simple pit, oriented SW-NE. The skeletal remains of this individual, the first to be buried, were collected and placed on top of a second corpse. **Skeletal information:** Adult (between 25-35 years old), male (genetic male: XY karyotype). **Grave goods:** No grave goods **Dating:** Direct Radiocarbon dated to 569-643 cal CE (1470±20 BP, UGAMS-72106) **Ancestry summary:** Hispano-Roman. **Additional information:** enthesopathies in the forearms and legs, resulting from continued heavy physical exertion
- **Genetic Identifier:** I29634. **Grave Identifier:** TBAR'06; R-30 (Camp 1). **Grave Type:** isolated skull in a pit **Skeletal information:** Subadult (between 10-13 years old). Genetic female (XX karyotype). **Grave goods:** No grave goods. **Dating:** Direct Radiocarbon dated to 420-539 cal CE (1600±20 BP, UGAMS-72107) **Ancestry summary:** Imperial Roman Eastern Mediterranean and North African (Punic-related) admixture. **Additional information:** dental hypoplasia and *cribra orbitalia*.

Site-specific Bibliography:

Vidal, Montse (2007). Memòria de la intervenció arqueològica efectuada en les obres de construcció de l'autovia A-34, al tram comprès entre els PK.26+500 i 27.200 al terme municipal de Cambrils (Baix Camp). Memòria d'intervenció arqueològica inèdita. ATICS SL. Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural: **qmem7049**. <http://hdl.handle.net/10687/24109>

2.25 Tarragona, La Canonja, Villa Romana dels Castellets

Contact person(s): Moisés Díaz García, Jordi Morera, Tatiana Piza Ruíz & Josep F. Roig Pérez.

Brief settlement history: The *Villa Romana dels Castellets* is a coastal Roman villa covering approximately 7,500 m². Archaeological investigations have identified multiple structural phases, with occupation spanning from the 1st century CE to the late 7th century CE. The villa underwent significant urban and architectural evolution throughout this period ^{110,111}.

The initial foundation of the villa is attributed to the Augustan era ¹¹¹. However, it was not until the late 2nd century CE that it acquired the full range of architectural and residential features characteristic of a high-status Roman estate. At this time, a formal residential sector was developed around a central courtyard, providing access to luxurious rooms with mosaic flooring, *cubiculae*, and a private *balneum*, with its *praefurnium* located outside the main structure. Concurrently, a wine production area was constructed, comprising functional spaces such as work areas, a pressing facility, and a *cella vinaria* housing *dolia defossa*.

The villa's prosperity came to an abrupt end around 260–270 CE, likely in connection with the Frankish raids along the coast. Evidence of this disruption is preserved in a substantial refuse deposit. Following this event, the villa entered a prolonged phase of decline, culminating in structural modifications and material reuse in the 5th century CE. During this period, the site was reorganized into a new residential complex centered around a courtyard or garden, with three possible wings separating functional spaces. Notable features from this phase include the construction of a new *balneum* and several representational spaces paved in *opus signinum* and decorated with wall paintings ¹¹⁰. Production facilities were also in use, as indicated by pipelines and tanks lined with *opus signinum*, suggesting continued agricultural exploitation of a dependent *fundus* ¹¹².

Material reuse remained a defining characteristic in later phases, but new structures were also introduced. Among the most significant were a fireplace, a canal kiln dated to the second half of the 7th century CE, and a series of silos, indicating a shift toward a rural settlement with an emphasis on cereal production. The site's final phase of occupation is dated to the late 7th century CE ¹¹¹.

Excavation History: Archaeological excavations were conducted in two phases, first between 2013–2014 ^{110,111} and later between 2017–2018 ¹¹². During the initial campaign, the principal structural components of the villa were identified, including the *pars urbana*, *pars rustica*, *pars fructuaria*, and a small burial area. The subsequent excavation phase focused on structures associated with a funerary area and a *torcularium*.

Geographic Information: The site is currently located within the Bayer Material Science S.L. Chemical Park (latitude: 41.1026, longitude: 1.1613), though historically it was situated on agricultural land. In the Roman period, the villa occupied a fertile plain with access to mineral water, positioned near the coast and in proximity to *Tarraco*, the provincial capital.

Summary of sampled materials: Several inhumations were recovered from the site. Two individuals (*UE 2576* and *UE 2578*) were found interred within individual silos, while two others (*UE 3195* and *UE 4244*) were identified as isolated burials. The remaining individuals were part of a small necropolis composed of slab cist burials, including *UE 4216* and *UE 4217*, who shared the same burial space.

Graves:

- **Genetic Identifier:** I28364. **Grave Identifier:** UE 10039; UF 3. **Grave Type:** unknown **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 258-419 cal CE (1690±25, UGAMS-74289). **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I29542. **Grave Identifier:** LCB13-UE4217. **Grave Type:** Human found inside a container of stone slabs. **Skeletal information:** Adult (between 40-45 years old), female (genetic female: XX karyotype). Lower jaw preserved. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300 - 500 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Cervical and dorsal arthritis. Schmorl's nodes on thoracic vertebrae D4-D12 and lumbar vertebrae L1-L4. Calcification of yellow ligaments in the dorsal vertebrae. *Osteochondritis dissecans* in the right mandibular condyle.
- **Genetic Identifier:** I29543. **Grave Identifier:** LCB13-2576. **Grave Type:** inside a silo (with I29545, without anatomical connection). **Skeletal information:** Adult (between 20-25 years old), male (genetic male: XY karyotype). Lower jaw preserved. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300 - 500 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Missing limbs. Infectious process in the palate. Periostitis on tibiae and fibulae. Possible osteoma on the lambda.
- **Genetic Identifier:** I29545. **Grave Identifier:** LCB13-2578. **Grave Type:** inside a silo (with I29543, without anatomical connection) **Skeletal information:** Adult (between 25-35 years old), male (genetic male: XY karyotype). Lower jaw preserved. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 500 - 600 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman (no Imperial Roman Eastern Mediterranean signal detected). **Additional information:** Missing lower limbs. Signs compatible with tuberculosis (Pott's disease). Lesions on vertebrae D12, L2, L1. Fusion of vertebral arches D10-D11 and D12-L1. Calcification on an intercostal rib. Abnormal compression on the femur (possibly related to tuberculosis). Callus on the distal third

of the left ulna. Callus on the proximal phalanx V of the right hand. Mixed human and faunal remains.

- **Genetic Identifier:** I29546. **Grave Identifier:** LCB13-3195. **Grave Type:** Simple fossa with an elliptical plant. **Skeletal information:** Adult (between 45-55 years old), female (genetic female: XX karyotype). Lower jaw. **Grave goods:** No grave goods found. **Dating:** Direct Radiocarbon dated to 231-339 cal CE (1780±20, UGAMS-74279). **Ancestry summary:** local Iron Age Iberian. **Additional information:** Considerably altered by construction processes from the so-called "second terms" dated around the mid-5th century CE.
- **Genetic Identifier:** I29547. **Grave Identifier:** LCB13-4171. **Grave Type:** human found inside a container of stone slabs. **Skeletal information:** Adult (>60 years old). Genetic female (XX karyotype). Lower jaw preserved. **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 545-634 cal CE (1500±20, UGAMS-74280). **Ancestry summary:** Hispano-Roman. **Additional information:** Generalized arthritis in the spine, knees, shoulders, and feet. Trauma to the right parietal. Calcification of the Achilles tendon on both heels. Large fistula in dental piece 23. Almost all alveoli reabsorbed due to tooth loss during life. Mixed human and faunal remains.
- **Genetic Identifier:** I29548. **Grave Identifier:** LCB13-4212. **Grave Type:** Human found inside a container of stone slabs. **Skeletal information:** Adult (between 60-70 years old), male (genetic male (XY karyotype) Lower jaw preserved. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300 - 500 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Ossification of the costal cartilage of the first rib fused with the manubrium. Vertebral arthritis. Schmorl's nodes on D12, L1-L4. Arthritis in the hands (metacarpals I, II right and proximal phalanx III left). Calcification of the Achilles tendon on both heels. Arthritis in the hallux of the feet. Arthropathy in the knees and hip joints.
- **Genetic Identifier:** I29549. **Grave Identifier:** LCB13-4216. **Grave Type:** Undetermined. **Skeletal information:** Adult (between 55-65 years old), female (genetic female (XX karyotype). Lower jaw. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300 - 500 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Costoclavicular sulcus on both clavicles. Strong calf and *gluteus minimus* medius insertion on femurs. Mid-insertion of the flexor digitorum longus on tibiae. Strong insertion of obliques, semimembranosus, and adductors on the pelvis. Osteophytes on the sacrum at S1. Cervical, dorsal, and L5 arthritis. Schmorl's nodes on D3, D7, and D8. Enthesopathy of the Achilles tendon on both heels. Possible trauma to the right parietal.

- **Genetic Identifier:** I29550. **Grave Identifier:** LCB13-4219. **Grave Type:** Human found inside a container of stone slab. **Skeletal information:** Adult (between 35-45 years old), male (genetic male: XY karyotype). Lower jaw preserved. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300 - 500 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** Costoclavicular sulcus on both clavicles. Sacralization of L5. Vertebral arthritis. Hernias on D6, D7, and D10. Schmorl's nodes on D8 and D9. Calcification of the Achilles tendon on both heels. Consolidated fracture on the distal phalanx V of the right foot. Secondary arthritis at the fracture site between the proximal and medial phalanx V of the right foot.
- **Genetic Identifier:** I29552_d. **Grave Identifier:** LCB13-4244. **Grave Type:** Human found inside a container of stone slabs. **Skeletal information:** Adult (between 30-35 years old) female (genetic female: XX karyotype)). Lower jaw preserved. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 300 - 600 CE. Based on the general grave goods found in the stratigraphic layer, and radiocarbon dating of individuals in the same stratigraphic layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Cribra femoralis on both femurs.

Site-specific Bibliography:

- Codex, S.C.C.L. (2016): Memòria de les intervencions arqueològiques realitzades a la vil·la de la partida dels Castellets - Nova Planta de Kemira Ibérica, S.A. (La Canonja, Tarragonès), *Memòria inèdita lliurada a la Direcció General del Patrimoni Cultural*, Tarragona.
- Roig, J. F. (2017): L'abocador ceràmic de finals del segle III dC de la villa romana dels Castellets (La Canonja, Tarragonès), *Revista d'Arqueologia de Ponent* **27**, 185-207. Universitat de Lleida.
- Roig, J. F.; Gimeno, M.; Garcia-Medrano, P. (2015): La vil·la romana dels Castellets (La Canonja, Tarragonès): un assentament romà de l'Ager Tarraconensis. Resultats preliminars de la intervenció arqueològica, *Tribuna d'Arqueologia 2014-2015*, 384-400. Barcelona.

2.26 Tarragona, La Selva del Camp, Barranc de Sales

Contact person(s): Josep Maria Vergès

Brief settlement history: The Barranc de Sales site comprises the remains of a *figlina* (ceramic production center) with an associated necropolis ^{113,114}. The *figlina* began production sometime after the mid-1st century BCE or during the 1st century CE and remained active until the late 3rd or early 4th century CE, with minor production activity potentially continuing into the later Imperial period. The earliest documented burials date to the late Early Imperial period, when the ceramic workshop was still in full operation, and burials continued until the 5th century CE ¹¹³.

The structures associated with the *figlina* include three rectangular settling tanks constructed with *tegulae* bases and walls, used for clay decantation. A circular mixing trough, measuring between 6 and 6.5 meters in diameter and preserved to a depth of 35 cm, was built with an *opus signinum* floor over a *rudus* base composed of cobbles partially bonded with lime mortar. Two large storage tanks for liquids were constructed with *opus caementicium* walls and lined with *opus signinum*. The site also contained three kilns: one circular kiln with a 3.5-meter diameter and two square-shaped kilns, the best-preserved of which measures approximately 4 × 4 meters. Production at the site primarily focused on manufacturing construction materials, including *tegulae*, *imbrices*, *tubuli*, interlocking bricks (both positive and negative), circular bricks, and *antefixes* ¹¹³.

The associated necropolis contained 48 funerary units, divided into two main clusters: Group A (23 burials) and Group B (20 burials), along with five isolated, scattered graves. Group B is located immediately south of the *figlina* structures, while Group A is slightly farther away, at a distance of approximately 10 meters. Both groups exhibit diverse burial orientations, with the most common being SW-NE, as well as variation in grave types and the demographics of the interred individuals. The most frequent burial type was inhumation within amphorae (15 cases), followed by double-pitched *tegulae* burials (8 confirmed cases, with 6 additional possible examples), and pits with stone-lined walls bonded with lime mortar (4 cases). Notably, all four stone-built tombs were found in Group B, potentially indicating a social distinction between the two burial clusters, though this remains unconfirmed ¹¹⁴.

Most burials were located outside the main production area, with three exceptions: inhumations 47 and 49, which were placed within the pottery workshop zone, and inhumation 7, whose burial pit cut through a workshop-related floor ¹¹⁴. The latter suggests that the interment took place after the primary industrial function of the site had ceased ^{113,114}.

Excavation History: The site was first documented in 1991 in a university paper by Andreu Ollé and Josep Vallverdú. Archaeological excavations were later conducted in 2004 and 2006 during the expansion of the industrial area in La Selva del Camp. The first phase (2004), focused on site delimitation, was carried out by Nemesis SCCL under the direction of Jaume Vilalta ¹¹⁵. The second phase (2005–2006) involved extensive excavation and was conducted by Codex under the supervision of Marta Bru ¹¹⁶.

Geographic Information: The Barranc de Sales site is situated one kilometer northeast of the town of La Selva del Camp (latitude: 41.2228, longitude: 1.1473), at the edge of the Camp de Tarragona plain. It lies at the foothills of the Pre-Coastal Mountain Range, near the seasonal Selva stream.

Summary of sampled materials: Samples analyzed in this study originate from funerary units (UF) 15 and 17 in Sector A, and UF 44 and 48 in Sector B. The individual in UF 15 was interred within an amphora, while UF 44 was a grave with side walls constructed of *opus caementicium* and covered with *tegulae*. The individual in UF 48 was buried beneath a double-pitched *tegula* structure. All three were found in a supine (*decubitus*) position, with no associated grave goods (Brú, 2013; Bru and CODEX SCfCL, 2005). No information is available regarding UF 17.

Graves:

- **Genetic Identifier:** I29531. **Grave Identifier:** BS-UF15. **Grave Type:** amphora container. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 231-339 cal CE (1780±20, UGAMS-74288). **Ancestry summary:** Hispano-Roman. **Additional information:** Individual in a supine position: legs extended and parallel, with arms stretched alongside the body or slightly bent, resting one or both hands on the pelvis or abdomen.
- **Genetic Identifier:** I29532. **Grave Identifier:** BS-UF17. **Grave Type:** untraceable. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200 - 400 CE. Based on the findings and the radiocarbon dates of other individuals found in the same stratigraphic layer. **Ancestry summary:** Excluded from de genome wide analysis due to low coverage.
- **Genetic Identifier:** I29535. **Grave Identifier:** BS-UF44. **Grave Type:** Grave with side walls made of *opus caementicium* and covered with *tegulae*. **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200 - 400 CE. Based on the findings and the radiocarbon dates of other individuals found in the same stratigraphic layer. **Ancestry summary:** Imperial Roman Eastern Mediterranean. **Additional information:** Individual in a supine position: legs extended and parallel, with arms stretched alongside the body or slightly bent, resting one or both hands on the pelvis or abdomen.
- **Genetic Identifier:** I29574. **Grave Identifier:** BS-UF48. **Grave Type:** covered with double-pitched *tegulae*. **Skeletal information:** Unknown age. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200 - 400 CE. Based on the findings and the radiocarbon dates of other individuals found in the same stratigraphic layer. **Ancestry summary:** Excluded from de genome wide analysis due to possible contamination. **Additional information:**

Individual in a supine position: legs extended and parallel, with arms stretched alongside the body or slightly bent, resting one or both hands on the pelvis or abdomen.

Site-specific Bibliography:

Bru, M. (2005). Informe dels treballs arqueològics realitzats al Barranc de Sales a la Selva del Camp (La Selva del Camp, Baix Camp). Memòria d'intervenció arqueològica inèdita. CODEX. *Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural:* <http://hdl.handle.net/10687/122414>

Bru, M. (2013). "El jaciment del Barranc de Sales", a Prevosti, M., López, J., Guitart, J. (Ed.). *Ager Tarraconensis 5. Actes del Simposi Internacional. Documenta 16*: 339-354. Institut d'Estudis Catalans i Institut d'Arqueologia Clàssica. Tarragona.

Bru, M. (2014). El jaciment del Barranc de Sales: indústria i poblament a la Selva en època romana, *Butlletí del Centre d'Estudis Selvatans*. 8:35-61.

Ollé, J. (2004). Memòria del control arqueològic al Barranc de Sales, la Selva del Camp (Baix Camp). Memòria d'intervenció arqueològica inèdita. Nemesis SCCL. *Disponible a l'Arxiu de memòries d'intervencions arqueològiques i paleontològiques de la Direcció General del Patrimoni Cultural:* <http://hdl.handle.net/10687/438975>

2.27 Tarragona, Manuel de Falla

Contact person(s): Moisés Díaz García, Josep F. Roig Pérez & Josep María Vergès

Brief settlement history: The archaeological site of Manuel de Falla (Tarragona) consists of a complex of urban and industrial buildings. The archaeological intervention revealed continuous occupation from the late Roman period to the early medieval era. The site is part of the broader suburbium of Tarraco along the Tulfis River.

The earliest documented structures belong to the late Roman period and include port-related buildings and associated storage facilities, constructed using *opus caementicium* and *opus signinum* techniques ¹¹⁷. These warehouses likely formed part of the extensive commercial and logistical infrastructure that supported *Tarraco*'s economic activity well into Late Antiquity. The site also contained a road segment that ran northeast-southwest, linking the area to the broader port infrastructure. This road was refurbished during the second half of the 5th century CE. The preserved section extends westward toward the Tulfis River, measuring approximately 10 meters in length, with a width varying from 1.50 meters at its eastern end to 0.80 meters at the western end ¹¹⁷. The presence of a roadway segment within the site suggests connectivity between the port installations and inland trade routes.

Following the decommissioning of the port warehouses, a large rectangular building was constructed. Only its southern side and part of its western boundary were preserved. This structure, subdivided into three distinct areas, measured at least 14.23 meters in length and 4.96 meters in width. In the later 5th century CE, this building was expanded. In the late 5th or early 6th century CE, following a phase of abandonment and partial demolition of the previous structures, a small funerary area was established ¹¹⁷. This cemetery contained six graves, and all the burials were simple inhumations, without grave goods.

Excavation History: Excavations were conducted in multiple phases between 2017 and 2020 as part of a broader research initiative investigating the *suburbium* of Tarraco along the Francolí River ¹¹⁷. The most significant discoveries were made in 2018 when the funerary area was identified.

Geographic Information: The site is located southwest of the present-day municipality of Tarragona and is bounded to the north by the old Tabacalera building (latitude: 41.1131, longitude: 1.2389), near the banks of the Francolí River. The site is around 400m away from the present-day coastline and modern city port.

Summary of sampled materials: The funerary area identified in the later phase contained six simple inhumation burials, two of which had been disturbed ¹¹⁷. The graves were aligned in various orientations, with no grave goods found. The lack of associated material culture indicates that this cemetery may have served a lower-status community during the transitional period between Roman and Visigothic rule.

Graves:

- **Genetic Identifier:** I29631. **Grave Identifier:** UF1. **Grave Type:** Simple pit, filled with construction materials (tiles, dolia, stones). **Skeletal information:** Adult (between 40-45 years old) male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 433-578 cal CE (1550±20, UGAMS-74282). **Ancestry summary:** Central-North European. **Additional information:** Estimated height between 169.86 and 172.05 cm, based on the maximum length of the left femur. The skeleton is gracile, with marked muscular development in the medial third of the humeral diaphysis. Light signs of arthritis bilaterally affect the shoulder, elbow, and hip joints. Schmorl's nodes are present on lumbar vertebrae L2 and L3, and ligament calcification is present on the thoracic vertebrae. The right femur shows a third trochanter, and both tibiae exhibit non-pathological external torsion, possibly indicative of equestrian activity. The right tibia and first phalanx of the right foot show osteochondritis lesions. The acetabulum shows a small groove with porosity, possibly linked to the pelvic ligament system. Cervical vertebra C3 shows an abnormal trabecula, suggesting an extradural lesion. Dental examination reveals three carious lesions, generalized alveolar recession, and dental calculus buildup. The sagittal suture is almost entirely obliterated.
- **Genetic Identifier:** I29632. **Grave Identifier:** UF3. **Grave Type:** Simple pit filled with soil. **Skeletal information:** Partial skeletal remains of an infant individual aged 3-4 years old. Genetic female (XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** local Iron Age Iberian.
- **Genetic Identifier:** I29633. **Grave Identifier:** UF4. **Grave Type:** Adjacent to a wall on the east side of the plot, buried in a simple pit. The fill contained earth, glass fragments, and iron pieces. **Skeletal information:** Juvenile individual aged 12±1 years old, female (genetic female: XX karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 400-600 CE. Based on the context of archaeological findings and radiocarbon dates of individuals of the same stratigraphic layer. **Ancestry summary:** local Iron Age Iberian. **Additional information:** The skeleton shows several notable alterations: periostitis with thickening, porosity, and lamellar layers affecting the diaphyseal and metaphyseal parts of the long bones (distal right humerus, proximal right and left ulna and radius, distal left ulna and radius, diaphyses of right and left tibiae, diaphyses of right and left fibulae, metacarpals and phalanges of hands, metatarsals, and phalanges of feet). Bilateral femoral cribra, bilateral thickening of the tibiae, and curvature of the fibulae are present. Anomalous striation is observed on the anterior side of the patellae. Similar periosteal lesions affect the long bones of the hands and feet. These alterations are macroscopically and distributionally consistent with thalassemia minor, a congenital hemoglobin disorder, ruling out other infectious etiologies. Further paleopathological analysis, including genetic testing, is recommended to confirm the diagnosis.

4544 **Site-specific Bibliography:**

4545

4546 Díaz, M.; Roig, J. F. (2021): El suburbium del Francolí. Resultats de les intervencions
4547 arqueològiques a l'avinguda de Vidal i Barraquer i al carrer de Manuel de Falla (Tarragona),
4548 *Tribuna d'Arqueologia 2018-2019*, 172-195. Barcelona.

2.28 Tarragona, Mas Gassol, Alcover

Contact person(s): Josep Maria Vergès

Brief settlement history: The Mas Gassol site in Alcover consists of the remains of an *opus signinum* deposit, along with the rubble of a nearby dry-stone structure, interpreted as a possible livestock enclosure ¹¹⁸. Approximately 10 meters away, a necropolis containing six funerary structures and human remains from ten individuals was identified. The site is dated between the 3rd and 5th centuries CE, although the recovered materials do not allow for greater chronological precision.

Excavation History: In December 1991, during the construction of the Mas Gassol urbanization in Alcover, excavation work uncovered and largely destroyed a Roman-era necropolis. Following the report of this discovery by Josep Maria Vergès to the relevant authorities, the Archaeology Service of the Generalitat de Catalunya commissioned an urgent salvage excavation, led by Josep Maria Vergès and Lluís Piñol. The intervention took place between January 1 and January 10, 1992.

Geographic Information: The site is located one kilometer northeast of the town of Alcover, at the edge of the Camp de Tarragona plain (latitude: 41.274, longitude: 1.178), at the base of the first elevations of the Prelitoral Mountain Range. It lies near the Font Major ravine, a natural and permanent water source that continues to supply part of the town's water in the present day.

Summary of sampled materials: Despite extensive damage to the tombs, their main characteristics could still be documented. All burials followed a common NW-SE orientation, with individuals placed in a primary position and their heads oriented toward the NW. The majority of the tombs were constructed using limestone slabs from the Muschelkalk formation for the base and some lateral walls, with additional small stone walls bound with lime and sand mortar. Notably, UE 104 was built entirely with *tegulae*, while UE 108 contained an individual buried in a wooden coffin. In UE 111, a *tegula* with trimmed wings was used as a structural element. The original covering or superstructure of these tombs was likely made of stone and mortar, though due to the high level of destruction, its exact form remains unknown.

DNA preservation in the sampled individuals was poor. The individual reported in this study was originally published in Olalde et al. ¹, though their tomb had been destroyed by heavy construction equipment before the salvage excavation began. This individual was re-sequenced for the present study but exhibited signs of contamination.

Graves:

- **Genetic Identifier:** I6491_enhanced.AG. **Grave Identifier:** MGA'92-Resta III. **Grave Type:** Undetermined. **Skeletal information:** Undetermined age. Genetic male (XY karyotype)). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 200 - 500 CE. Based on the archaeological findings in this

4596 archaeological layer. **Ancestry summary:** Excluded from the analysis because of
4597 contamination signals. **Additional information:** Resequenced from Olalde et al.¹.
4598

4599

4600 **Site-specific Bibliography:**

4601

4602 Canyellas, J.; Piñol, Ll. & Vergès, J.M. (1996). La Vil·la d'Alcover i la Necròpolis de
4603 Mas Gassol. *Quaderns de Vilaniu* **29**:27-41

2.29 Tarragona, Vilardida

Contact person(s): Adrià Cubo Córdoba, Jordi Morera

Brief settlement history: The Vilardida site presents a long sequence of occupation, spanning over twenty centuries from the Iberian period to modern times. Particularly significant are the phases from the Iberian period to late antiquity ^{119,120}. The earliest well-defined horizon dates to the Late Iberian or Roman Republican period (3rd -1st centuries BCE), characterized by a rural settlement with partially excavated areas and storage structures, likely associated with a small Iberian farmstead. The second major phase corresponds to the early Imperial period (1st - 3rd centuries CE), with evidence suggesting a villa, though its precise location remains uncertain and is likely buried beneath the present-day village of Vilardida ^{119,120}. The most well-defined phase belongs to Late Antiquity (5th - 8th centuries CE), where remains indicate a rural settlement ¹²⁰.

Excavation History: The archaeological intervention at Vilardida was conducted between March 2018 and July 2019, covering approximately 3.5 hectares. This excavation was carried out as part of the improvement project for the C-51 road, near the municipalities of Montferri and Vila-rodona ¹²⁰.

Geographic Information: The site is located in the small village of Vilardida (latitude: 41.2833, longitude: 1.3666), situated between the municipalities of Montferri and Vila-rodona in the Alt Camp region (Tarragona). The excavated area lies in the southern part of the village, positioned between the bridge over the Gaià River and a hill behind Vilardida, on the river's left bank. It is strategically located at the junction of the C-51 and T-204 roads, which connect Montferri and Vilardida.

Summary of sampled materials: The site includes six burials from the Visigothic period. Individual I28357 (UE 5665; UF 46) was a young adult male with bound hands, interred in a double grave, radiocarbon dated to 571–651 CE. Individual I28358 (UE 5725; UF 49) was an adult male buried in a *tegulae* box, dated to 382–541 CE, accompanied by a belt buckle. Individual I28359 (UE 5186; UF 41) was an adult of undetermined sex, aged 35–40 years, buried alongside another individual, with a burial date of 550–650 CE. Individual I28360 (UE 5714; UF 48) was an adult male interred in a simple pit near a lime kiln, dated to 564–609 CE. Individual I28361 (UE 5544; UF 39) was a 45–50-year-old male with signs of health issues, buried in a double pit alongside a woman, with a date range of 661–774 CE. Individual I28362 (UE 5179; UF 40) was an adult male, aged 35–39 years, buried with two others in a communal pit, dating to 550–650 CE ¹²⁰.

Graves:

- **Genetic Identifier:** I28357. **Grave Identifier:** UE 5665; UF 46. **Grave Type:** Double freely buried grave located at the perimeter of a Visigothic period hut floor (first individual sampled). **Skeletal information:** Young adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct InCal 20 radiocarbon dated to 571-651 cal CE (1450±30 BP, Beta-537541). **Ancestry**

summary: Excluded from the genome-wide analysis due to low coverage. **Additional information:** Buried in a double grave, cutting through the layers associated with productive contexts of the villa. Hands are bound. $\delta^{13}\text{C}$: -18.2 o/oo IRMS, $\delta^{15}\text{N}$: +10.0 o/oo (95.4%)

- **Genetic Identifier:** I28358. **Grave Identifier:** UE 5725; UF 49. **Grave Type:** Burial in a double-sloped tegulae box, unknown orientation. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** Belt buckle found at the pelvis. **Dating:** Direct radiocarbon dated to 382-541 cal CE (1630 $\pm$ 30 BP, Beta-537540). **Ancestry summary:** Central-North European. **Additional information:** Buried in a deep grave, covered with double-pitched roof tiles, cutting through the layers associated with productive contexts of the villa. $\delta^{13}\text{C}$: -18.6 o/oo, $\delta^{15}\text{N}$: +7.2 o/oo (64.7%)
- **Genetic Identifier:** I28359. **Grave Identifier:** UE 5186; UF 41. **Grave Type:** Freely buried individual, unknown orientation. **Skeletal information:** Adult, 35-40 years old, undetermined sex. **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 550-650 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this stratigraphical layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Buried in a pit of the villa, along with another individual. $\delta^{13}\text{C}$: -18.1 o/oo $\delta^{15}\text{N}$: +9.0 o/oo (95.4%)
- **Genetic Identifier:** I28360. **Grave Identifier:** UE 5714; UF 48. **Grave Type:** Burial located just next to I28357 hut floor, W-E orientation. **Skeletal information:** Adult, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 564-609 cal CE (1460 $\pm$ 30 BP, Beta-537539). **Ancestry summary:** Hispano-Roman. **Additional information:** Buried at the bottom of a pit associated with a lime kiln, $\delta^{13}\text{C}$: -18.7 o/oo IRMS $\delta^{15}\text{N}$: +9.4 o/oo (95.4%)
- **Genetic Identifier:** I28361. **Grave Identifier:** UE 5544; UF 39. **Grave Type:** Simple pit burial containing two individuals side by side. First individual sampled, unknown orientation. **Skeletal information:** Adult, 45-50 years old, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct radiocarbon dated to 661 - 774 cal AD (1259 $\pm$ 40 BP, Beta-537542). **Ancestry summary:** Hispano-Roman. **Additional information:** Buried in a double pit cutting through the layers associated with productive contexts of the villa. The sampled male showed a benign tumor on the underside of the jaw, a rib fracture, several herniated discs, and clear signs of malnutrition. Isotopes: Beta - 528295 VMV 39;18 UE 5543 1280 $\pm$ 30 BP IRMS $\delta^{13}\text{C}$: -18.3 o/oo IRMS $\delta^{15}\text{N}$: +9.5 o/oo (95.4%).
- **Genetic Identifier:** I28362. **Grave Identifier:** UE 5179; UF 40. **Grave Type:** Simple pit burial containing three individuals. Lowest individual sampled, unknown orientation. **Skeletal information:** Adult, 35-39 years old, male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 550-650 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this stratigraphical layer. **Ancestry summary:** local Iron Age Iberian. **Additional information:** Buried in a pit of the villa, along with two other individuals.

4698 Sampled individual showed the knees fully bent and feet together, likely due to the
4699 pressure from the other two individuals above him. Isotopes: Beta - 528298 VMV
4700 39;18 UE 5177 1440 +/- 30 BP IRMS $\delta^{13}\text{C}$: -18.1 o/oo IRMS $\delta^{15}\text{N}$: +9.4 o/oo
4701 (95.4%)
4702
4703

4704 **Site-specific Bibliography:**
4705

4706 Arrayás-Morales, I. (2003). Morfologia històrica del territori de Tarraco en època tardo-
4707 republicana romana o ibèrica final (ss. III-I aC): cadastres i estructures rurals. *Universitat*
4708 *Autònoma de Barcelona*, **2003**.
4709

4710 Cubo-Córdoba, A., Camprubí, J. M., & Ruiz, T. P. (2022). El jaciment de Vilardida: de
4711 l'hàbitat de l'ibèric final a l'assentament tardoantic. Primeres valoracions dels darrers treballs
4712 arquiològics. *Tribuna d'arqueologia*, (2019), 155-176.

2.30 Toledo, Carranque, Santa María de Abajo

Contact person(s): Virginia García Entero & Sergio Vidal Álvarez.

Brief settlement history: Archaeological investigations at the Santa María de Abajo site indicate an initial occupation during the Early Imperial period (1st century CE)¹²¹, though the most significant structural developments date to the Late Roman period (4th -5th centuries CE). This phase saw extensive construction, including a productive complex for oil and wine, the remodeling of the *Casa de Materno* to align with elite architectural and decorative standards, the construction of a mausoleum, and, by the late 4th century CE, the erection of a palace. This palace featured elaborate interior decorations crafted from ornamental stones sourced from major quarries across the Mediterranean and the Iberian Peninsula¹²¹.

By the mid-5th century CE, the industrial complex was gradually dismantled, and a new Late Antique settlement emerged over its ruins, leaving limited archaeological traces. In the mid-6th century CE, a large necropolis with over 100 burials developed around the remains of a barely detectable Christian religious structure¹²¹. Following the Visigothic occupation, an Andalusian rural settlement with dozens of storage silos was established. After a subsequent period of abandonment, a Christian church and monastery were constructed over the ruins of the Late Roman palace in the 12th century, accompanied by a new necropolis in the 14th century.

By the 16th century, only a portion of the Late Roman structure remained, serving as a rural chapel. After the 19th-century disentanglement, the site became a refuge for marginalized communities, who occupied it until the early 20th century¹²¹.

Excavation History: The site was discovered in 1983 during agricultural work that revealed a mosaic, later identified as part of a Roman villa's residential area. This discovery prompted archaeological interventions sponsored by the Junta de Comunidades de Castilla-La Mancha, conducted in two phases: the first from 1985 to 2003, and the second from 2004 to the present. The site was officially opened to the public in 2003 as part of the Castilla-La Mancha Archaeological Parks Network.

During the first research phase (1985–2003), excavations focused on several buildings believed to be associated with the estate of Maternus Cynegius, a *Praetorian Prefect* under Theodosius I. However, this interpretation faced strong academic scrutiny. Since 2004, renewed investigations have sought to refine the chronology and function of the site's structures through targeted excavations and comprehensive analysis of material culture¹²¹.

Geographic Information: The Santa María de Abajo site (Carranque, Toledo) is strategically located in the central Iberian Peninsula, on a broad terrace along the right bank of the Guadarrama River (latitude: 40.18972, longitude: -3.9547). The site occupied a key position along the *Itinerarium Antonini* Route XXIV, which facilitated north–south communication between the two Mesetas via the Fuenfría Pass in the Sierra de Guadarrama. It also served as a crucial east–west transit corridor during the Roman period. This route remained in use until the conquest of Toledo in 1085, after which new roads emerged in response to shifting political and socio-economic conditions.

Summary of sampled materials: The analyzed samples originate from graves excavated during the 2009 and 2010 campaigns ¹²¹. All belong to a Visigothic-era necropolis with at least a hundred burials, uncovered over multiple excavation seasons. The necropolis was established atop the ruins of a Late Roman palace, which had been repurposed to accommodate a Christian basilica. The necropolis expanded around this religious structure, though little information is available regarding the basilica's interior decoration ¹²¹.

Graves:

- **Genetic Identifier:** I15419. **Grave Identifier:** UE 10829; T-5; CA07. **Grave Type:** Collective pit grave. W-E orientation. **Skeletal information:** Adult. Genetic female (XX karyotype). **Grave goods:** Bronze lyriform belt clasp with buckle and clasp pin in the pelvic area. **Dating:** Direct radiocarbon dated to 607-774 cal CE (1360±30 BP, Beta-471267). **Ancestry summary:** Central-North European and Imperial Roman Eastern Mediterranean admixture. **Additional information:** Primary position in the pit grave.
- **Genetic Identifier:** I15423. **Grave Identifier:** UE 10718; T-122; CA10. **Grave Type:** Collective pit grave. W-E orientation **Skeletal information:** Subadult. Genetic female (XX karyotype) **Grave goods:** A cylindrical bronze washer, several fragments in the shape of earrings and a circular appliqué of the same material. **Dating:** Archaeologically dated to 600-700 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this stratigraphical layer. **Ancestry summary:** Hispano-Roman. **Additional information:** Raided tomb.
- **Genetic Identifier:** I15424. **Grave Identifier:** UE 10652; T-154; CA2010; maxila 3. **Grave Type:** Collective pit grave. W-E orientation. **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 600-700 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this stratigraphical layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** Jaw sampled from a pile of bones in the pit.
- **Genetic Identifier:** I15426. **Grave Identifier:** UE 10652; T-154; CA2010; maxila 1. **Type:** Collective pit grave. W-E orientation. **Skeletal information:** Unknown age. Genetic male (XY karyotype). **Grave goods:** No grave goods found. **Dating:** Archaeologically dated to 600-700 CE. Based on the archaeological findings and radiocarbon dating of other individuals in this stratigraphical layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** Jaw sampled from a pile of bones in the pit.
- **Genetic Identifier:** I15427. **Grave Identifier:** UE 10651; T-154; CA2010. **Grave Type:** Collective pit grave. W-E orientation. **Skeletal information:** Adult (between 25 and 35 years old), male (genetic male: XY karyotype). **Grave goods:** No grave goods found. **Dating:** Direct InCal 20 radiocarbon dated to 564-650 cal CE (1460±30

BP, Beta-421969). **Ancestry summary:** local Iron Age Iberian. **Additional information:** Dental calculus.

- **Genetic Identifier:** I15428. **Grave Identifier:** UE 10650; T-154; CA10. **Grave Type:** Collective pit grave. W-E orientation. **Skeletal information:** Adult (between 25 and 35 years old). Genetic female (XX karyotype). **Grave goods:** a rectangular iron belt buckle -without needle- of iron. **Dating:** Direct InCal 20 radiocarbon dated to 597-664 cal CE (1410±30 BP, Beta-421970). **Ancestry summary:** Excluded from the genome wide analysis due to low coverage. **Additional information:** Presented a slight bulge in the medial aspect of the right tibia, approximately in the middle area of the diaphysis. This may be the result of periostitis due to a small traumatism.

Site-specific Bibliography:

García-Entero, V., Peña-Cervantes, Y., Zarco-Martínez, E., Elvira-Martín, A. y Vidal-Álvarez, S., (2017). La necrópolis de época visigoda de Santa María de Abajo (Carranque, Toledo). *La Meseta Sur entre la Tardía Antigüedad y la Alta Edad Media*, pp. 153-212. Toledo.

2.31 Zaragoza, Épila, Las Lomas del Molino

Contact Person(s): Isidro Aguilera

Brief settlement history: The site has a long history of human occupation, beginning in the Bronze Age (circa 1900–1700 BCE) with open-air settlements containing refuse pits, one of which was later repurposed as a burial tomb ¹²². During the Roman period (1st–3rd centuries CE), the area functioned as a rural agricultural settlement, featuring two cisterns constructed with hydraulic mortar. In the Visigothic period (5th–early 8th centuries CE), the site was transformed into a large Christian necropolis with over 450 documented burials. These included monolithic sarcophagi made of alabaster or sandstone, tiled graves, and simple earthen pits. Adjacent to the cemetery, a Visigothic village with domestic silos was identified, indicating continuous occupation and agricultural activity. During the early Islamic period (8th century CE), pottery vessels were found within some of these silos, suggesting a shift in use and cultural influence in the region ¹²³.

Excavation History: The site was discovered in 1993 during preparatory work for the construction of the Zaragoza-Madrid high-speed railway, having been previously undocumented. Excavations were conducted in 1994 and 1999 by *Arqueo-Expert S.L.*, focusing on the area directly affected by the railway construction. However, archaeological evidence suggests that the site extends beyond the excavated zone, indicating a larger, yet unexplored settlement ¹²³.

Geographic Information: The site is located within the municipality of Épila, situated on a river terrace along the left bank of the Jalón River, a tributary of the Ebro River to the south. The terrace is composed of sand, gravel, and rounded stones, characteristic of the region, which has historically been used for dry farming (latitude: 41.591263, longitude: -1.311375).

Summary of sampled materials: A total of 15 individuals were unearthed during the rescue excavations. These remains are currently housed in the storage facilities of the Zaragoza Archaeological Museum. Unfortunately, due to a loss in excavation information, little is known about the archaeological context of each individual ¹²³.

Graves:

- **Genetic Identifier:** I30586. **Grave Identifier:** Tumba 3A.85, caja 2050. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic female (XX karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30587. **Grave Identifier:** Tumba 3b.86, caja 2050. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic female (XX karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.

- **Genetic Identifier:** I30588. **Grave Identifier:** Tumba 12, caja 2037. **Grave Type:** untraceable. **Skeletal information:** untraceable. Not enough genetic signal to assess sex determination. **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage.
- **Genetic Identifier:** I30589. **Grave Identifier:** Tumba 30, caja 2039. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30590. **Grave Identifier:** Tumba 32, caja 2034. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30591. **Grave Identifier:** Tumba 35. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30592. **Grave Identifier:** Tumba 65A, caja 2052. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Central Italian, Central-North European, Imperial Roman Eastern Mediterranean and North African (Punic related) admixture.
- **Genetic Identifier:** I30597. **Grave Identifier:** Tumba 184. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic female (XX karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30598. **Grave Identifier:** Tumba 188, caja 2041. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30599. **Grave Identifier:** Tumba 201.99, caja 2042. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic female (XX

karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman (No Imperial Roman Eastern Mediterranean signal detected) and Central-North European admixture.

- **Genetic Identifier:** I30930. **Grave Identifier:** Tumba 8, caja 2036. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30931. **Grave Identifier:** Tumba 18. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30932. **Grave Identifier:** Tumba 21a. **Grave Type:** untraceable. **Skeletal information:** untraceable. Genetic male (XY karyotype). **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman.
- **Genetic Identifier:** I30933. **Grave Identifier:** Tumba 34B, caja 2045. **Grave Type:** untraceable. Genetic female (XX karyotype). **Skeletal information:** untraceable. **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Hispano-Roman and Central-North European admixture.
- **Genetic Identifier:** I30935. **Grave Identifier:** Tumba 204a, caja 2047. **Grave Type:** untraceable. **Skeletal information:** untraceable. Not enough genetic signal to assess sex. **Grave goods:** untraceable. **Dating:** Archaeologically dated to 400 - 800 CE. Based on the archaeological findings in this stratigraphical layer. **Ancestry summary:** Excluded from the genome wide analysis due to low coverage.

Site-specific Bibliography:

Aguilera-Aragón, I., Delgado-Ceamanos, J., Lorenzo-Lizalde, J. I., Lorenzo-Millán, J. V., Rodanés-Vicente, J. M., & Aja, A. S. S. (2020). La ocupación del llano durante la Edad del Bronce en el centro de la depresión del Ebro: El Campo de Hoyos de las Lomas del Molino (Épila, Zaragoza). In *Actas: 14 y 15 noviembre 2019*. pp. 115-128. Colegio Oficial de Doctores y Licenciados en Filosofía y Letras y en Ciencias de Aragón.

Casabona, J.F. y Pérez-Casas, J. A. (1997): “Excavaciones arqueológicas con motivo de la construcción de la línea de alta velocidad. Yacimiento de Las Lomas del Molino (Salillas de

- 4965 Jalón, Zaragoza). *Ficha técnica*” *Arqueología Aragonesa 1995-2003*. **1995-2005**. Edición
4966 digital. Zaragoza 2005.

3 Direct AMS 14C Dates and Isotope Analysis (Complementary to Star Methods “Stable Isotope Analysis” Section).

Edited and revised by Maite I. Garcia-Collado

We report 35 new radiocarbon dates for the newly reported individuals, which can be found in Table S1A and Table S5A. The radiocarbon dating was performed at the Pennsylvania State accelerator mass spectrometry radiocarbon laboratory (PSUAMS identifier in Table S1A and S5A); CIRAM (France) radiocarbon laboratory (CIRAM identifier in Table S1A and S5A); and the University of Georgia Center for Applied Isotope Studies (UGAMS identifier in Table S1A and S5A). Table S1 also reports published radiocarbon dates or dates performed by the local archaeologist teams. The dated material (bone or tooth) was the same as the one subjected to ancient DNA analysis. Dates were calibrated to 2 sigma using OxCal v4.4.2¹²⁴ and the IntCal20 calibration curve¹²⁵.

We also generated $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values for our newly reported individuals using analyses conducted at the Pennsylvania State University accelerator mass spectrometry facility. To contextualize these values, we compiled comparative isotopic data from published case studies from the Iberian Peninsula dated to between the Roman Age and the Early Middle Ages. Specifically, we included data from C_3 cereals and legumes¹²⁶, domestic herbivores and omnivores^{127–140} and marine fish¹⁴¹ (Figure S1). Instead, the closest available isotopic measurements of C_4 plants were from an Iron Age context¹⁴² (Figure S1). These reference datasets provided an isotopic baseline chronologically and geographically consistent with the human populations analyzed. We then plotted the isotopic values from our individuals against this framework to assess broad dietary patterns and subsistence strategies at the archaeological sites analyzed in this study.

According to $\delta^{13}\text{C}$ values, most of the individuals' diets were based on C_3 plants. Considering contemporary archaeobotanical studies¹⁴³, these were probably mainly wheat and barley. A third of the individuals showed higher $\delta^{13}\text{C}$ values indicating small but consistent consumption of C_4 crops, such as millets. Two individuals with the highest $\delta^{13}\text{C}$ values had atypical diets with great proportions of C_4 crops (Figure S1), which suggest they could have a different social status or originate from regions with isotopic baselines different to the Iberian Peninsula. The spread of $\delta^{15}\text{N}$ values covers the range between moderate to high animal protein diets (Figure S1), but it is difficult to be more precise without specific baselines for each region. No clear evidence of the consumption of marine or freshwater fish was identified in any case. However, this does not rule out the possibility of occasional intake. No significant differences were observed between the diets of Roman and early medieval individuals, but some of the individuals cluster geographically.

4 Kinship analysis and Identification of Identity by descent (IBD) DNA fragments (Complementary to Star Methods “Kinship Inference” Section).

We conducted an analysis to identify kinship relationships among the newly reported individuals in our study, employing two methods, the Relationship Estimation from Ancient DNA (READv2)¹⁴⁴ and KIN¹⁴⁵.

READv2 has the capability to infer family relationships up to the second degree, even in samples with very low coverage. To ensure independence of kinship classification from within-population diversity, we normalized the proportion of non-matching alleles (P0) before assessing relationships between pairs of individuals with default options for both window size and median pairwise P0. Pairwise comparisons were performed among all of the newly reported individuals of the dataset (Table S2A). To minimize the impact of the high heterogeneity of ancestral backgrounds of the samples, we also performed a READ run among individuals within the same broad period (Roman and post-Roman control period), together with a geographic divide (Northern and Southern Iberia) (Table S2B). We considered pairwise comparisons with more than 2,000 overlapping SNPs as true positives, as the program reliably infers kinship relationships down to 1,878 shared SNPs per pair, assuming an expected mismatch rate of approximately 0.247 for unrelated individuals¹⁴⁴.

Kin is a method that estimates the relatedness of a pair of individuals from shared identical-by-descent fragments based on a hidden Markov model (HMM) approach. This method also predicts the nature of the kinship relationship within the degree of relatedness. Pairwise comparisons were performed among all of the newly reported individuals of the dataset (Table S2C). Following the criteria established in the literature, we do not consider pairwise comparisons with a log-likelihood score below 1 as true positives. Additionally, to accurately determine the specific type of relationship within first-degree relatives, we only considered results with a Within-Degree Log-Likelihood Ratio greater than 3, and a IBD length higher than 0¹⁴⁵.

We also used this method to determine the nature of the first-degree relations in the dataset, most importantly the Vilanova-Blanes first-degree pair of individuals. Kin results show that these two individuals (a woman from Vilanova d’Alcolea and a man from Blanes) were likely full siblings. To verify this result, we performed a run including the aforementioned pair together with individuals with similar ancestral origins (i.e. with substantial Germanic-related ancestry) from the Blanes necropolis, to avoid biases associated with ancestry heterogeneity. Furthermore, to test whether the amount of data overlap between these two individuals was enough to correctly determine the type of first-degree relation, we ran Kin on the individuals from the Hazleton North large pedigree, whose relationships are well-established¹⁴⁶, down-sampling at different coverage levels to match the coverage of the first-degree relatives from Vilanova-Blanes. We found that the determination of the type of first-degree relationships was accurate at the coverage levels present in the Vilanova-Blanes pair¹⁴⁶. The P0 value from the first run was used.

We calculated the shared IBD segments by imputing genome-wide data for only our high coverage newly reported individuals according to the method described by ^{147,148}. We used this methodology to properly characterize the degree of kinship among the more distantly related samples. We report those IBD comparison of those pair of individuals (published and newly reported) that had at least an IBD segment larger than 16 cM ¹⁴⁹ (Table S2D).

Incorporating the results of the three kinship approaches, we found 20 different families in our dataset. IBDs support these kinship relationships but do not find any new distant relatives across sites. The families are as follows:

- Córdoba, Lucena, Cortijo Coracho Basilica

- Family A (18 members):
 - I35804 and I36195 are daughter-father.
 - I35804 and I37209 are mother-daughter.
 - I37209 and I35942 are daughter-father.
 - I35806 and I37256 are siblings.
 - I36195 and I37209 are grandfather-granddaughter.
 - Second degree relationships: I35804-I35948, I35804-I37207, I35942-I35948, I35948-I37209, I35949-I37250, I36195-I37206, I36195-I37207, I36195-I37209, I36195-I37210.
 - Third degree relationships: I35803-I35946 (possibly 4th degree according to IBD sharing (Table S2D)), I35803-I37206, I35803-I37257 (possibly 4th degree according to IBD sharing (Table S2D)), I35804-I37206, I35804-I37210, I35806-I35943, I35806-I35946 (possibly 4th degree according to IBD sharing (Table S2D)), I35898-I35943, I35898-I35948-, I35898-I37257 (possibly 4th degree according to IBD sharing (Table S2D)), I35942-I36196, I35943-I37256, I35943-I37257, I35946-I37256 (possibly 4th degree according to IBD sharing (Table S2D)), I35948-I36195, I35948-I37207 (possibly 4th degree according to IBD sharing (Table S2D)), I37206-I37207, I37206-I37210, I37207-I37209. (Figure S2)

- Estepona, Necrópolis Arroyo Vaquero

- Family A (2 members):
 - I23173 and I23174 are father and son (order unknown).

- Girona, Pla de l'Horta

- Family A (2 members):
 - I20267 and I20382 are either first-degree (KIN results) or twins (Readv2 results).

- 5100
- 5101
- 5102
- 5103
- 5104
- 5105
- 5106
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- 5108
- 5109
- 5110
- 5111
- 5112
- 5113
- 5114
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- 5145
- Family B (2 members):
 - I12029 and I12031 are father/son (order unknown).
 - Family C (2 members):
 - I20395 and I13575 are parent/offspring (order unknown).
 - Family D (2 members):
 - I20396 and I20400 are father/son (order unknown).
 - Family E (2 members):
 - I12164 and I12032 are siblings.
 - Family F (2 members):
 - I20397 and I12163 are 3rd degree relatives
- **Granada, Colomera, Cortijo del Chopo**
- Family A (5 members, all female and with the same mtDNA haplogroup: U5a1i1):
 - I32154 is the daughter/mother of I32155.
 - I32154 is the daughter/mother of I32152.
 - I32152 is a 2nd degree relative of I32155.
 - I32154 is a 2nd degree relative of I32160.
 - I32155 is a 2nd degree relative of I32162.
 - I32154 is a 2nd degree relative of I32162.
 - I32160 is a 2nd degree relative of I32162.
 - Family B (2 members):
 - I32157 is the mother/daughter of I32158.
- **Guadalajara, Cubillejo de la Sierra**
- Family A (2 members):
 - I19667 and I19676 are 3rd degree relatives.
 - Family A (2 members)
 - I19668 and I19675 are 3rd degree relatives.
- **Mérida, Necrópolis Blanes and Castelló AND Castelló, La Vilanova d'Alcolea, Hostalot-Ildum**
- Family A (2 Members):
 - I23273 and I22103 are siblings.
- **Tarragona, Cambrils, Els Masos**

- 5146
- 5147
- 5148
- 5149
- 5150
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- 5152
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- 5155
- 5156
- 5157
- 5158
- 5159
- 5160
- 5161
- 5162
- 5163
- 5164
- Family A (3 members):
 - I29524, I29525 and I29526 are mother-father-daughter respectively.
 - **Tarragona, Cambrils, La Mineta**
 - Family A (2 members)
 - I29575 and I29629 are siblings.
 - **Tarragona, La Canonja, Villa Romana dels Castelletts**
 - Family A (2 members):
 - I29550 and I29547 are parent-child, order unknown (Only based in KIN results).
 - **Zaragoza, Epila, Las Lomas del Molino**
 - Family A (2 members):
 - I30599 and I30587 are 3rd degree relatives.

5 Ancestry modelling and allele frequency-based f-statistics framework tests

(Complementary to Star Methods “Ancestry Modeling of ancient individuals”, “Ancestry Modeling of present-day populations” and “Admixture Dating (DATES)” Sections)

In this supplementary section, we aim to understand the genetic ancestry underlying the Roman and Late Antiquity populations of the Iberian Peninsula. To accomplish this goal, we modeled the ancestry of 269 ancient individuals newly reported in this study, together with previously published 1240k captured individuals from the same region and time period¹, using the f-statistics framework implemented in the *qpAdm* software from AdmixTools v.6.0 (<https://github.com/dReichLab/AdmixTools>). The decision-tree workflow used to infer population structure of the newly reported dataset can be found in Figure S7.

The analyses described in this section were carried out in the dataset containing the 1,233,013 SNPs common to both 1240k and Twist reagents (see Star Methods: In-solution Hybridization Capture of Genomic Libraries Section). The parameter "allsnps: YES" was used to maximize SNP overlap across f4-statistics, and therefore minimizes the effects of missingness in our dataset. Also, to bypass the effect of allele capture bias observed when using together 1240k capture and shotgun data¹⁵⁰ and its subsequent effects in f-statistics matrix calculations¹⁵¹, whenever possible, we avoided the use of shotgun sequenced ancient individuals in any of our models, both as source populations and outgroups.

The demographic processes underlying the complex demographic and linguistic landscape encountered by the Romans upon their arrival to Iberia in the 3rd century BCE remain incompletely understood (this will be a topic for future work). However, the broad ancestry make-up of Iberian Iron Age populations at the dawn of the proto-historic and historic periods has been investigated in previous work¹, and we can use their genetic data as a proxy for the local Iberian component in individuals dated to later periods. Since our aim is to study the demographic impacts of the Roman colonization and the later Great Migration period, we develop a proximal ancestry model with Bronze Age populations preferentially as outgroups, which would be differentially related to the source populations (mainly Iron Age groups, e.g., Iberian Iron Age) contributing ancestry to our target individuals from the Roman and Late Antiquity periods dated ~0-700 CE.

We designed the following set of outgroups:

- Mota: We use the Mota cave individual (its 1240k data version), a 4500-year-old hunter-gatherer from Ethiopia without any evidence of West Eurasian admixture as the “base” outgroup^{152,153}.
- Morocco_Iberomaurusian: We use the individuals from the Iberomaurusian culture of North Africa (present-day Morocco) as the outgroup giving leverage for teasing apart North African-related ancestry¹⁵⁴.
- Spain_EBA_Argar: This population represents individuals from the Early Bronze El Argar culture in present-day Spain^{1,155}. We include this outgroup for teasing apart Iberian-specific drift within Iron Age Iberian sources.

- Germany_EBA_Unetice: These individuals are associated with the Unetice culture of Early Bronze Age Germany ¹⁵⁶.
- Turkey_Alalakh_MLBA: This population represents individuals from the Middle/Late Bronze Age site of Alalakh in Northern Levant ¹⁵⁷. We use this outgroup for teasing apart Levantine-related ancestry.
- Steppe_IA: Individuals from the Steppe region during the Iron Age ^{158–161}.
- Greece_Mediterranean_BA: This population represents individuals from the Bronze Age Aegean region ^{2,162–165}. We use this outgroup to provide leverage for teasing apart ancestry from the Eastern Mediterranean-specific drift.

5.1 Baseline model for the Roman and Late Antiquity individuals from Iberia

The results of the West-Eurasian Principal Component Analysis suggest the presence of three main ancestral components in the majority of Roman and Late Antiquity individuals from Iberia (See Star Methods: Principal Component Analysis (PCA) Section, Figure 1C-F, Figure S4). These components are: i) ancestry derived from local Iberian Iron Age groups; ii) ancestry associated with Eastern Mediterranean populations, which became widespread across the Roman Empire during the Imperial period in the city of Rome ¹⁶⁴, iii) central Italy ¹⁶⁵ and the Balkan peninsula² and iv) ancestry derived from North African populations. We based this inference on:

- The PCA position of several Roman and Late Antiquity individuals overlapping or adjacent to the space occupied by previously published Iberian Iron Age individuals ^{1,166–169}. A local Iberian component is also supported by the presence of uniparental markers with clear local Iberian origin, such as Y-chromosome lineage R1b-DF27, widespread in Iberia since the Early Bronze Age up until the present day ^{1,155,170,171}.
- The shift (higher values in PC1 of the West-Eurasian PCA) observed in many Roman and Late Antiquity individuals towards groups with high levels of Eastern Mediterranean ancestry such as Western Anatolian populations and the available population from Rome during the Imperial period. This is also supported by the presence of uniparental markers with a likely Eastern Mediterranean/Near Eastern proximal origin such as Y-chromosome haplogroups L1b, T1a or J2a, all absent in Iberia during earlier Bronze and Iron Age periods.
- The shift (higher values in PC1 and lower values in PC2 of the West-Eurasian PCA) observed in many Roman and Late Antiquity individuals towards ancient and present-day groups from North Africa. This shift is also clearly seen in the North Africa West Eurasian PCA (Figure S3A). A North African component is further supported by the presence of uniparental markers with a likely North African proximal origin such as Y-chromosome haplogroups

E1b-M81 and E1b-V65 and mtDNA haplogroup U6, as well as others with a more general African proximal origin such mtDNA haplogroups L1, L2 and L3. all absent in Iberia during earlier Bronze and Iron Age periods.

Based on these observations we modeled the ancestry profile of the newly reported and the previously published Roman and Late Antiquity individuals from Iberia using the following set of possible source populations:

- Iberia_IA: We use this population, which includes Iron Age individuals from the Iberian Peninsula ^{1,166–169}, as a direct source of local ancestry. Out of the 24 individuals included in this group, 13 were excavated at non-Indo-European-speaking areas along the Mediterranean, and an additional 11 were excavated at Indo-European-speaking areas throughout the Central Plateau and the northern Cantabrian coast. Previous work has shown that these regions differ in their proportions of Central-European-related ancestry, with higher levels in the latter ¹. By using this metapopulation as a baseline, we account for this regional imbalance in the Central European signal, and aim to correct the potential bias in the estimation of local ancestry in Roman and Late Antique individuals, particularly in cases where ancestry is derived from local groups with elevated Central European affinities. However, the small population size precludes the construction of a more finely localized Iron Age source population, specific to the regions studied.
- WestAnatolia_Roman_Byzantine: This population is composed of a group of 29 individuals who inhabited the Aegean coast of Anatolia during the Roman-Byzantine period ¹⁶³. We use this source as a proxy for the Eastern Mediterranean signal present in the Italian Peninsula and the Balkans during the Imperial Period ^{2,164,165}.
- North_Africa_Punic: This population is composed by ancient individuals dated to the Punic period from North Africa (Kerkouane, Tunisia) and South Spain (Villaricos, Almería) ($n=4$), who are almost fully North African in ancestry ¹⁷². We consider that this population would represent a relatively good proxy for the source of the North African signal observed in our test Iberian individuals from Roman and Late Antiquity periods. We caution, however, that North Africa during the second half of the 1st millennium BCE is currently severely undersampled, so the real North African source who contributed ancestry to our test individuals might differ from the North_Africa_Punic group we use as a proxy.

Due to the substantial ancestry heterogeneity observed in PCA, even among individuals from the same archaeological sites, we opted against aggregating the tested individuals into populations for this particular analysis. This decision was made to avoid losing interesting patterns that would otherwise go unnoticed when grouping several individuals. However, this approach diminishes the statistical power to reject poor-fitting models specially in low-coverage individuals, as compared to an approach where individuals are grouped into

populations or clusters for modelling. As a result, caution needs to be taken when interpreting the results of low-coverage individuals.

For those individuals whose 3-way (*Iberia_IA* + *WestAnatolia_Roman_Byzantine* + *North_African_Punic*) model was rejected (p-value < 0.01, the models was infeasible due to negative ancestry proportions, or the proportion's standard errors were bigger than the proportion value) by the *qpAdm* algorithm, we developed a strategy to select a more suitable model (Figure S6). This entails examining whether there are any of the 3 components with a negative proportion (or high standard errors, which would exceed the value of the proportion). In these cases, we check the viability of the respective nested model without the rejected component/s. By iterating through this process, we aim to refine the model selection. If no ancestry was directly rejected (namely, yielded a negative ancestry, or a standard error bigger than the actual ancestry proportion), we explored the fitting nested models of any of them starting with the basal 3-way model.

Out of the 269 individuals with a good-fitting model, 146 can be modeled as a mixture (with varying proportions of these 3 main components): *Iberia_IA*, *WestAnatolia_Roman_Byzantine*, *North_African_Punic*. A further 25 can be modeled as a two-way nested model: 13 as a *Iberia_IA* and *WestAnatolia_Roman_Byzantine*, 6 as *Iberia_IA* and *North_African_Punic*, and 6 as *WestAnatolia_Roman_Byzantine* with *North_African_Punic*. And a final number of 25 as a nested one-way model: 18 as *Iberia_IA*, 5 as *WestAnatolia_Roman_Byzantine*, and 2 as *North_African_Punic*. We could model the ancestry of 196 ancient Iberian individuals, however, there were 74 individuals remaining without any fitting model.

5.2 Introduction of Central/Northern European-like ancestry

For those individuals who did not yield a good-fitting model with the approach explained in the previous subsection, 5.1, we hypothesized that for some of them, an additional ancestry component was missing in the initial model. Based on historical and archaeological evidence, a good candidate is Central/Northern European-related ancestry brought by groups commonly known as the Vandals, Suevians, Alans and most prominently the Visigoths who migrated to the Mediterranean region during and after the decline and fall of the Roman Empire, reaching the Iberian Peninsula in the 5th century CE. Several archaeogenetic studies have identified and genetically characterized these groups, which had varying degrees of demographic impact depending on the region^{1,2,164,173–175}. The presence of Central/Northern European-related ancestry unaccounted for in our initial model is further supported by 1) the PCA position of several of our test individuals (mostly dated to the Late Antiquity), close or within the space occupied by Central/Northern European populations, including Germanic groups from the Migration Period such as the Langobards; and 2) the detection of I1 and R1a Y-chromosomes lineages of likely Central/Northern European origin in four Late Antiquity individuals in our transect.

To account for the incorporation of this ancestral component we added to the first baseline 3-way model from section 5.1 a new source population:

- CNE_EarlyMedieval: Including individuals from Northern Italy and the Carpathian basin excavated at Langobard-associated necropolises dated to the V-VI centuries CE ¹⁷³ These individuals present Central-North European ancestry and are contemporaneous to the sites in our transect with more PCA evidence of Central/Northern European ancestry, such as Pla de l'Horta and Blanes. We use them as a proxy for the groups arriving to the Iberian Peninsula during the Migration Period.

We, therefore, attempted to model with this 4-way model all of the individuals who did not yield a fitting model from section 5.1. We follow the same iterative approach defined in the previous section, i.e. if any of the ancestry proportions was negative, we looked for the nested model without the source(s) with negative proportion. Again, if no ancestry was directly rejected (as described in section 5.1), we explored the fitting nested models of any of them starting with the starting 4-way model.

Following this approach, we found 66 individuals who carried a Germanic-like ancestry. 13 individuals can be modeled with a 4-way model with *Iberia_IA*, *WestAnatolia_Roman_Byzantine*, *North_African_Punic* with *CNE_EarlyMedieval* as left populations. The remaining 53 individuals had a fitting nested model: 2 as *CNE_EarlyMedieval* + *WestAnatolia_Roman_Byzantine* + *North_African_Punic*, 2 as *Iberia_IA* + *CNE_EarlyMedieval* + *WestAnatolia_Roman_Byzantine*, 3 as *Iberia_IA* + *CNE_EarlyMedieval* + *North_African_Punic*, 8 as two-way model *CNE_EarlyMedieval* + *WestAnatolia_Roman_Byzantine*, 3 as *CNE_EarlyMedieval* + *North_African_Punic* and 5 individuals as a two-way admixture of *Iberia_IA* + *CNE_EarlyMedieval*. Finally, 19 individuals were modeled as 1-way *CNE_EarlyMedieval*.

5.3 Non fitting individuals: Introduction of Italian-like ancestry and testing outlier sources

After these steps, 10 individuals still lacked an acceptable model fit (p-value < 0.01, the models was infeasible due to negative ancestry proportions, or the proportion's standard errors were bigger than the proportion value) model.

Our first hypothesis was motivated by the well-documented foundation of veteran colonies established in Roman Hispania following its conquest and incorporation into the Roman Empire. Cities such as *Valentia*, *Emerita Augusta*, and *Caesaraugusta* were founded by Roman legionaries settled in the Iberian Peninsula during and after the Punic Wars and subsequent phases of Roman expansion. The literature has proposed that many of these recruits were of Italian origin, based on epigraphic evidence, including Roman tomb inscriptions bearing Italic names ¹⁷⁶. To assess the impact of these Italian settlers we tested for Italian like ancestry in the Roman and post-Roman by introducing two populations as possible sources:

- Italy_Lazio_Viterbo_Etruscan: Individuals from Iron Age central Italian peninsula (present-day region of Lazio) ¹⁶⁵. These populations should serve as a proxy for the early Republican Roman settlers from the Italian Peninsula,

given that Republican Rome exhibited genetic continuity with preceding Iron Age populations ^{164,165}.

- *Central_Mediterranean_Antiquity*: Individuals from Sicily during the Punic and early Roman period ¹⁷². We use this population as a proxy for groups with a proximal origin in the central Mediterranean that could be admixing with Iberian populations but without the strong Eastern Mediterranean/Near Eastern signal that we model with *WestAnatolia_Roman_Byzantine*.

In addition, we incorporated an additional potential source population from northern Europe that represents a different origin than the *CNE_EarlyMedieval* group. This ancestry component is intended to account for migrants who may have originated in more northwestern regions of Europe, specifically from areas located near the northwesternmost frontier of the Roman Empire.

- *Netherlands_MBA_IA*: This population consists of individuals from the Middle Bronze Age and Iron Age in what is now the Netherlands, as reported in ¹⁶⁶. It serves as a proxy for northwestern European ancestry that may not be adequately captured by more central or eastern European sources such as *CNE_EarlyMedieval*.

We also tested for possible outlier individuals with ancestry components that are completely missing (e.g. Central Asian ancestry, like observed in the Migration Period individuals from the Balkans ²) among our source populations utilized so far. Alternatively, the poor fit could be the result of using source populations that, although generally similar to the actual populations contributing ancestry to our test individuals, present small differences in ancestry that drive the model failure. One could hypothesize, for instance, that people arriving to the Iberian Peninsula during the Roman colonization were not ancestrally homogenous, and that we are not fully capturing this diversity with our modelling framework and the limited array of previously published ancient populations from the relevant periods and regions that are available to us. Another equally plausible scenario is that North African populations contributing ancestry to Roman and Late Antiquity Iberia were ancestrally diverse, and the extremely limited available archaeogenetic data from this region does not fully cover this diversity.

For special outliers, we introduced the extra ancestral component:

- *Kazakhstan_Sarmatian_IA*: A group of individuals from present-day East Kazakhstan Iron Age associated with the Sarmatian culture ¹⁵⁸. We use this population as a proxy for the ancestry in Iron Age Steppe populations, who have also been shown to impact demographically in Great Migration-period populations in Central and Southeastern Europe ².

We detect 5 individuals that yielded differing amounts of *Italy_Lazio_Viterbo_Etruscan* ancestry but only in admixed form. 3 individuals yielded varying amounts of *North_Africa_Punic* ancestry. While individual I30592 was modeled with a 4-way *Italy_Lazio_Viterbo_Etruscan*, *WestAnatolia_Roman_Byzantine*, *CNE_EarlyMedieval* and

North_Africa_Punic model; and individual I19665 was modeled with a 3-way *Italy_Lazio_Viterbo_Etruscan*, *CNE_EarlyMedieval* and *North_Africa_Punic* model.

We do not detect any Iron Age Steppe-like ancestry in Migration Period Iberia, as no individual could be successfully modelled using *Kazakhstan_Sarmatian_IA* as a source population. Historical accounts indicate that the Goths settled for several centuries along the northern shores of the Black Sea, near the Pontic Steppe. During this time, early Gothic groups came into contact with nomadic steppe cultures and incorporated elements of their ancestry into the Gothic gene pool². However, by the time the Visigoths reached the Iberian Peninsula, this Steppe-related ancestry was likely too diluted to leave a detectable genomic signal.

5.4 Validation of West European ancestry source in lower coverage samples

Due to the recent history of gene flow between Iberia and Central Europe during the Bronze Age and Iron Age periods^{1,155,177}, we wondered whether our qpAdm setup was able to properly tell apart the proxy for different European source populations: Central/Northern European ancestry arriving to Iberia during Late Antiquity (*CNE_EarlyMedieval*), the local Iron Age proxy (*Iberia_IA*), and the Italian settlers arriving in Iberia during early Roman colonization of the peninsula represented by their Iron Age proxy (*Italy_Lazio_Viterbo_Etruscan*). In principle, we would expect more issues in low coverage individuals or in cases where the amount of *Iberia_IA/CNE_EarlyMedieval*-related ancestry to be modelled was small.

To assess the extent of this possible mischaracterization of *Italy_Lazio_Viterbo_Etruscan*, *Iberia_IA* and *CNE_EarlyMedieval*-related ancestries, we developed two complementary approaches to evaluate the robustness of the selected European source.

5.4.1 Three-way f_4 test comparison for European population affinities

To determine the affinity of the newly reported individuals to local Iron age *Iberia_IA* source, *CNE_EarlyMedieval* source and *Italy_Lazio_Viterbo_Etruscan* we first computed three f_4 Comparisons:

$f_4(\text{Mbuti, newly_reported_individual}; \text{Iberia_IA}, \text{CNE_EarlyMedieval})$
 $f_4(\text{Mbuti, newly_reported_individual}; \text{Iberia_IA}, \text{Italy_Lazio_Viterbo_Etruscan})$
 $f_4(\text{Mbuti, newly_reported_individual}; \text{Italy_Lazio_Viterbo_Etruscan}, \text{CNE_EarlyMedieval})$

We determined whether the affinity to a specific European source population was significantly different from that to alternative sources using Z-scores, considering values where $Z > 3$ or $Z < -3$ as statistically significant. By identifying individuals with a significantly stronger affinity to an alternative source, we were able to detect potential mischaracterizations in source assignment and explore revised admixture models accordingly.

A total of 71 individuals yielded significant results in this comparison. Among them, 4 individuals showed stronger affinity to a different source than initially assigned through the pipeline described in Sections 5.1–5.3. These comparisons and results are presented in Table S3B. Further exploration of alternative models led to corrected ancestry models for 8 of these individuals (Table S3D; Figure S8A and S8B).

Four individuals (I13574.AG and, I13571.AG), who were initially modeled using *Iberia_IA* as a proxy for their European ancestry component, exhibited significantly greater affinity to *CNE_EarlyMedieval* in both $f_4(\text{Mbuti, newly_reported_individual; Iberia_IA, CNE_EarlyMedieval})$ and $f_4(\text{Mbuti, newly_reported_individual; Italy_Lazio_Viterbo_Etruscan, CNE_EarlyMedieval})$ tests. For all four individuals, viable models using *CNE_EarlyMedieval* as a source were obtained.

Lastly, individual I37213.TW showed significant affinity to *Italy_Lazio_Viterbo_Etruscan*. When this population was used as the European source (alongside *WestAnatolia_Roman_Byzantine* and *North_Africa_Punic*) the model produced a negative proportion for *WestAnatolia_Roman_Byzantine*. However, removing *WestAnatolia_Roman_Byzantine* from the source set resulted in a well-fitting model for this individual.

5.4.2 European population proxy qpAdm model source - outgroup rotation

We developed a second strategy to evaluate the most appropriate European ancestry source by testing alternative qpAdm models. Specifically, we introduced additional potential European source populations (those not originally included as sources) into the outgroup set of each individual's ancestry model. This allowed us to assess whether the initial model remained valid in light of potential confounding ancestry signals.

If the model remained statistically valid with the new population added to the outgroups, we considered the original European source correctly assigned. However, if the model failed with any European population in the outgroups, we re-evaluated ancestry composition by rotating the tested population from the outgroup set into the source set, replacing the originally assigned European source. We then examined whether this new configuration yielded a statistically fitting model.

For example, in individuals whose ancestry was initially modeled as a three-way mixture of *Iberia_IA*, *WestAnatolia_Roman_Byzantine*, and *North_African_Punic* (as described in Sections 5.1-5.3), we tested whether the model still fit when either *CNE_EarlyMedieval* or *Italy_Lazio_Viterbo_Etruscan* was moved into the outgroup list. If the model remained valid, we retained the original *Iberia_IA* assignment. If not, we constructed alternative models by replacing *Iberia_IA* with either *CNE_EarlyMedieval* or *Italy_Lazio_Viterbo_Etruscan* in the source list and moving *Iberia_IA* to the outgroups. If these alternative models yielded a good statistical fit, we reassigned the European ancestry source accordingly.

Model testing failed for 14 individuals when an alternative European source population was introduced as a replacement for the original European ancestry proxy (Table S3C). Of these,

7 individuals also yielded failed models when the alternative source was rotated into the source set and the original source placed in the outgroup list. Due to these repeated failures, we considered the analysis inconclusive for these cases and retained the original model assigned through the semi-automatic pipeline (described in Sections 5.1–5.3).

For the remaining 7 individuals (I26172.AG, I35942.TW, I37208.TW, I18399.AG, I3577.AG, I19665.AG and I30592.TW), the alternative model (where a different European source was used) produced a significantly better fit. As a result, we replaced the original model with the revised one, reflecting the corrected European ancestry proxy; Table S3D).

When reporting genetic profiles in text, close relatives were retained when their relationship was biologically or archaeologically informative (i.e. site-specific interpretations and the identification of familial structures). However, for population-level comparisons of ancestry profiles or genetic category frequencies, first-degree relatives were excluded to avoid overrepresentation of individual lineages and approximate independent sampling. We note that related individuals may carry different ancestry profiles due to recent admixture, and therefore can provide valuable insights into the timing and social context of admixture. Nevertheless, they are treated separately for population-level frequency reporting.

5.5 Modern individuals Modelling IBS (qpAdm Modelling and f_3 tests)

To analyze the long-term impact of the migration period on the Iberian demographics we designed an approach involving present-day Iberian populations from the 1000 Genomes project¹⁷⁸.

We attempted to model the individuals grouped regionally by the administrative region annotated in the 1000 Genomes project¹⁷⁸ with the same models described in sections 5.1 and 5.4. However, none of the models fit the data adequately (Table S4A). To ensure these results were not driven by known biases when co-analyzing different data types: ancient data from the outgroups and sources derived from SNP capture while the present-day test populations derived from shotgun sequencing^{150,151}, we explored the behavior of the models when pruning out from the dataset the SNPs with the strongest bias and keeping 620,466 SNPs^{150,151}. We also performed a random SNP down-sampling of exactly 620,466 SNPs to account for the potential loss in statistical power due to data loss, and thus introducing a risk in false positive model fit.

By performing such a pruning, we found fitting models for some of the present-day Iberian populations, however, we were unable to identify a model that fit all populations. We do observe a broad increase in p-values across all populations when using the pruned biased SNPs dataset; Table S4A), and for *IBS_Extremadura* (p-value > 0.05); and *IBS_Valencia*, *IBS_Murcia*, *IBS_Galiza*, *IBS_Castilla_y_Leon*, *IBS_Balears* and *IBS_Aragon* (p-value > 0.01), we find a 4-way fitting model when using *Iberia_IA*, *WestAnatolia_Byzantine*, *North Africa Punic*, *CNE_Early Medieval* as sources (Table S4A). We tested if this increase is due to a lower number of SNPs in the dataset, but in this case of random SNP down-sampling, the p-values do not increase, indicating that the increase in p-values when pruning out SNPs with strong bias is not due to a decrease in resolution.

Based on historical sources and on the genomic population structure of present-day Iberian populations (Figure 14B), we deem improbable that the Iberian Peninsula saw a major scale migration event after the Migration period that would significantly had introduced new ancestral signals. Events such as the Islamic conquest, the later conquest by the Christian kingdoms, the repopulation events carried out during the rule of Charles V (Holy Roman Emperor) or even modern episodes like Napoleon's invasion did not introduce major ancestry components that fall outside the scope of the four sources used in our models (Sections 5.1 - 5.3). Present-day populations would continue to be represented by combinations of these sources. However, despite the fact some of the present-day Iberian populations yield a fitting model with the biased SNPs pruned dataset, the general poor model fits observed could reflect the demographic reshaping of local population structure that occurred during the Medieval and later periods. This process involved significant resettlement and demographic turnover, especially in southern Iberia that is still to be explored from the ancient DNA perspective. This likely contributes to the low p-values observed for some modern populations (Table S4A) despite the adequacy of the ancestral signals.

A second major point must be raised regarding the adequacy of the present-day target and ancient sources used. First, as mentioned in previous sections there is a significant allelic bias when using different types of capture technologies¹⁵¹. This inevitably bias the f-statistic computations. Thus, we mitigated such effect by pruning the known biased SNPs which resulted in nearly halving our SNP count in the used dataset for these tests. This is suboptimal both for the Target population and the ancient sources/outgroups used, who already possess missingness, and although we compared the result of such an excessive SNP loss by comparing our results with a randomly down-sampled dataset, we still take caution when drawing conclusions of our results.

Second, and more importantly, we see as a limitation with the restricted number of published ancient samples available to use as source for this ambitious present-day Iberians modelling. We acknowledge that there is a systematic sampling gap in the ancient DNA record for the Iberian and European Iron Age, as the most extended burial method is cremation. Because of this there are major regions in the Iberian Peninsula that are completely unsampled in this period (mostly the west and north portions of the peninsula), and the ones that are more systematically sampled do not yield a big number of well-preserved individuals. Just as a fast comparison, the number of published Bronze Age genomes from the Iberian Peninsula is in the hundreds, while we could only recover 24 from the Iron Age for our direct source (Table S1B). Despite the fact that broadly most of the peninsula is covered by these 24 samples, we recognize there is fine scale variation that we are probably not detecting in our source. These models will have to be revisited with the advancement of the field and publication of more ancient individuals. In the same line, we also must point out that the Maghrebi region (and the African continent) is severely under sampled, deeming our Iron Age (Punic Related) population that we use as a source to suffer from the same loss of resolution limitation pointed out for the Iron Age Iberia.

Lastly, we also have to acknowledge that there is also lack a systematic sampling of the post-Migration period and Medieval Iberian Peninsula at the time of writing. The demographic processes that shaped Iberia during the Late Medieval period are yet to be fully characterized.

Prolonged conflict between the northern Christian kingdoms and the Andalusi Muslim political entities during most of the medieval era severely altered the population landscape of the Peninsula. Historical sources indicate that territories incorporated by the northern kingdoms were frequently repopulated using groups originating from their northern Iberian homelands. However, these northern regions are currently underrepresented in the ancient DNA record. Therefore, the specific source populations (that we expect, should be a subset of Early Medieval heterogeneity) that contributed ancestry to present-day Iberian populations during these repopulation processes are not directly sampled in the publicly available dataset. This limitation constrains our ability to fully resolve patterns of genetic continuity between early medieval Iberian populations and present-day Iberians. The publication of more genomes from this timeframe will allow the scientific community to better understand the demographic changes that occurred during these historical periods. We thus conclude that, although the major ancestry signals present in today's Iberia arrived in the peninsula during Roman and Migration period, the current state of the archeogenetic datasets does not allow us to fully understand the demographic processes that explain the present-day landscape.

Nonetheless, to make better sense of the population affinities of the present-day Iberians in relationship with the current ancient DNA record, we have computed the following outgroup f_3 tests. For this test we used the full 1240k SNP un-pruned dataset as there are comparisons between different types of data and we aimed to preserve as many SNPs as possible. The number of SNPs used in each of the tests can be also found in Table S4B. Parameters used were inbreeding: NO; outputmode: YES:

- $f_3(Mbuti; IBS_region, Ancient_Test)$: Where the *Ancient_Test* population we tested all published European and North African ancient population, present in the AADR v62.0 dataset ¹⁷⁹. We use this test to find the closest ancient populations to present-day Iberians. First, since no major population turnover happened in Migration period Iberia (Data S1 Section 5.1), higher affinities to local peninsular populations from present-day Iberian population would indicate no major demographic change would have happened after this period. Second, since we know that the population structure in present-day Iberia is very different to the late antique one, this test may reveal signals of medieval internal resettlement (Table S4B).
- $f_3(Chimp; IBS_region, PresentDay_Test)$: We designed this test with the same set up and intention as the test above but using a more distant outgroup (*Chimp*) to account for the fact that the previous outgroup (*Mbuti*), may share shorter f-stat branches with ancient African populations, and therefore yielding falsified results (Table S4C).
- $f_3(Mbuti; IBS_region, PresentDay_Test)$: We also selected a number of important present-day West Eurasian and North African populations (Table S4B). We designed this test as a matter of control for positive results to the more related population among present-day Iberians and other populations.

This test also mitigates the fact that the North African ancient DNA record is very lacking, and thus, accounting for the loss in resolution that would emerge when exploring the affinities of present-day Iberian to ancient African populations (Table S4B).

- $f_3(\textit{Chimp}; \textit{IBS_region}, \textit{PresentDay_Test})$: We designed this test with the same set up and intention as the test above but using a more distant outgroup (*Chimp*) to account for the fact that the previous outgroup (*Mbuti*), may share shorter f -stat branches with present-day African populations, and therefore yielding biased/misleading results (Table S4C).

We also advise caution in interpreting these results since there is an observable bias in affinities correlated by type of data generation. For instance, there is an excess of high Z-scores among the *IBS_Region* population and ancient and present-day populations whose data has been generated from Shotgun sequencing (“SG”; Table S4B, Table S4C). Also, comparisons among f_3 tests with a lower SNP overlap and comparisons between small population sizes may also yield misleading results. To account for this, we only refer to the results of those outgroup f_3 test with a >600,000 SNP overlap and also take caution of the data generation technology.

The results of these tests show first how present-day Sub-Saharan populations are the most distant from present-day Iberians, depicted by the low f_3 values of these comparisons to ancient and present day Sub-Saharan individuals (Table S4C). While present-day Western European populations have the highest affinities to present-day Iberians, we do observe a distribution of such affinities that varies regionally. For instance, in the test $f_3(\textit{Mbuti}; \textit{IBS_region}, \textit{French.DG})$, the populations of the northern and eastern regions of Spain, have higher Z-scores than southern ones, depicted by *IBS_Andalucia* yielding the lowest value.

Interestingly, and in line with present-day population genomic studies¹⁸⁰, present-day Basques (*IBS_Euskal_Herria*) and other northern populations (*IBS_Cantabria*) seem to have a unique population structure, distinct from the rest of the peninsula with higher affinities for a broad set of Iron Age western and central European populations (e.g. *Czechia_IA_LaTene.AG*, *England_MIA_LIA.AG*, *Hungary_IA_LaTene.AG*, etc.). This lays in contrast with the lower values yielded in the same outgroup f_3 tests using the rest of the regions populations (Table S4B). These northern Iberian population, however have lower affinities for Central and Eastern Mediterranean populations (e.g. $f_3(\textit{Mbuti}; \textit{IBS_region}, \textit{WestAnatolia_Roman_Bizantine})$) when comparing with other Iberian populations, most significantly the populations from regions with a Mediterranean coastline (*IBS_Catalunya*, *IBS_Valencia*, *IBS_Balears*). When comparing present-day Iberians with North African populations we observe that overall they yield lower f_3 values than when compared with other West Eurasian populations, even with lower SNP overlap (e.g. *Tunisia_Kerkouane_Punic.SG* or *North_Africa_Punic*).

In conclusion, we can see there is a broad structure of the different regional populations where the closest affinities are shared with broadly Western European populations. However, we observe this structure is not homogeneous across the peninsula and that there is a

significant regional variability. Since the population structure of late antique Iberia differ significantly, we acknowledge the that achieving a finer scale link of the newly reported individuals and population from this paper is not possible. Therefore, we reiterate that the expansion of the ancient genomic dataset must be achieved in order to elucidate the demographic processes that shaped the population structure of present-day Iberians, sampling crucial historical periods and regions, most importantly the Andalusi and posterior Medieval and perhaps Modern period.

5.6 Estimating Admixture Times Using DATES

To estimate the timing of admixture events in the Iberian Peninsula, we applied the DATES software ¹⁸¹, focusing on the two key migratory phenomena: (1) intra-Imperial migration during the Roman period, and (2) the impact of the Migration Period. We ran the tool with parameters: binsize = 0.001, maxdist = 1, jackknife=Yes, qbin=10, runfit=Yes, affit=Yes, and lovaftit 0.45; with a random seed.

As described in Data S1 Section 5.1, the baseline model for the Hispano-Roman population, persisting well beyond the Roman political decline which includes three ancestry sources *Iberia_IA*, *WestAnatolia_Byzantine* and *North_Africa_Punic*. This triad reflects the impact of Roman-era mobility on the Iberian gene pool. Our aim was to determine the timing of these admixture processes:

5.6.1 Arrival of Mediterranean Ancestries (Combined Model)

To broadly estimate when ancestries from across the Mediterranean entered the Iberian gene pool, we tested:

- Target: All individuals modeled with the three-way Hispano-Roman ancestry (*Iberia_IA* + *WestAnatolia_Byzantine* + *North_Africa_Punic*).
Sources: Metapopulations formed by *WestAnatolia_Byzantine* + *North_Africa_Punic* vs. *Iberia_IA*.

DATES algorithm estimated that admixture occurred 4.911 ± 4.392 generations ago, corresponding to a date range between ~197 CE and 451 CE (using the mean date of the target population as a reference: 467 CE). Despite the wide confidence interval, the time window overlaps substantially with the Roman occupation of Iberia, and coincides with the period of greatest imperial prosperity. The large standard error likely reflects the gradual, low-intensity, and perhaps ongoing, nature of mobility across the Roman Mediterranean, rather than discrete, large-scale migrations. However, given the proportional error (>50% of the estimate), this result should be interpreted with caution (Table S5B).

5.6.2 Arrival of Eastern Mediterranean ancestry

To refine the timeline for Eastern Mediterranean gene flow:

- Target: Individuals with the 3-way model (*Iberia_IA* + *North_Africa_Punic* + *WestAnatolia_Byzantine*).
Sources: *Iberia_IA* + *North_Africa_Punic* metapopulation vs. *WestAnatolia_Byzantine*.

DATES estimated this admixture at 34.034 ± 10.635 generations ago, translating to a broad window from ~748 BCE to 131 BCE (assuming a mean group date of 547 CE). Despite the shared ancient ancestry between North African and Levantine populations¹⁸², DATES outputs a feasible estimation. The lower bound of the estimate predates by some centuries the Roman arrival in Iberia (coinciding with Punic establishment in the region), however it also overlaps with the period of early Roman rule in the region. Since the reference age for the population is an average of the ages of all the individuals, we can also argue that the date of admixture is not a single admixture event, but a gradual process of lower scale continuous migration from Eastern Mediterranean ancestry carrying individuals into Iberia.

An alternative test using as target the individuals modeled as a two-way admixture of *Iberia_IA* and *WestAnatolia_Byzantine* (Data S1 Section 5.2), returned an even less reliable estimate: 996.562 ± 591.195 generations ago, further invalidating the approach due to high heterogeneity and limited population size (Table S5B).

5.6.3 Arrival of North African ancestry signal

To test the timing of North African gene flow:

- Target: Individuals with the 3-way model (*Iberia_IA* + *North_Africa_Punic* + *WestAnatolia_Byzantine*).
Sources: *Iberia_IA* + *WestAnatolia_Byzantine* metapopulation vs. *North_Africa_Punic*.

DATES estimated admixture at 21.804 ± 11.714 generations before the average date of the target group (~547 CE), yielding a date range from ~425 BCE to 254 CE. This overlaps with the period of intense Roman colonization, supporting a historical link.

A separate test using as target the individuals modeled as a two-way admixture of (*Iberia_IA* and *North_Africa_Punic*) yielded a more recent admixture estimate of 4.911 ± 4.392 generations before the average age of the sampled individuals (467 CE), translating to ~197–451 CE. However, given the proportional error (>50% of the estimate), this result should be interpreted with caution (Table S5B).

5.6.4 Time of Arrival of CNE ancestry

5813 To assess the timing of CNE ancestry influx we performed the following DATES set-up:
5814
5815 - Target: Individuals modeled with the 4-way model (*Iberia_IA* +
5816 *WestAnatolia_Byzantine* + *North_Africa_Punic* + *CNE_EarlyMedieval*).
5817 Sources: *CNE_EarlyMedieval* vs. the 3-way Hispano-Roman ancestry.
5818
5819 DATES returned an estimate of 129.21 ± 135.127 generations ago. This high error margin
5820 likely reflects heterogeneity in the target population's ancestry proportions. Alternatively, it
5821 may indicate multiple migration events from Central-Northern Europe, consistent with prior
5822 reports of frontier permeability in other Roman peripheries such as the Balkans and Britain
5823 ^{2,183} (Table S5B).

6. DATA S1 References

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