

Figure S1. The linguistic scenario of Euskara. Related to Table 1 and Figure 1. The colored area represents the current Euskara-speaking region. Colors represent the current distribution of the Euskara's dialects based on Zuazo's classification^{S1}, as shown in the legend. The dashed line represents the area where an Euskara-related archaic language was spoken in the 1st century, as suggested by Luís Núñez Astrain^{S2}. Km, Kilometers. Modified image from the source: Igartua and Zabaltza, 2016^{S3}.

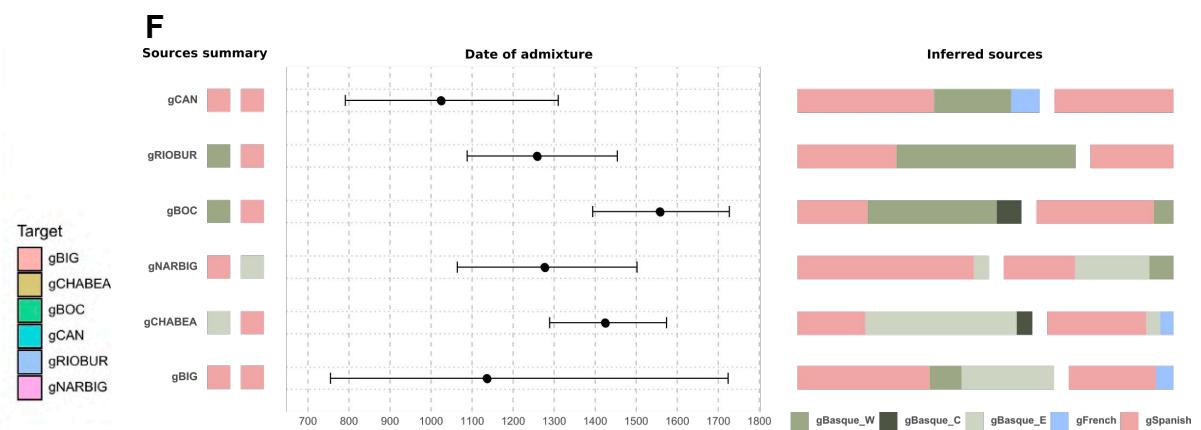
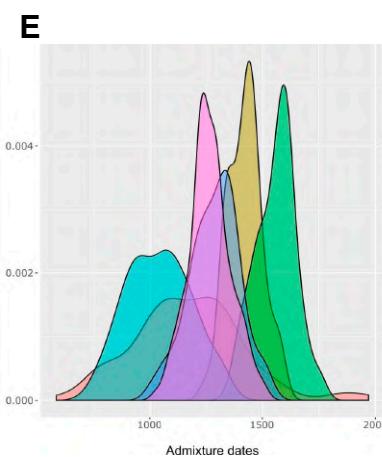
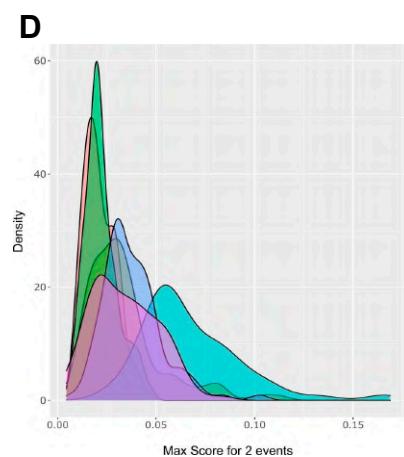
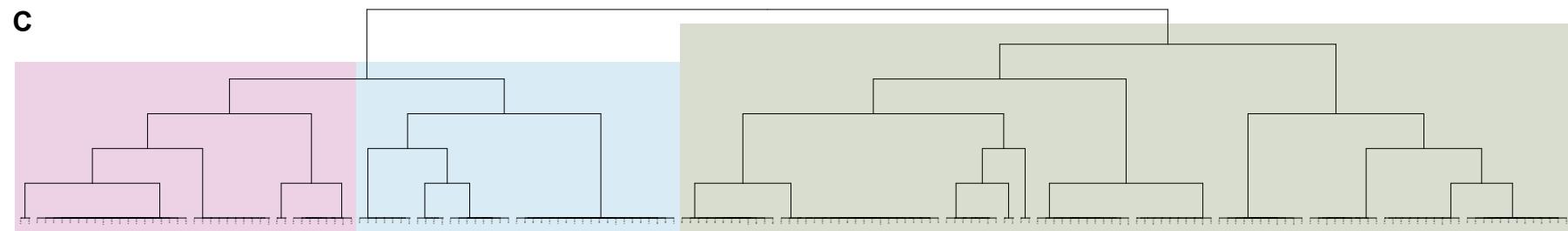
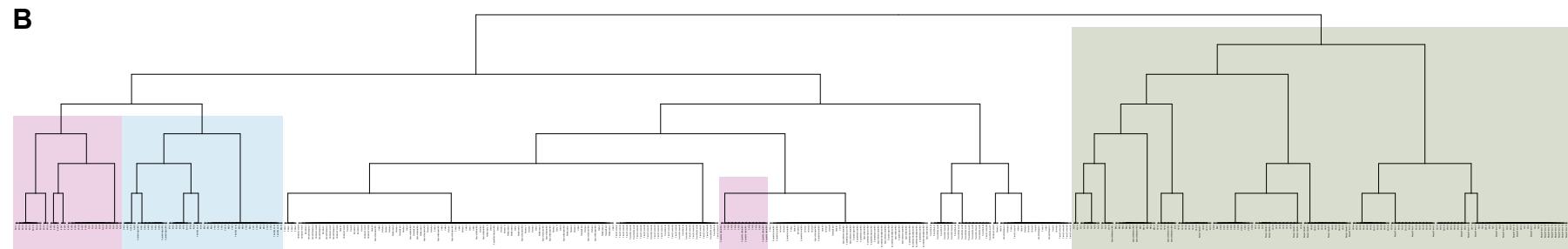
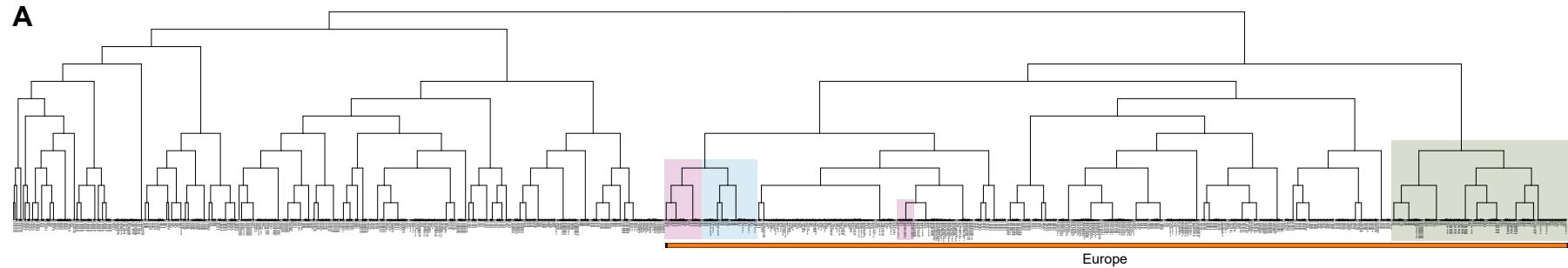


Figure S2. Contextualizing the Franco-Cantabrian region with haplotype-based methods. Related to Figure 2, Figure 3 and Figure 6. (A-C) Trees inferred from the different levels of ChromoPainter and fineSTRUCTURE analyses: the whole dataset (A), Iberian Peninsula and France (B), plus the Franco-Cantabrian region (C). Our target samples are distributed in similar clusters in the three analyses. The Franco-Cantabrian clusters are highlighted with colors: Basques in green, Western Peri-Basques (Spanish) in pink and Eastern Peri-Basques (French and NAR) in blue. (D-F) Admixture events inferred by GLOBETROTTER in the Peri-Basque area, considering the genetically homogeneous clusters described with fineSTRUCTURE (See Figure 6 and Table S1). The density of the good of fitness for two admixture events calculated after 100 bootstrap iterations is shown (D). Values higher or equal than 0.35 show support for more than one admixture event. All the results in our analysis presented values lower than 0.35, suggesting very little support for more than one admixture event. Then, the density of the admixture dates estimated after 100 bootstrap iterations is represented (E). Finally, the detailed information about the inferred admixture events is shown (F). Each row in the figure shows the result of a target cluster. The colors represent the detected surrogates involved in the admixture events. The inferred dates of the admixture events and their confidence intervals are shown in the central part of the figure. The left panel show a summary of the major (left square) and minor (right square) sources in the target clusters. The right panel shows a detail of the major and minor sources showing only the surrogates over 2.5%. The Basque proportions in the inferred sources where grouped by the three general Basque clusters described with fineSTRUCTURE (See Figure 6 and Table S1): gBasque_W (Western Basques), gBasque_C (Central Basques) and gBasque_E (Eastern Basques).

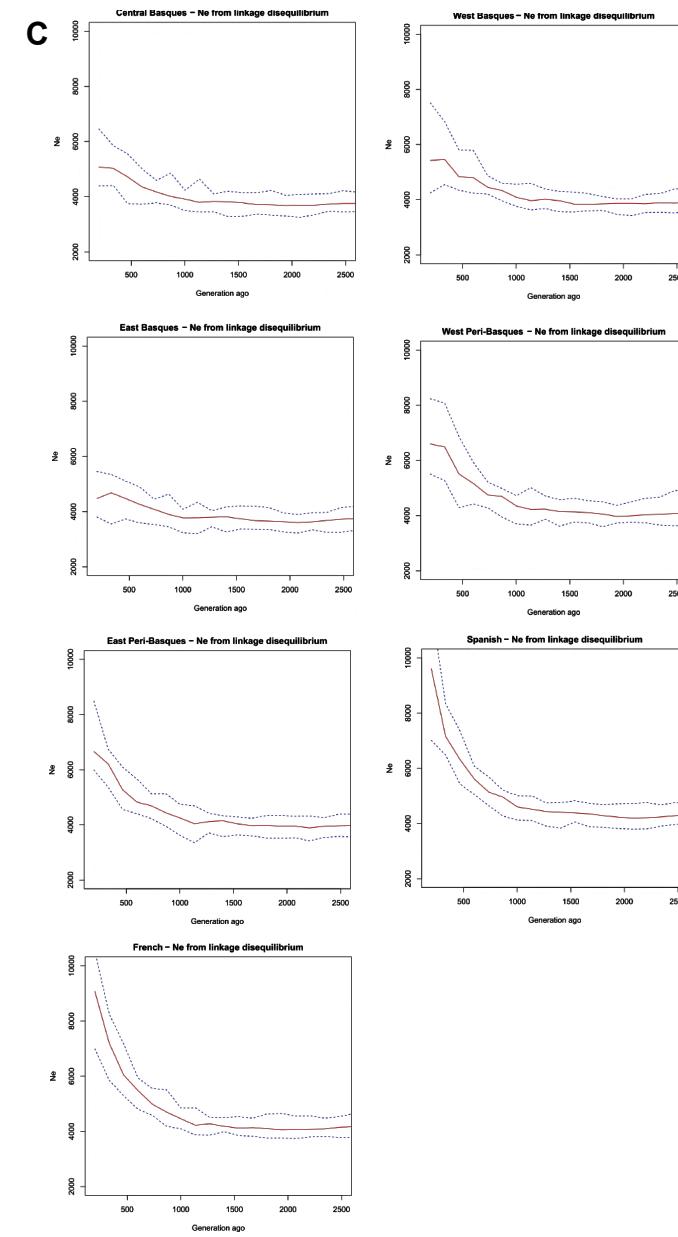
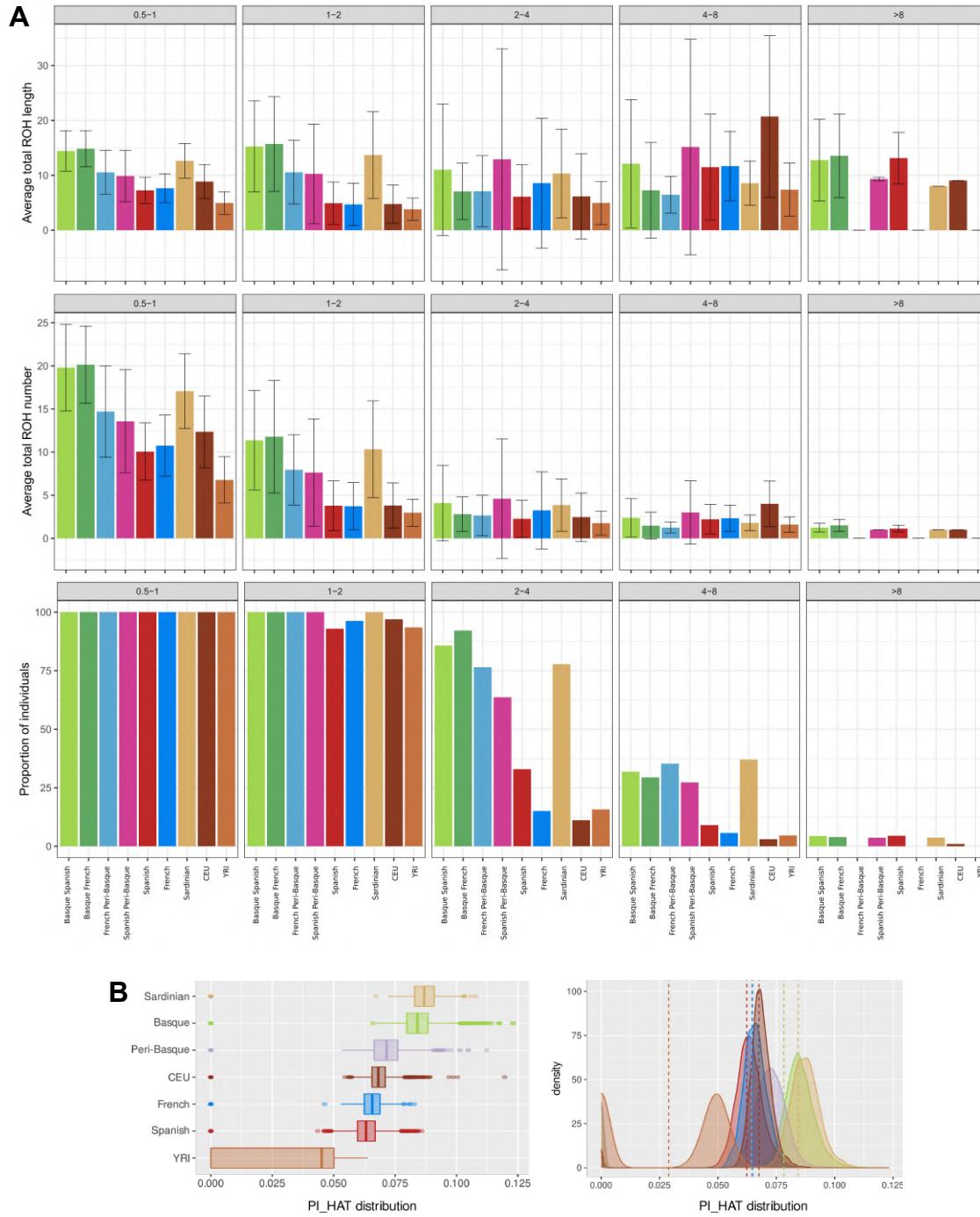


Figure S3. Demographic dynamics exploration. Related to Figure 3. (A) Runs of homozygosity plots: ROH length categories. Average of the total length and number of runs of homozygosity for different length categories. ± 1 standard deviation is represented for each population. The proportion of the total samples for the different groups represented in each category is also shown in the last figure. The length of the categories is expressed in Megabases (Mb). (B) Distribution of the PI_HAT values within populations. In the whisker plot, left, each point represents the result for a pair of samples. In the density plot, right, the mean for each population is represented with dashed lines. (C) Effective population size through time. The X-axis represents the time in generations ago. The Y-axis shows the inferred N_e values at that time. The continuous line shows the median values of the N_e and the dashed lines represent the 5th and 95th percentiles of the N_e distribution. The analysis was performed in the clusters inferred by fineSTRUCTURE as in Figure 6.

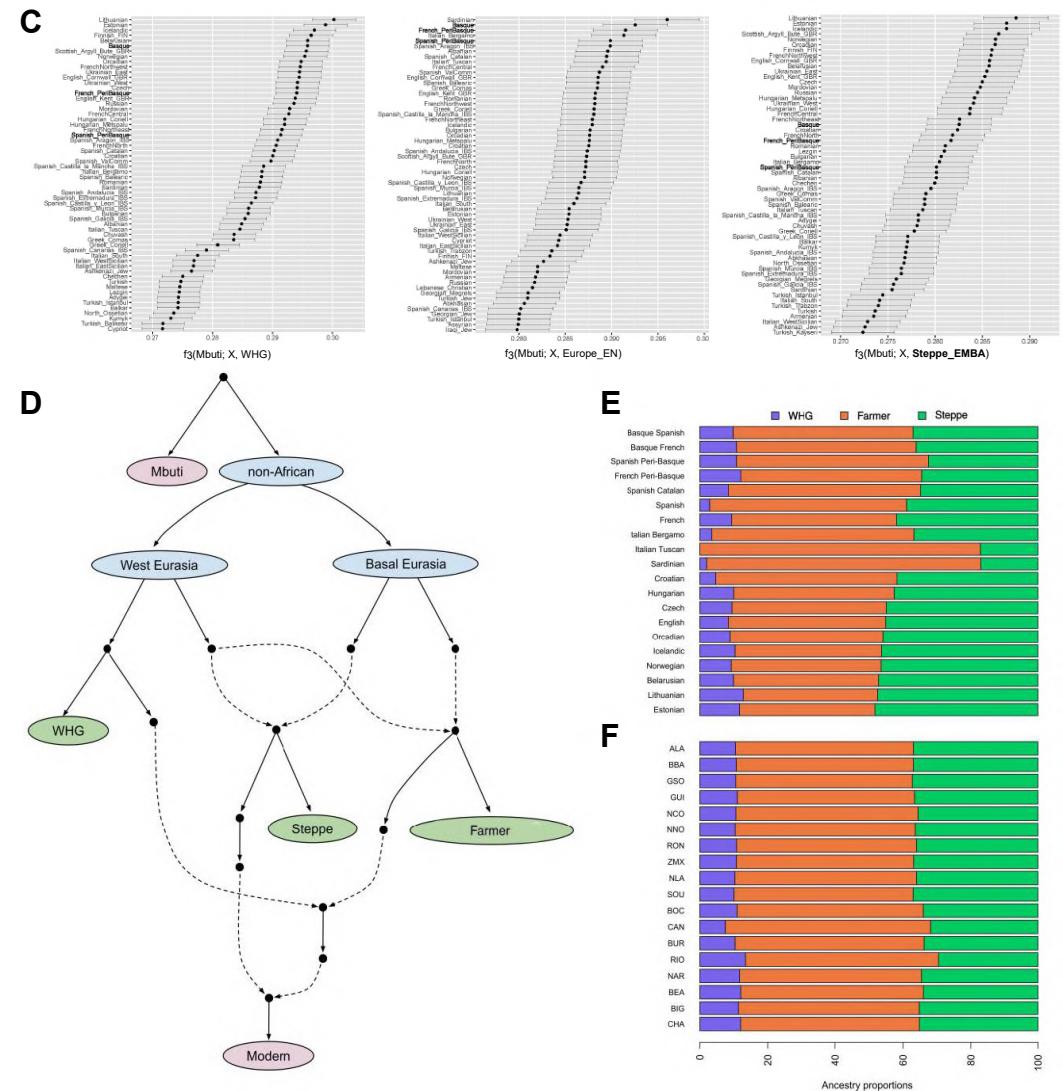
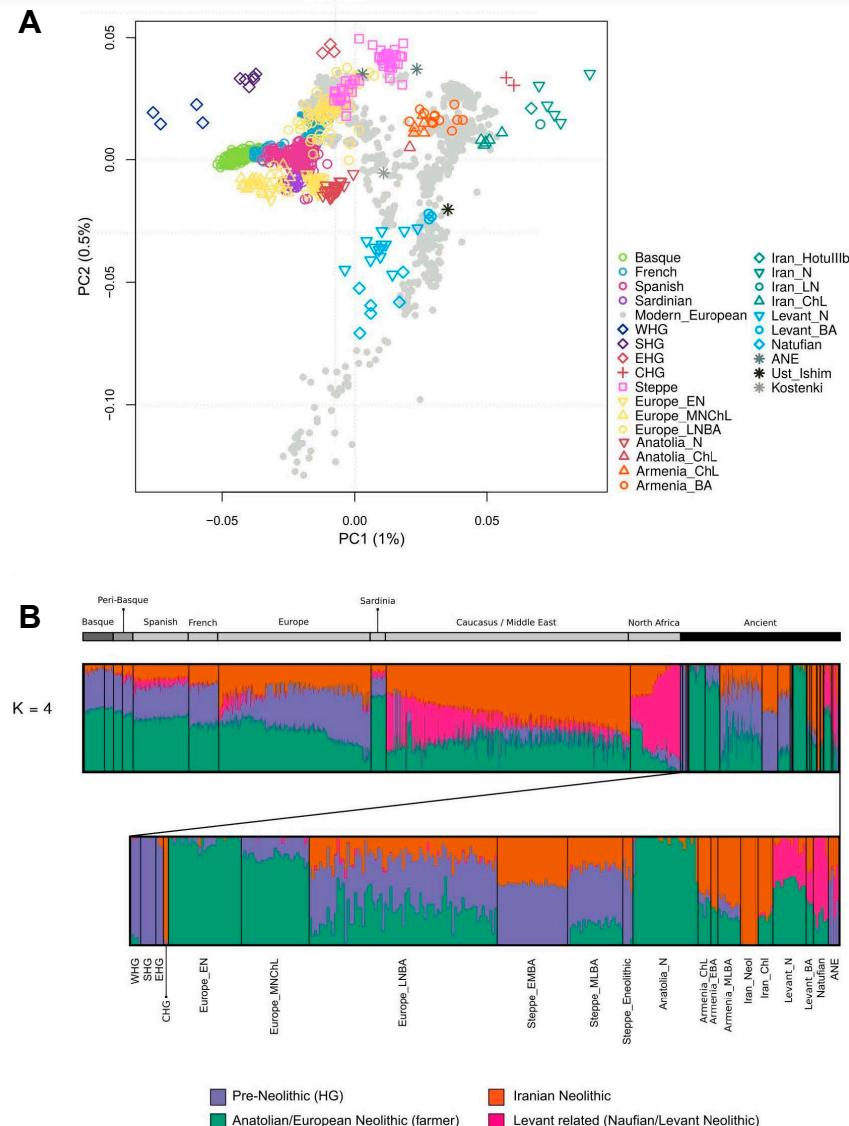


Figure S4. Franco-Cantabrians in the wide Western Eurasian ancient context. Related to Figure 4. (A) Principal component analysis projecting ancient samples ^{S4}. (B) Unsupervised admixture analysis including ancient samples ^{S4}. K=4 is shown, which is the K with the lowest cross validation error. WHG, Western hunter-gatherer; EHG, Eastern hunter-gatherer; SHG, Southern hunter-gatherer; E, Early; M, Middle; L, Late; HG, hunter-gatherer; N, Neolithic; ChL, Chalcolithic; BA, Bronze Age; IA, Iron Age; ANE, Ancient North Eurasian. (C) Outgroup f3-statistics results. For each major European ancient group, the shared drift was calculated with every modern population. WHG, Europe_EN and Steppe_EMBA from Lazaridis et al. ^{S4} were used as proxies for the pre-Neolithic Hunter-gatherer, Neolithic farmer and post-Neolithic Yamnaya pastoralist components, respectively. The analysis was performed in the form f3(Mbuti; Ancient, Modern). In each case, the standard errors of the f3 values estimated from blocked jackknife procedure are represented by error bars. (D) qpGraph model used to calculate the mixture proportions of the three main ancient components in Europe as followed by Haak et al ^{S5} or Chiang et al. ^{S6}. Dashed lines represent admixture. Modern samples are colored in pink, ancient samples in green, main ancestral Eurasian groups in blue and intermediate reconstructed ancestral groups as a black dot. (E) Admixture proportions in different European populations. (F) Admixture proportions in the Franco-Cantabrian groups. 100 permutations were performed in each case and the 95 % confidence intervals were calculated. All of them were statistically significant with Z-scores between 3 and -3. The confidence intervals were small enough to not be represented in the barplot. WHG, Western hunter-gatherer; Europe_EN, European Early Neolithic farmers; Steppe_EMBA, Steppe Early Middle Bronze Age associated with Yamnaya culture.

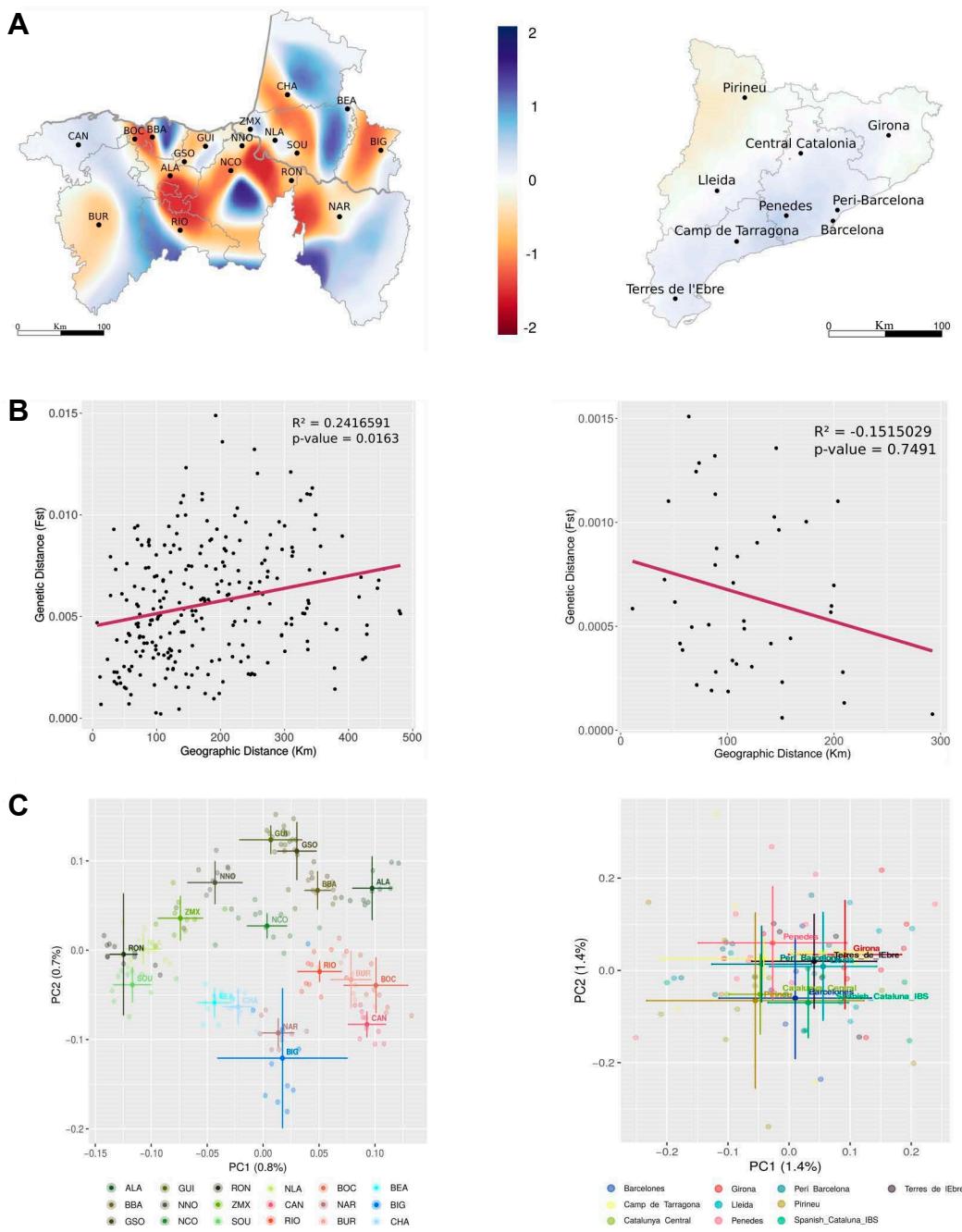
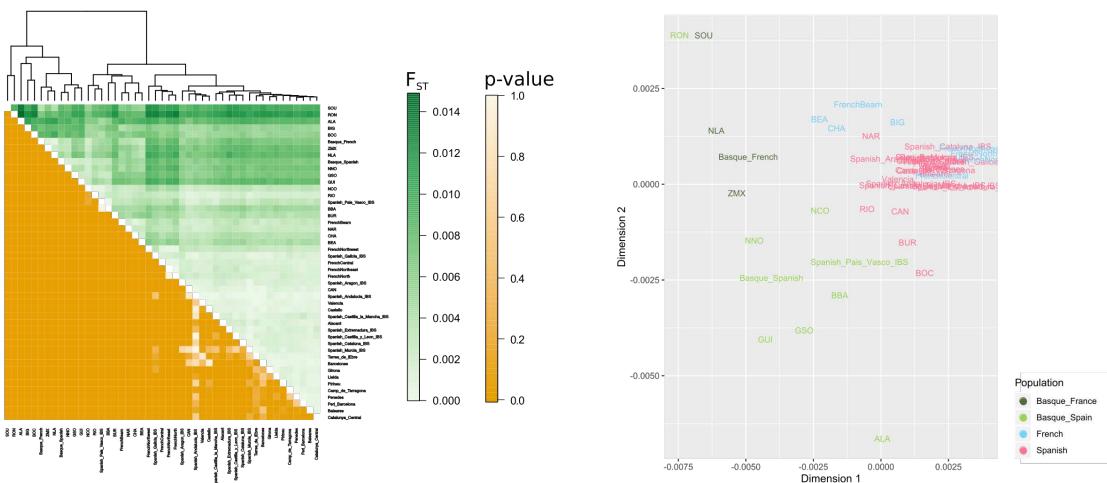
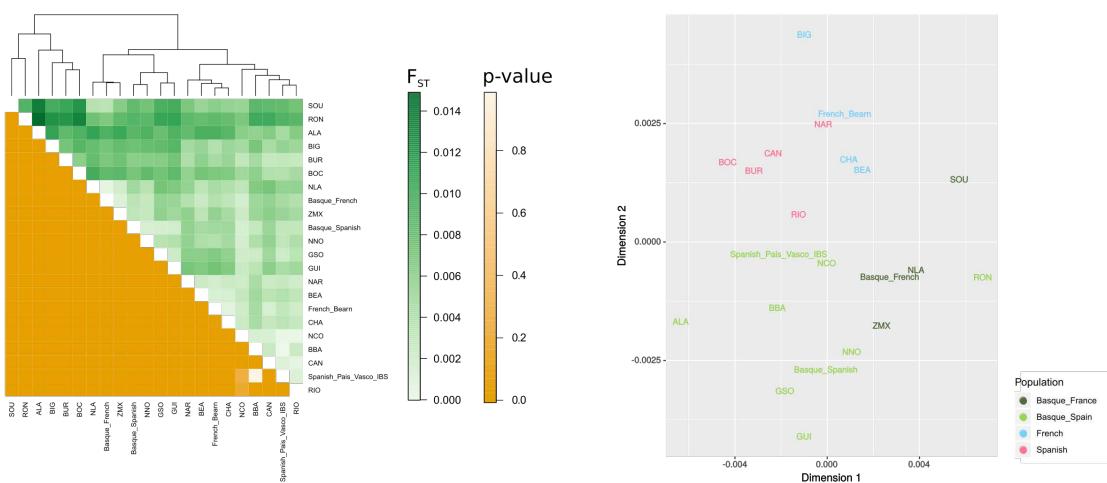


Figure S5. Comparing the Franco-Cantabrian region with Catalonia, as reference population of similar size and high-resolution sampling. Related to Figure 5 and Figure 6. In the left, the analysis in the Franco-Cantabrian region. In the right, the analysis in Catalonia. (A) EEMS analysis result. The posterior mean migration rates on the log10 scale are represented in the map. Values >0 indicate corridors, whereas <0 evince barriers. (B) The correlation between the pairwise genetic (F_{ST}) and geographic (Km) distances, together with the Mantel test result. (C) Principal component analyses. Km, Kilometers.

A Iberian Peninsula and France



B Franco-Cantabrian region



C Catalonia

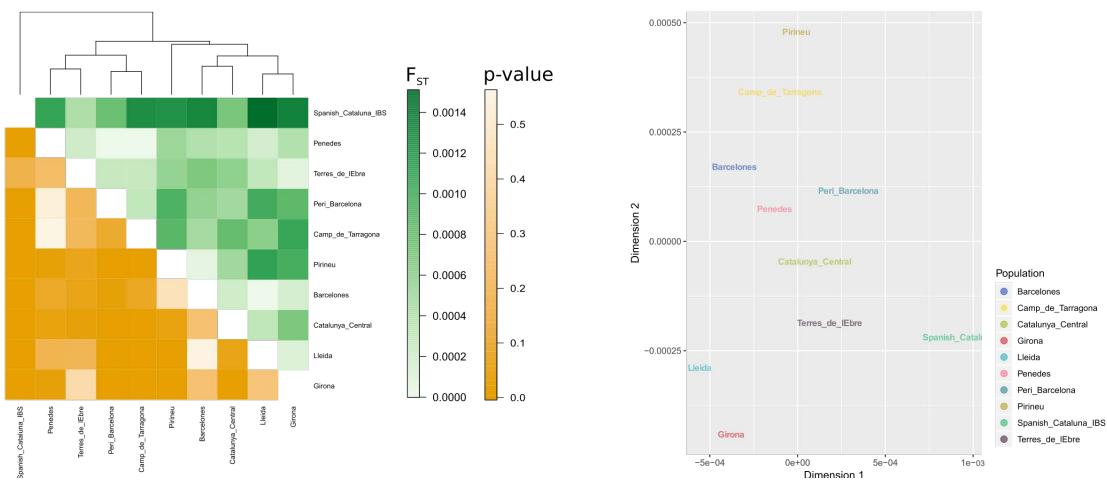


Figure S6. Pairwise genetic distance analyses at different levels in the dataset. Related to Figure 5 and Figure 6. (A) The Iberian Peninsula and France, (B) the Franco-Cantabrian region and (C) Catalonia. In the left, the heatmaps and dendograms based on the pairwise F_{ST} values (above the diagonal), and related pvalues (below the diagonal). In the right, multidimensional scaling analyses performed with these genetic distances.

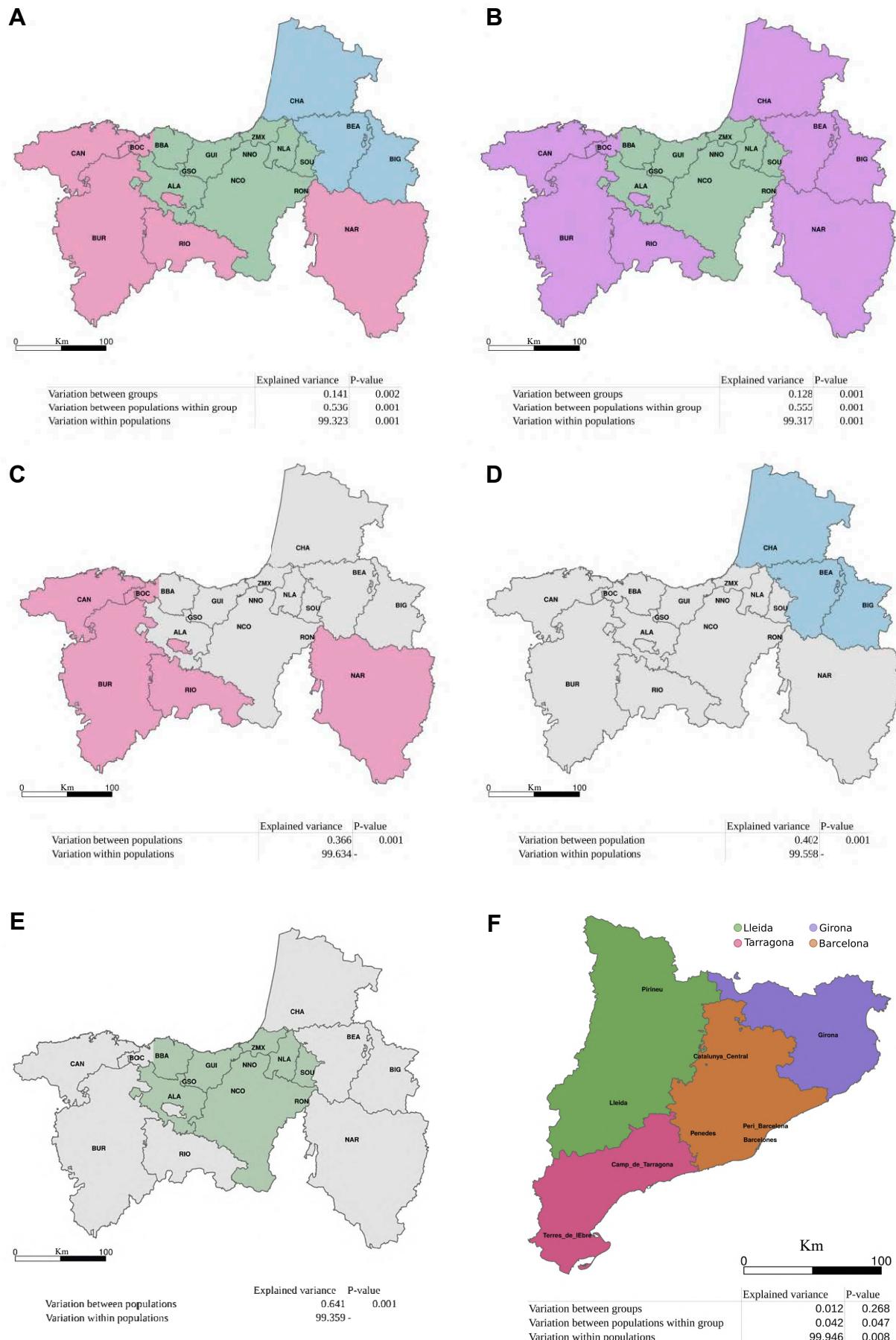


Figure S7. AMOVA analyses in the Franco-Cantabrian region (A-E) and Catalonia (F). Related to Figure 5 and Figure 6. Different hypotheses were tested in the Franco-Cantabrian region: Three differentiated major groups for Spanish Peri-Basques, French Peri-Basque and Basques. Variation explained in the different levels is statistically significant, evidencing heterogeneity in the region. (B) Two major groups for Basques and non-Basques in order to see if the variation explained between groups descended. The results are also significant, with higher variation explained within groups due to the fact of considering Spanish and French Peri-Basques together. This shows evidences of heterogeneity in the Peri-Basques groups. Then, in order to see which major group explained more variation within, separately AMOVA tests were performed for: (C) Spanish Peri-Basques, (D) French Peri-Basques and (E) Basques. The higher value is observed in Basques. Then, the AMOVA analysis was performed in Catalonia by considering provinces and regions within provinces. Km, Kilometers.

Cluster name	Population name	N
gJLA	ALA	11
gGUIGO	Basque_Spanish	3
	BBA	1
	GSO	11
gBBA		10
gZMXNNO	Spanish_Pais_Vasco_IBS	5
	GUI	1
	BBA	10
gNCO	Basque_French	2
	NNO	5
	ZMK	7
	BIG	1
gNNO	Basque_French	1
	NNO	6
gRON	RON	2
gNLIA	Basque_French	14
	NLA	11
	ZMK	3
gSOJ	Basque_French	3
	SOU	10
gSpanish1	Alacant	2
	Camp_de_Tarragona	3
	Catalunya_Central	2
	Lleida	1
	Mallorca	1
	Penedes	1
	Eivissa	4
	Valencia	2
	Alicant	2
	Barcelones	5
	Campello	3
	Catalunya_Central	8
	French_Central	2
	Girona	10
	Lleida	8
	Mallorca	3
	Menorca	3
	Penedes	10
	Peri_Barcelona	1
	Prineu	3
	Spanish_Aragon_IBS	3
	Spanish_Baleares_IBS	4
	Spanish_Cataluna_IBS	5
	Spanish_Extramadura_IBS	1
	Spanish_Euskadi_IBS	4
	Spanish_Murcia_IBS	2
	Spanish_Valencia_IBS	5
	Vilaenda	3
	Castello	2
	Spanish_Andalucia_IBS	4
	Spanish_Aragon_IBS	3
	Spanish_Castilla_la_Mancha_IBS	5
	Spanish_Castilla_Y_Leon_IBS	3
	Spanish_Extramadura_IBS	2
	Spanish_Galicia_IBS	4
	Spanish_Murcia_IBS	2
	Spanish_Valencia_IBS	5
	Vilaenda	4
	CAN	1
	Prineu	1
	Spanish_Baleares_IBS	1
	Spanish_Canarias_IBS	2
	Spanish_Extramadura_IBS	3
	Spanish_Galicia_IBS	4
	RIO	10
gSpanish4	CAN	9
	Spanish_Cantabria_IBS	5
	BIG	2
gNARBIG	French_Bean	1
	NAR	10
gBOC	BOC	2
gROBUR	BUR	4
	BEA	10
	CHA	3
	French_Bean	7
gCHABEA	FrenchCentral	10
	FrenchNorth	2
	FrenchNorth	2
gBIG	FrenchNorth	19
gFrench1	FrenchNorth	4
	FrenchNorth	2
	FrenchNorth	5
	English_Cornwall_GBR	5
	English_Kent_GBR	5
	French_Central	4
	FrenchNorthwest	7
	Scottish_Argyll_Bute_GBR	4
gFrench2	FrenchNorth	4
	FrenchNorth	2
	FrenchNorth	1
gFrench3	FrenchNortheast	4
	FrenchNortheast	2
	FrenchNortheast	1
glItalian_North	Italian_Bergamo	12
	Italian_Tuscan	8
	Italian_East_Sardinian	5
gItalian_Sicily	Italian_South	1
	Italian_West_Sicilian	6
gMediterraneanislands	Cypriot	6
	Greek_Corfiot	1
	Italian_South	3
	Maltese	8
gSardinian	Sardinian	27
gIcelandic	Icelandic	12
gIce_Orc	Orkadian	12

Cluster name	Population name	Czech
gJLNA		Hungarian_Corell
gGUIGO		Hungarian_Wespalu
gRON		Ukrainian_West
gNLIA		Belarusian
gSOJ		Chuvash
gSpanish1		Estonian
gSpanish2		Finnish_FIN
gSpanish3		Lithuanian
gSpanish4		Mordvinian
gNARBIG		Russian
gBOC		Saami_WGGA
gROBUR		Ukrainian_East
gCHABEA		Ukrainian_West
gBIG		Croatian
gFrench1		Nonwegian
gFrench2		Albanian
gFrench3		Bulgarian
glItalian_North		Greek_Corfiot
gItalian_Sicily		Hungarian_Motspalu
gMediterraneanislands		Lebanese_Christian
gSardinian		Lebanese_Muslim
gIcelandic		Saudi
gIce_Orc		Syrian
gSpanish1		Turkish_Adamu
gSpanish2		Turkish_Kayseri
gSpanish3		Armenian
gSpanish4		Assyrian
gNARBIG		Georgian_Jew
gBOC		Turkish_Aydin
gROBUR		Turkish_Balkesir
gCHABEA		Turkish_Istanbul
gBIG		Turkish_Kayseri
gFrench1		Turkish_Trabzon
gFrench2		Turkish_Turkey
glItalian_North		Azerbaijan
gItalian_Sicily		Iranian_Lor
gMediterraneanislands		Iranian_Mazandrani
gSardinian		Adygei
gIcelandic		Balkar
gIce_Orc		Georgian_Megrels
gSpanish1		Georgian_Jew
gSpanish2		Kumyk
gSpanish3		Nogai
gSpanish4		North_Osetian
gNARBIG		Ossetian
gBOC		Chechen
gROBUR		Iraqi_Jew
gCHABEA		Kurdish
gBIG		Lezgin
gFrench1		Georgian_Jew
gFrench2		Georgian_Jew
glItalian_North		Iranian_Jew
gItalian_Sicily		Iranian_Bandari
gMediterraneanislands		Jewish_Azerbaijan
gSardinian		Jewish_Greece
gIcelandic		Jewish_Iraqi
gIce_Orc		Jewish_Iran
gSpanish1		Jewish_Kurdistan
gSpanish2		Jewish_Tunisia
gSpanish3		Jewish_Ukraine
gSpanish4		Jewish_Uzbekistan
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gBOC		Kurdish_Iran
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gBOC		Qashqai
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gSardinian		Qashqai
gIcelandic		Qashqai
gIce_Orc		Qashqai
gSpanish1		Qashqai
gSpanish2		Qashqai</td

Target	Source1	Source2	Source3	P-value	Mixture proportions			SE		
					Source1	Source2	Source3	Source1	Source2	Source3
ALA	Iberian IA	-	-	0.012934	-	-	-	-	-	-
BBA	Iberian IA	-	-	0.088069	1	-	-	0	-	-
GSO	Iberian IA	-	-	0.178498	1	-	-	0	-	-
GUI	Iberian IA	-	-	0.050397	1	-	-	0	-	-
NCO	Iberian IA	-	-	0.013567	-	-	-	-	-	-
NNO	Iberian IA	-	-	0.234794	1	-	-	0	-	-
RON	Iberian IA	-	-	0.091552	1	-	-	0	-	-
NLA	Iberian IA	-	-	0.020546	-	-	-	-	-	-
SOU	Iberian IA	-	-	0.116304	1	-	-	0	-	-
ZMX	Iberian IA	-	-	0.046718	1	-	-	0	-	-
BUR	Iberian IA	-	-	0	-	-	-	-	-	-
CAN	Iberian IA	-	-	0	-	-	-	-	-	-
NAR	Iberian IA	-	-	0.00023	-	-	-	-	-	-
RIO	Iberian IA	-	-	0.000015	-	-	-	-	-	-
BOC	Iberian IA	-	-	0.000044	-	-	-	-	-	-
BEA	Iberian IA	-	-	0.002376	-	-	-	-	-	-
BIG	Iberian IA	-	-	0.000284	-	-	-	-	-	-
CHA	Iberian IA	-	-	0.045	1	-	-	0	-	-
Alacant	Iberian IA	-	-	0	-	-	-	-	-	-
Barcelones	Iberian IA	-	-	0	-	-	-	-	-	-
Camp_de_Tarragona	Iberian IA	-	-	0	-	-	-	-	-	-
Castello	Iberian IA	-	-	0.000021	-	-	-	-	-	-
Catalunya_Central	Iberian IA	-	-	0	-	-	-	-	-	-
Spanish_Cataluna_IBS	Iberian IA	-	-	0	-	-	-	-	-	-
Girona	Iberian IA	-	-	0	-	-	-	-	-	-
Lleida	Iberian IA	-	-	0	-	-	-	-	-	-
Penedes	Iberian IA	-	-	0	-	-	-	-	-	-
Peri_Barcelona	Iberian IA	-	-	0	-	-	-	-	-	-
Pirineu	Iberian IA	-	-	0	-	-	-	-	-	-
Terres_de_Ebre	Iberian IA	-	-	0	-	-	-	-	-	-
Eivissa	Iberian IA	-	-	0	-	-	-	-	-	-
Mallorca	Iberian IA	-	-	0	-	-	-	-	-	-
Menorca	Iberian IA	-	-	0	-	-	-	-	-	-
Valencia	Iberian IA	-	-	0	-	-	-	-	-	-
Spanish_Aragon_IBS	Iberian IA	-	-	0.000002	-	-	-	-	-	-
Spanish_Andalucia_IBS	Iberian IA	-	-	0	-	-	-	-	-	-
Spanish_Castilla_la_Mancha_IBS	Iberian IA	-	-	0	-	-	-	-	-	-
Spanish_Castilla_y_Leon_IBS	Iberian IA	-	-	0	-	-	-	-	-	-
Spanish_Extramadura_IBS	Iberian IA	-	-	0	-	-	-	-	-	-
Spanish_Galicia_IBS	Iberian IA	-	-	0	-	-	-	-	-	-
Spanish_Murcia_IBS	Iberian IA	-	-	0	-	-	-	-	-	-

Target	Source1	Source2	Source3	P-value	Mixture proportions			SE		
					Source1	Source2	Source3	Source1	Source2	Source3
ALA	Iberian IA	Roman	-	0.05	0.853	0.147	-	0.057	0.057	-
BBA	Iberian IA	Roman	-	0.121467	0.903	0.097	-	0.057	0.057	-
GSO	Iberian IA	Roman	-	0.200949	0.917	0.083	-	0.059	0.059	-
GUI	Iberian IA	Roman	-	0.096474	0.881	0.119	-	0.059	0.059	-
NCO	Iberian IA	Roman	-	0.293	0.793	0.207	-	0.053	0.053	-
NNO	Iberian IA	Roman	-	0.601246	0.86	0.14	-	0.055	0.055	-
RON	Iberian IA	Roman	-	0.109369	0.908	0.092	-	0.061	0.061	-
NLA	Iberian IA	Roman	-	0.092279	0.85	0.15	-	0.054	0.054	-
SOU	Iberian IA	Roman	-	0.222369	0.873	0.127	-	0.062	0.062	-
ZMX	Iberian IA	Roman	-	0.035507	-	-	-	-	-	-
BUR	Iberian IA	Roman	-	0.171002	0.618	0.382	-	0.046	0.046	-
CAN	Iberian IA	Roman	-	0.24162	0.541	0.459	-	0.04	0.04	-
NAR	Iberian IA	Roman	-	0.106867	0.73	0.27	-	0.051	0.051	-
RIO	Iberian IA	Roman	-	0.480194	0.66	0.34	-	0.047	0.047	-
BOC	Iberian IA	Roman	-	0.541521	0.668	0.332	-	0.047	0.047	-
BEA	Iberian IA	Roman	-	0.114585	0.777	0.223	-	0.053	0.053	-
BIG	Iberian IA	Roman	-	0.062056	0.745	0.255	-	0.052	0.052	-
CHA	Iberian IA	Roman	-	0.37066	0.823	0.177	-	0.055	0.055	-
Alacant	Iberian IA	Roman	-	0.52297	0.493	0.507	-	0.046	0.046	-
Barcelones	Iberian IA	Roman	-	0.532865	0.632	0.368	-	0.051	0.051	-
Camp_de_Tarragona	Iberian IA	Roman	-	0.752023	0.547	0.453	-	0.044	0.044	-
Castello	Iberian IA	Roman	-	0.643503	0.645	0.355	-	0.049	0.049	-
Catalunya_Central	Iberian IA	Roman	-	0.028238	-	-	-	-	-	-
Spanish_Cataluna_IBS	Iberian IA	Roman	-	0.404373	0.567	0.433	-	0.049	0.049	-
Girona	Iberian IA	Roman	-	0.537719	0.575	0.425	-	0.044	0.044	-
Lleida	Iberian IA	Roman	-	0.252858	0.564	0.436	-	0.045	0.045	-
Penedes	Iberian IA	Roman	-	0.030195	-	-	-	-	-	-
Peri_Barcelona	Iberian IA	Roman	-	0.610215	0.532	0.468	-	0.04	0.04	-
Pirineu	Iberian IA	Roman	-	0.267184	0.555	0.445	-	0.051	0.051	-
Terres_de_lEbre	Iberian IA	Roman	-	0.811116	0.613	0.387	-	0.05	0.05	-
Eivissa	Iberian IA	Roman	-	0.407911	0.424	0.576	-	0.048	0.048	-
Mallorca	Iberian IA	Roman	-	0.293786	0.462	0.538	-	0.04	0.04	-
Menorca	Iberian IA	Roman	-	0.020145	-	-	-	-	-	-
Valencia	Iberian IA	Roman	-	0.759661	0.545	0.455	-	0.04	0.04	-
Spanish_Aragon_IBS	Iberian IA	Roman	-	0.480053	0.614	0.386	-	0.05	0.05	-
Spanish_Andalucia_IBS	Iberian IA	Roman	-	0.361134	0.429	0.571	-	0.049	0.049	-
Spanish_Castilla_la_Mancha_IBS	Iberian IA	Roman	-	0.55664	0.509	0.491	-	0.045	0.045	-
Spanish_Castilla_y_Leon_IBS	Iberian IA	Roman	-	0.089883	0.379	0.621	-	0.049	0.049	-
Spanish_Extramadura_IBS	Iberian IA	Roman	-	0.004075	-	-	-	0.048	0.048	-
Spanish_Galicia_IBS	Iberian IA	Roman	-	0.007372	-	-	-	0.047	0.047	-
Spanish_Murcia_IBS	Iberian IA	Roman	-	0.003331	-	-	-	0.054	0.054	-

Target	Source1	Source2	Source3	P-value	Mixture proportions			SE		
					Source1	Source2	Source3	Source1	Source2	Source3
ALA	Iberian IA	Roman	North African	0	-	-	-	-	-	-
BBA	Iberian IA	Roman	North African	0	-	-	-	-	-	-
GSO	Iberian IA	Roman	North African	0	-	-	-	-	-	-
GUI	Iberian IA	Roman	North African	0	-	-	-	-	-	-
NCO	Iberian IA	Roman	North African	0	-	-	-	-	-	-
NNO	Iberian IA	Roman	North African	0	-	-	-	-	-	-
RON	Iberian IA	Roman	North African	0	-	-	-	-	-	-
NLA	Iberian IA	Roman	North African	0	-	-	-	-	-	-
SOU	Iberian IA	Roman	North African	0	-	-	-	-	-	-
ZMX	Iberian IA	Roman	North African	0	-	-	-	-	-	-
BUR	Iberian IA	Roman	North African	0	-	-	-	-	-	-
CAN	Iberian IA	Roman	North African	0.076845	0.540	0.456	0.004	0.05	0.059	0.013
NAR	Iberian IA	Roman	North African	0	-	-	-	-	-	-
RIO	Iberian IA	Roman	North African	0	-	-	-	-	-	-
BOC	Iberian IA	Roman	North African	0	-	-	-	-	-	-
BEA	Iberian IA	Roman	North African	0	-	-	-	-	-	-
BIG	Iberian IA	Roman	North African	0	-	-	-	-	-	-
CHA	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Alacant	Iberian IA	Roman	North African	0.288126	0.508	0.483	0.009	0.057	0.067	0.015
Barcelones	Iberian IA	Roman	North African	0.246325	0.628	0.369	0.003	0.066	0.08	0.019
Camp_de_Tarragona	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Castello	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Catalunya_Central	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Spanish_Cataluna_IBS	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Girona	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Lleida	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Penedes	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Peri_Barcelona	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Pirineu	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Terres_de_Ebre	Iberian IA	Roman	North African	0.50553	0.612	0.385	0.003	0.062	0.073	0.017
Eivissa	Iberian IA	Roman	North African	0.206236	0.433	0.562	0.005	0.061	0.074	0.018
Mallorca	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Menorca	Iberian IA	Roman	North African	0.006	0.524	0.474	0.002	-	-	-
Valencia	Iberian IA	Roman	North African	0.449248	0.555	0.441	0.004	0.051	0.06	0.014
Spanish_Aragon_IBS	Iberian IA	Roman	North African	0	-	-	-	-	-	-
Spanish_Andalucia_IBS	Iberian IA	Roman	North African	0.783606	0.492	0.469	0.038	0.059	0.07	0.017
Spanish_Castilla_la_Mancha_IBS	Iberian IA	Roman	North African	0.352677	0.531	0.453	0.015	0.056	0.067	0.016
Spanish_Castilla_y_Leon_IBS	Iberian IA	Roman	North African	0.231746	0.444	0.521	0.035	0.06	0.071	0.016
Spanish_Extremadura_IBS	Iberian IA	Roman	North African	0.225462	0.534	0.407	0.059	0.062	0.073	0.017
Spanish_Galicia_IBS	Iberian IA	Roman	North African	0.511188	0.478	0.464	0.058	0.057	0.067	0.015
Spanish_Murcia_IBS	Iberian IA	Roman	North African	0.047	0.439	0.52	0.042	0.066	0.077	0.017

Table S2. Admixture models tested with qpAdm for the Basques, Peri-Basques and Spanish groups as target populations. Related to Figure 4 and STAR Methods section "Allele frequency methods". In order to test the major posterior Iron Age geneflow events: 1-way, 2-way and 3-way admixture models were tested including Iberian Iron Age ^{S7}, Imperial/Late Antiquity Rome ^{S8} and Mozabite ^{S4} samples as sources (left populations). To take into account the chronology of the events, a 1-way model was run first, with the Iron Age samples as sources. Then, a 2-way admixture model was performed adding the Roman samples as the following potential source as proxy for the influence of the Roman Empire. Finally, 3-way admixture model was performed including Mozabite to represent the North African geneflow during the Islamic period in the Iberian Peninsula. A tested model is accepted as plausible if p-value > 0.05. These models are highlighted in red in the table. Some target populations are explained by more than one plausible model. In those cases, the simplest model, representing the earlier period is chosen to explain the target. These cases are shown by a dashed blue line in the table. A fixed outgroup panel (right populations) was used including: WHG ^{S4}, EHG ^{S4}, Morocco_Iberomaurusian ^{S9}, Mota ^{S4}, Iran_N ^{S4}, Levant_N ^{S4}, Steppe_EMBA ^{S4}, MbutiPygmy ^{S4} and Karitiana ^{S4}. IA, Iron Age; WHG, Western Hunter-gatherer; EHG, Eastern Hunter-gatherer; N, Neolithic; EMBA, Early Middle Bronze Age.

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