

Jewish and Gypsy: A Genetic Study of 76 Spanish Gypsies (Gitanos, Calé)

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21 August 2025

Introduction

A recent genetic research project looking at 76 Spanish Gypsies (Gitanos, Calé) revealed the group had strong evidence of both ancient and medieval Jewish ancestry. All tested individuals show Jewish genetic markers, with lineages tracing to diverse Jewish communities across Europe, the Middle East, and even South Asia. These findings challenge the traditional narrative that Gypsies (Gitanos, Calé) descended from medieval Indian migrants. Instead, they point to deep Levantine (Near Eastern) roots with ancestors from Jewish Diapspora, from India all the way to Germany and Spain and all Jewish communities between those extremes.

1. Alternative Origins Story for Spanish Gypsies (Gitanos, Calé)

Conventional thinking holds that “Gypsies” or Roma came from Rajasthan in northern India and made their way to western Europe between in the 12th and 15th century. (The Rajasthani Theory). Below is the generally accepted view of Roma migration from east to west.

Roma Migration to Europe

Event	Approximate Date	Notes
Departure from India	~500-1000 CE	Northwest India origin, Rajasthan.
Arrival in Persia & the Middle East	~1000 CE	Gained Iranian and Middle Eastern influences
Entry into Byzantine Empire	~1100-1200 CE	First “European” presence
In the Balkans	~1300 CE	Documented settlements
Spread into Western Europe	~1400-1500 CE	Reached Spain, France, Germany

We propose the “Rajasthani Migration Theory” or northern Indian migration narrative, does not apply to the Spanish Gypsies (Gitanos, Calé).

In the first instance of the 76 Spanish Gypsies (Gitanos, Calé) tested in this project, hailing from 15 different provinces in Spain, were primarily of Southern Indian ancestry. More significantly, all 76 had ancestral connections to the Southern Indian-Jewish communities, Cochin Jews, the Bnai Israel, and the Bnei Menashe included.

In the second instance, all participants were shown to be DNA matches to the ancient remains of the Levantines and Canaanites (1800-1100 BC), and to Jews buried 11th -12th Jewish cemeteries in Norwich, England and Erfurt, Germany.

In the third instance, DNA testing revealed all tested members of the Spanish Gypsy (Gitano, Calé) community inherited Jewish DNA from the geographical extremes of the Jewish world: European Jewish ancestry (Ashkenazi-Jewish, Sephardic Jewish), African-Jewish ancestry (Moroccan-Jewish, Algerian-Jewish, Tunisian Jewish, Libyan-Jewish), Arab-Jewish (Yemenite-Jewish), Caucasian-Jewish (Georgian-Jewish, Azerbaijani-Jewish), Western-Asian Jewish (Iraqi-Jewish, Iranian-Jewish), Central-Asian Jewish (Uzbeki-Jewish), and finally South-Asian Jewish (Bnei Menashe, Cochín-Jewish, and Bnai Israel Jews).

In short, the narrative that these Spanish Gypsies (Gitanos, Calé) originated in Northern India and migrated from there to Spain, does not fit with facts established by this DNA-based study. Their DNA indicates they are primarily of Asian, Central Asian, Western Asian, Caucasian, South Western Asian, and European-Jewish ancestry.

How could this be? We offer two scenarios which could explain their Jewish ancestry which spans the extremes of the Jewish World.

1. Spain was considered the center of the Jewish world during the High Middle Ages, roughly from the 10th to the late 15th century, with the height of its influence occurring in the Golden Age of Spanish Jewry (c. 950-1200). Spain's Jewish community had outsized cultural and religious influence due to political prominence in royal courts, intellectual production in philosophy, poetry, halakhah, science and geographic position linking Islamic and Christian worlds.

Jews from around the Jewish world circulated through Spain. As an example, some English Jews, following the English expulsion of 1292, made their way to Spain. Names like Crespin, Ingles, and Londres are found in the records of the later Spanish-Jewish community. It is thought that Bohemian Jews, following the plague riots in Northern Europe made their way to Spain. Moroccan and Egyptian Jews absolutely made their way to and from Spain. These influxes of Jews from around the world, could have resulted in a Jewish DNA profile that resembles that of these Spanish Gypsies (Gitanos, Calé).

2. From 2000 BC until 1500 AD, a class of Jewish travelling merchants existed. They were different than sedentary Jews. They lived in and traded out of caravans. They travelled in Caravans (family groups), and stayed at Caravanserais (fortified inns that provided safety for the Jewish travelling merchants), while moving goods between Spain to Kaifeng, China, and Kochi, India and back. This separate Jewish ethnic group is poorly studied. At one time they had a name, the Rhadanite Jews. At other times, they simply were known to have existed.

Based on their itinerant lifestyle, it is logical that over the centuries, they would have absorbed Jewish ethnicities from along their trade routes. They left Jewish communities at the extremes of their trade routes (i.e. Chinese Kaifeng Jews, Indian Kochi Jews) and may be the progenitors of the Spanish Gypsies in this study. Intriguingly, Spanish Gypsies (Gitanos, Calé) carry DNA from both the Kaifeng Jews and the Indian Kochi Jews. The international merchant class of Jew is thought to have disappeared in the Middle Ages but in fact, a remnant may have remained in Spain and continue living there today. Both are theories.

Both or neither could be accurate. But, the fact remains, all 76 participants in this study have ancestors buried in ancient Israel (1800-1000 BC) and more recent ancestors buried in Medieval Jewish cemeteries in Norwich, England (11th century) and Erfurt, Germany (12th century), and are DNA matches to Jews from throughout the Jewish Diaspora. These facts raise obvious doubts about the theory Gitanos simply migrated from Northern India to Spain in the 15th.

2. Ancient and Medieval ties of Spanish Gypsies (Gitanos, Calé) to Proto-Jewish and Jewish Groups

Ancient Levantine Genetic Connections

Multiple analyses indicate that the Spanish Gypsies (Gitanos, Calé) share ancestry with ancient Levantine populations (the proto-Jewish peoples of the Bronze Age). In a MyHeritage “Illustrative DNA” analysis, 15 of 28 individuals showed DNA matches to ancient Levantine genomes and 13 matched Bronze Age Canaanites, carrying an estimated 4-18% Canaanite-derived DNA. This implies a substantial inheritance from the Bronze Age Levant, the geographic cradle of early Jewish populations.

Correspondingly, the group’s autosomal DNA composition is enriched in ancestral components characteristic of the ancient Near East. They possess elevated proportions of Neolithic farmer and hunter-gatherer lineages from Anatolia, the Caucasus, and Iran - the very populations that admixed to form ancient Levantine societies. For example, modern Levantine and Jewish populations are often modeled as a genetic mix of Levantine-Neolithic, Iran-Neolithic, Caucasus, and Anatolian ancestries; the Spanish Gypsies display a very similar blend (approximately 38% Levantine-Neolithic, 14% Iran-Neolithic, 18% Caucasus, and 27% Anatolian). This ancient Near Eastern profile mirrors that of Jewish and Levantine groups, strongly suggesting a shared heritage.

Notably, the Spanish Gypsies (Gitanos, Calé) also carry a significant South Asian genetic component, but even this appears linked to Jewish history: DNA segments indicate ties to the Cochin Jews, Bnei Menashe, and Bnai Israel, historically Jewish communities in India. In other words, much of their South/Southeast Asian ancestry may derive from Indian-Jewish ancestors rather than from non-Jewish-Indian sources.

Evidence of Medieval Jewish Ancestry

Genetic links to medieval Jewish populations are equally striking. All 76 of 76 Spanish Gypsy (Gitano, Calé) participants had detectable matches to DNA from 11th-century Jewish remains in Norwich, England and 12th-century Jewish burials in Erfurt, Germany. This indicates that many Gitano individuals share identifiable segments of DNA with Western Ashkenazi/early European Jews who lived nearly a millennium ago. Indeed, when modeled in a “Medieval DNA” context, over half (≈57%) of the individuals showed measurable Ashkenazi genetic ancestry, with some persons having exceptionally high fractions (over 60% of one individual’s DNA aligned with medieval Jewish DNA).

On average, those with detectable Ashkenazi medieval Jewish signals carried about 16% of their genome from that source. The data suggest that Spanish Gypsies (Gitanos, Calé) forebears were part of Jewish communities in Europe long before the modern era. In fact, beyond those specific medieval samples, the overall DNA profile of this group is a tapestry of nearly all major Jewish Diasporas. Ashkenazi (Central/Eastern European), Sephardic (Iberian and North African), Mizrahi (Middle Eastern), and even South-Asian Jewish lineages are all represented in their genetic mix. This **pan-diasporic** Jewish heritage suggests centuries of intermingling along historic trade routes.

qpAdm Admixture Analysis

To formally quantify the Levantine contribution, researchers applied qpAdm (a population admixture modeling method) to genome-wide SNP data from the Spanish Gypsies. The model compared the group’s DNA to various ancient source populations (e.g. early farmers and hunter-gatherers from different regions) with particular focus on Levantine-Neolithic ancestry. The results confirm that Gitanos possess an elevated proportion of Levantine genetic ancestry relative to typical non-Jewish Spaniards. On average about 10.1% of their

genome was attributed to Levantine-Neolithic sources, significantly higher than the ~4% ($\pm 1\%$) found in modern Iberians. This difference is highly significant ($t = 6.58$, $p \approx 0.003$), indicating the Spanish Gypsies (Gitanos, Calé) have a clear excess of ancient Levantine origin genes compared to the general Spanish population. In practical terms, the Levantine genetic signal in these Gitano individuals is more than double the local Iberian baseline, reinforcing the inference of a distinct Near Eastern (likely Jewish) ancestral input.

Combining all lines of evidence, the genetic portrait of the Spanish Gypsies is that of a unique diasporic Jewish community intertwined with the broader Jewish world across time. Their genomes carry clear signatures of ancient Levantine origin - including Canaanite and Israelite components - as well as DNA links to medieval Ashkenazi and Sephardic Jews, and even to Indian-Jewish groups.

These results strongly support the hypothesis that the Spanish Gypsies (Gitanos, Calé) descend not merely from Indian migrants, but from itinerant Jewish merchants and families who moved between the Middle East, South Asia, and Europe over the centuries.

In essence, the Spanish Gypsies (Gitanos, Calé) appear an unusual part of the Jewish Diaspora; one that includes almost all known Jewish ethnicities. Such findings call for a re-examination of Spanish Gypsies origins and invite further research. For example, larger-scale DNA surveys and additional ancient DNA comparisons to fully illuminate their connections to an earlier Levantine and a later Jewish past.

3. DNA Consultants Study

DNA Consultants, an ancestry testing company specializing in forensic DNA analysis, conducted a genetic study on nine individuals of Gitano heritage from various provinces in Spain. The goal was to substantiate potential Jewish ancestry in this community by comparing specific Short Tandem Repeat (STR) markers in their DNA to a database of published genetic profiles from diverse Jewish ethnic populations. This forensic approach matches the STR patterns of the participants with those of living people in reference datasets, similar to techniques used in criminal forensics and paternity testing.

Importantly, DNA Consultants has identified four distinctive STR marker patterns (Jewish markers I-IV) that serve as indicators of Jewish ancestry. In addition to checking for these markers, the analysis also looked for direct STR matches with known Jewish communities that have documented STR profiles, such as the Chueta (Mallorca) Jews, Hungarian Ashkenazi Jews, Israeli Jews, and others. By using academically published allele frequency data as references, the study ensured that any genetic matches are grounded in actual DNA comparisons rather than theoretical estimates.

Jewish Ancestry Markers (I-IV)

According to the DNA Consultants framework, four Jewish genetic markers were used as ancestral indicators, each corresponding to different historical Jewish lineages.

Jewish Marker I consists of STR patterns commonly found among Sephardic and Ashkenazi Jews. This is the most frequent marker and can appear even in individuals without a known Jewish identity due to historical conversions or intermarriage; its frequency is high in populations (e.g. Poles, Russians, Hungarians) that intermixed with Ashkenazi Jews, as well as in Sephardic-Jewish communities.

Jewish Marker II is the strongest indicator of consistent Jewish heritage, characteristic of families that intermarried exclusively with other Jews over centuries (a hallmark of Ashkenazi lineage).

Jewish Marker III signifies Middle Eastern ancestry preserved by Jewish populations; it reflects ancient Near Eastern roots and is particularly common in Sephardic (Spanish/Mediterranean) Jews, though it also appears in some neighboring groups from the Middle East and North Africa.

Marker IV points to Tatar/Khazar heritage: it denotes genetic traces of the medieval Khazar people, a Turkic group from Central Asia that converted to Judaism and later contributed to Eastern European Jewry.

It is important to note that the presence of these markers is not absolutely exclusive to people of Jewish descent. DNA Consultants emphasizes that such markers “do not necessarily point to *only* Jewish ancestry” because they can also appear in populations where Jews lived or converted, due to centuries of admixture, religious conversion, Crypto-Judaism (hidden Jewish practice), and identity changes. Nevertheless, these markers are highly prevalent among Jews: statistics indicate that over 80% of modern Jews carry one or more of the Jewish markers.

In practice, detecting multiple Jewish markers in an individual’s DNA (especially in combination) is a strong signal of Jewish genetic heritage, spanning both major branches of the Jewish people (Sephardi, Ashkenazi, Mizrahi, etc.).

Genetic Findings in the Spanish Gypsy (Gitano, Calé) Sample

Each of the nine Gitano participants showed clear evidence of Jewish genetic markers in their DNA. All nine individuals were found to carry Jewish markers I, II, III, and IV in some combination, meaning that between their maternal and paternal lineages they exhibit the full range of STR markers associated with Jewish ancestry. This finding indicates not only the presence of Jewish ancestry, but diverse Jewish ancestry encompassing Ashkenazi (Central/Eastern European), Sephardi (Iberian/Mediterranean), and even Mizrahi or Middle Eastern Jewish lineages. Many participants had multiple Jewish markers present on both sides of their family. For example, one individual’s DNA profile contained all four Jewish markers (I-IV), while several others carried three of the four markers. Such patterns suggest that Jewish genetic heritage is deeply ingrained in their lineage.

Beyond the presence of abstract markers, the analysis also uncovered direct DNA matches with known Jewish population datasets. Several participants’ STR profiles matched those recorded in scientific studies of established Jewish communities. Notably, one female participant had genetic connections to multiple reference groups: her STR markers aligned with data from a Hungarian-Ashkenazi Jewish study, a Mallorcan Chueta (Sephardic-descended) Jewish study, a broader European-Jewish dataset, and an Israeli-Jewish population study.

Other individuals showed similar matches (for instance, one man’s DNA matched STR patterns from Mallorcan, European, and Hungarian Ashkenazi Jewish samples). In fact, all nine Gitano participants shared various DNA segments (STRs) identical to those of known living Jews from different backgrounds, which is compelling forensic evidence of a biological relationship to the Jewish people.

Furthermore, the specific STR loci observed in the Gitano group - for example, D13S317, D18S51, D21S11, D3S1358, D5S818, D8S1179, FGA, and vWA - include alleles that are commonly found in Jewish populations. This overlap in genetic markers strengthens the case that these Gitano individuals share ancestry with Jewish groups.

Shared Heritage and Historical Implications

An additional remarkable finding of the study is the high degree of genetic similarity among the nine individuals themselves. Although they hail from different provinces across Spain,

the participants exhibited *numerous identical alleles at multiple STR loci*, indicating they are closely related at the genetic level. For instance, many of them carry the same allele values at markers like D5S818 (alleles 11 and 12 appear very frequently), D13S317 (common alleles 8, 9, 11, 12), and D8S1179 (common alleles 12, 13, 14). The range of variation in their STR profiles is tight - often differing by only one or two repeat units - which means the group is genetically homogeneous at many loci.

This narrow allele variation suggests a founder effect, where the group descended from a relatively small number of ancestors, as well as long-term endogamy (marriage within the community). In forensic genetic genealogy, when multiple unrelated individuals share the same alleles at many loci, it typically signals either recent kinship or a shared ethnic origin.

In this case, both factors are likely at play: the Spanish Gypsy(Gitanos,Calé) participants are interrelated and belong to the same ethnic group. Through endogamy this population has maintained a common genetic lineage over generations. This observation is consistent with the community's own oral history, which holds that they have a common origin despite being spread across different regions. The genetic data indeed "support the Spanish Gypsies' oral history", pointing to a shared ancestral source for this group.

Importantly, since all individuals carry the Jewish-specific markers, the evidence implies that this shared origin was Jewish. In other words, their ancestors were Jews who entered the Iberian Peninsula at some point in history.

The combination of Ashkenazi, Sephardic, and Mizrahi genetic signals in one group suggests that their ancestor population might have been a mix of different Jewish Diasporas (Jewish immigrants to Spain when Spain was the center of global Jewish life), or that they interacted with multiple Jewish communities over time (Jewish travelling merchants.)

While the Jewish genetic markers can, in general, appear in non-Jewish populations due to historical admixture, the fact that all nine tested individuals consistently exhibit multiple Jewish markers (alongside direct matches to Jewish genetic studies) strongly points to a Jewish ancestral origin for this community.

Conclusion

This forensic DNA analysis presents compelling evidence that the Spanish Gypsies (Gitanos,Calé) group descend from Jewish ancestors. All nine participants not only carry hallmark Jewish genetic markers but also match allele patterns found in known Jewish populations, indicating a broad spectrum of Jewish lineage (Ashkenazi, Sephardi, and Middle Eastern) in their heritage. Moreover, the tight genetic kinship among the participants suggests they originated from a single small community, likely a Jewish group that settled in Spain at some undefined historical time.

While this study is preliminary, its findings open the door for further research. Additional STR analyses and broader population studies are warranted to deepen the understanding of the Spanish Gypsies' relationship to Jewish populations and to pinpoint more precisely the historical context of their ancestry.

In summary, the genetic data produced by DNA Consultants provides a scientific affirmation of Jewish ancestry in this Spanish Gitano community.

4. MyHeritage /GedMatch

This study examined the genetic structure of 76 Spanish Gypsies (Gitanos,Calé) using autosomal DNA admixture analysis (Dodecad v3). Based on historical expectations, one would anticipate a mix of Indian (specifically northern Indian, e.g. Rajasthani) and Spanish

(Iberian) ancestry in this population. Instead, the analysis revealed a strikingly high level of Levantine-associated ancestry - **about** 47% on average - which exceeds the analogous proportion in typical Iberian (~43%).

In this context, “Levantine” genetic components (a combination of Mediterranean, West Asian, and Southwest Asian markers) serve as a proxy for Jewish-related ancestry, implying that the Spanish Gypsy (Gitano, Calé) cohort carries a high degree of Jewish ancestral DNA.

Researchers attribute this elevated Levantine signal to historical gene flow from a variety of Jewish populations, ranging from communities in India and Central Asia to those in the Middle East and Europe. In other words, multiple Jewish Diaspora sources appear to have contributed to the gene pool of Spanish Gypsies, yielding a “strong and layered Jewish genetic ancestry” in this group.

The overall admixture profile of the Spanish Gypsies is a unique mosaic. On average, individuals in the sample have substantial West European (~20%) and Mediterranean (~25%) genetic components, along with notable South Asian (~17%) and West Asian (~15%) contributions, among others. This constitutes a distinctive blend of ancestries not seen in Iberians.

Their DNA signature aligns most closely with peoples of the eastern Mediterranean and West Asia, particularly those with Jewish Diaspora roots. For example, the Spanish Gypsies’ combined ancestry profile bears notable similarity to Ashkenazi and Sephardic Jews, Mizrahi (Middle Eastern) Jewish communities, Indian Jews, and other Levantine groups. This suggests that the historical ancestors of Spanish Gypsies had significant overlap with Jewish populations from Europe, North Africa, the Middle East, and South Asia.

Multiple lines of evidence confirm a pervasive Jewish heritage in this group.

In a single-population DNA match analysis, 98.65% of the individuals had *at least one* Jewish population among their top genetic matches. In practical terms, every person in the sample shows a closest genetic affinity to some Jewish community, underscoring how dominant the Jewish component is in their ancestry. When modeling each individual’s DNA as a mixture of several source populations, Jewish lineages consistently emerge as significant contributors across the board.

For instance, a two-way admixture model (approximating each person’s ancestry as derived from two reference groups) found that 38 out of 76 individuals could be best described as a mix involving a Jewish populations.

A three-population model showed that 59 individuals had at least one Jewish group in their top three ancestral components. All had Jewish ancestral components as their top 10 ancestral components.

In four-way admixture estimates (which capture more complex heritage), Jewish ancestries featured prominently: the analysis detected frequent contributions of Sephardic Jews in the Spanish Gypsies, as well as numerous instances of Ashkenazi Jews, Sephardic Jews, Moroccan Jews, Libyan Jews, Iraqi Jews, Iranian Jews, Georgian Jews, Azari Jews, Uzbeki Jews, and South-Asian Jewish communities (notably the Cochin Jews and Bnei Menashe) among their inferred ancestral mixtures.

In summary, it could be said that a “super abundance of pan-Jewish ancestry” is found in the Spanish Gypsies (Gitanos, Calé) cohort. The strongest signals correspond to Ashkenazi and Sephardic lineages, but virtually all major Jewish Diaspora branches are

represented - including those with roots in Central Asia, the Middle East (Western Asia), the Caucasus, North Africa, Southern Europe, and the Indian subcontinent. The genetic makeup of Spanish Gypsies encompasses a wide swath of the Jewish Diaspora, effectively spanning regions from India to Western Europe in its components.

Another notable finding is the nature of the South Asian (Indian) ancestry in Spanish Gypsies. As a Roma population in Europe, they are often assumed to descend mainly from northern India; however, the genetic evidence points to a different emphasis. Every individual in the study carried a substantial proportion of Southern Indian genetic heritage, rather than exclusively northern Indian, in their DNA.

Moreover, a significant part of this Indian-derived component is specifically linked to Indian-Jewish communities. The analysis identified frequent contributions from the Cochin Jews of southwest India, the Bnei Menashe (a Jewish community with roots in the India-Myanmar border region), and even the Bene Israel lineage, within the Spanish Gypsies (Gitanos, Calé) genetic profiles. This strong Southern-Indian Jewish imprint is highly unexpected and challenges the conventional assumption that the Spanish Gypsies (Gitanos, Calé) contribution would be predominantly from North Indian (Rajasthani) sources. Such findings suggest historical connections to Jewish Diaspora groups along ancient trade routes, rather than a simple origin from a single Indian region.

In summary, the genetic analysis of these 76 Spanish Gypsies (Gitanos, Calé) reveals an extraordinarily rich and layered ancestry, anchored by a predominant thread of Jewish heritage. All individuals tested showed significant genetic ties to Jewish populations, and the levels of Levantine/Middle Eastern and Indian-Jewish DNA in this group far exceed what one would expect based on traditional narratives of Gitanoni origin.

Given how unusual and significant these results are, the researchers stress the need for further investigation. Future studies using higher-resolution genomic techniques (such as full genome sequencing and detailed lineage markers) are warranted to fully unravel the complex Jewish history and ancestry of the Spanish Gypsies. All told, this study challenges simplistic views of Spanish Gypsies (Gitanos, Calé) origins and highlights a deep historical interweaving with diverse Jewish communities across continents.

5. Haplogroups of the Spanish Gypsies (Gitanos, Calé)

This study analyzed the Y-DNA and mtDNA of 76 Spanish Gypsy (Gitano, Calé) individuals to investigate the hypothesis that a significant segment of this population may descend from ancient Jewish or Israelite lineages, rather than solely from Indian origins. The results demonstrate compelling genetic signals associated with Jewish ancestry, specifically reflected in paternal haplogroups (Y-DNA) and maternal lineages (mtDNA), as well as autosomal and forensic STR data.

Y-DNA Findings

The Y-chromosome results show a high prevalence of haplogroups commonly found in Jewish populations. Among the tested individuals:

- **J1** (especially J-P58 and J1-Z640): Found in multiple individuals (e.g., Y015, Y062, Y054, Y067, Y069, Y011). These subclades are strongly associated with Jewish and Middle Eastern populations, particularly among Mizrahi and Yemenite Jews.
- **J2a** (J-M410): Represented in samples such as Y028 and Y038. This haplogroup is linked to Levantine and Mediterranean Jewish groups.
- **E-M84** (a subclade of E-M34): Observed in several individuals (e.g., Y058, Y013). This lineage is known to be common among Sephardic Jews and ancient Israelites.

- **T1a** and **G2a**: Though less frequent, these are historically present among Jewish populations in the Mediterranean and Near East.

Other relevant lineages include:

- **R-Z201** and **R1b-Z2103**: Though broadly Eurasian, in the context of these samples, their STR and autosomal profiles showed matches with Jewish populations.
- **H-Z5875** and **H-Z5885**: Typically associated with Indian ancestry but in some cases also matching Indian Jewish groups such as Cochin Jews and Bnei Menashe.

mtDNA Findings

Mitochondrial DNA revealed maternal lineages also linked to Jewish populations:

- **K1a1b1a**, **H1a3**, **H7c**, **HV0a**, and **T2b3**: All observed in Spanish Gitano women and commonly found among Ashkenazi and Sephardic-Jewish women.
- **U5b**, **N1b**, and **J1c**: These lineages, while widespread in Europe and the Near East, have a strong presence in Jewish populations.

The co-occurrence of both Jewish-linked Y-DNA and mtDNA haplogroups in the same individuals strengthens the argument for inherited Jewish ancestry. This study involved a limited number of individuals but indicates further study of Spanish Gypsies (Gitanos, Calé) haplogroups is warranted. In particular, with more haplogroup data, comparisons could be made to the many haplogroup studies already conducted on Sephardic-Jewish, Converso populations, Ashkenazi-Jewish, and Indian-Jewish populations. These comparisons would shed light on the nature of the origins of the Spanish Gypsies, a newly identified “Crypto-Jewish” population.

6. STR and Forensic Data/DNA Consultants +Gedmatch+ Haplogroups

STR profile analysis via DNA Consultant’s software revealed high forensic similarity to Jewish populations:

- Most individuals matched best with Sephardic, Mizrahi, North African, and Yemenite-Jewish reference populations.
- Exact matches (100%) were found in several individuals with documented Jewish STR profiles, indicating not just similarity but direct ancestry.
- Several individuals also showed matches with Indian-Jewish groups, such as Cochin Jews, Bnei Menashe, and Bnai Israel.

Interpretive Summary

The convergence of autosomal, Y-DNA, mtDNA, and STR data reveals a consistent pattern: a significant proportion of tested Spanish Gypsies (Gitanos, Calé) carry genetic signatures strongly associated with Jewish populations. The presence of key paternal haplogroups (J1, J2a, E-M84), maternal lineages (K, H, T2, HV), and STR matches to various Jewish groups suggest that Jewish ancestry has played a central role in the ethnogenesis of the Gitano population.

While traditional narratives emphasize Indian origins, the genetic data supports a more complex model of ancestry, involving descent from various Jewish Diasporas.

7. Sephardic Jewish connections of Spanish Gypsies

Modern genetic evidence has revealed a significant Sephardic-Jewish lineage among Spanish Gypsies. In this study of 76 Spanish Gitano individuals, 42% were found to carry Iberian-Sephardic Jewish ancestry.

That said, all participants showed some form of Jewish genetic heritage, including traces from Ashkenazi and other Jewish communities (Middle Eastern, North African, Central and South Asian Jewish groups), indicating that the Spanish Gypsies (Gitanos, Calé) arrived in Spain already carrying diverse Jewish ancestries. This broad pan-Jewish genetic footprint suggests that Spanish Gypsies Jewish ancestry is not solely the result of local intermixing with Jews in Iberia; rather, they likely brought Jewish lineages with them “from the four corners of the Jewish world” and later intermarried with Iberian Jews. Given the substantial Sephardic component in their DNA, this study sought to find connections between the Spanish Gypsies (Gitanos, Calé) population and the Iberian-Jewish population.

Historical Overlap of Gitanos and Conversos

Multiple lines of historical evidence indicate a meaningful overlap between Spanish Gypsies and Conversos (Sephardic Jews who were forced to convert to Christianity).

Both groups endured parallel forms of persecution under the Spanish Inquisition, facing suspicion, forced assimilation, and legal restrictions targeting their communities. They often lived side by side on the margins of cities such as Córdoba, Seville, and Granada, which made everyday interaction and even cohabitation common. In these shared marginal neighborhoods, social blending occurred, as each group was pushed out of mainstream society and found solidarity with the other.

Crucially, there is oral history providing evidence of intermarriage and familial blending between Gitanos and Conversos after 1492 (when Jews were expelled from Spain or forced to convert). Some converso families reportedly sought refuge within Gitano communities to escape Inquisitorial scrutiny. As a result, intermarriages occurred and identities blurred.

Evidence of this convergence can be found in shared surnames; Conversos and Spanish Gypsies (Gitanos, Calé) carry the same surnames.

The 1749 “Great Gitano Round-up”: Persecution and Surname Data

One of the most significant (and tragic) sources of data on 18th-century Gitano families comes from the 1749 nationwide raid known as the “Great Gypsy Round-up” (La Gran Redada). On July 30, 1749, under King Fernando VI, authorities carried out a coordinated mass arrest of Gitanos across Spain. This operation, orchestrated by the Marquis of Ensenada, aimed to eradicate the Gitano’s autonomous presence. It was executed by surprise, sweeping men, women, and children from their homes in dozens of cities and towns simultaneously. Detainees faced brutal treatment: men were sent to forced labor in naval shipyards, women and children imprisoned in workhouses or convents, and entire families were deliberately separated in an effort to break community bonds.

The scale of the 1749 round-up was enormous, estimates range from about 9,000 to 12,000 Gitano people arrested during this crackdown. Many perished from the inhumane conditions; others languished for years apart from their kin. Public outcry and opposition from the Church eventually prompted the authorities to release most survivors by the mid-1760s. Despite its cruelty, the 1749 round-up inadvertently produced a valuable historical record: officials catalogued the names of the Gypsies detained. This list of surnames provides a snapshot of the Gitano population in mid-18th century Spain.

When modern researchers compared the 1749 Spanish Gypsy (Gitano, Calé) surnames (documented in archival records of the round-up) with known Converso surnames (such as those in Genie Milgrom’s compiled database of Converso lineages), they discovered a remarkable overlap. Many of the family names recorded among the arrested Gitanos also appear as traditional Converso surnames

Statistical analysis established roughly 75% of the individuals arrested in 1749 had surnames that match those found in Converso families. In other words, the majority of Spanish Gypsies targeted in the round-up carried last names with known Jewish (converso) roots. The extensive list of surnames from 1749 includes dozens of examples such as *Heredia*, *Salazar*, *Vargas*, *Bautista*, *Montesinos*, and *Rodríguez*, to name only a few.

How and why Spanish Gypsies and Conversos shared the same last names is unknown at this time. But, these findings strongly suggest that by 1749, a significant fusion of the Spanish Gypsy (Gitano, Calé) and Converso Jewish genealogies may have occurred in Spain.

The 1783-1785 Gitano Census: Assimilation and Continuity

A generation after the 1749 round-up, the Spanish Crown took a very different approach to its Gitano populace. In 1783, King Carlos III issued the *Pragmática Sanción*, a royal decree ending overtly punitive measures and instead promoting the assimilation of Spanish Gypsies into mainstream society. As part of this reform, a comprehensive census of the Gitano population (1783-1785) was conducted to gather detailed demographic data. This census - one of the most extensive historical surveys of Spain's Gitano people - documented 12,037 individuals and recorded 567 distinct hereditary surnames among them. The data revealed that a small subset of surnames was extremely common: roughly 10% of those surnames accounted for 75% of the Gitano population, indicating that a few large family networks made up the bulk of the community.

The census also detailed regional distributions of Gitano populations and surnames: Southern Spain, particularly Andalusia (with Seville and towns like Utrera), had the highest concentrations of Gitanos. It also reveals certain surnames were clustered by region. This census may provide genealogical data which will establish a connection between the Spanish Gypsies and Conversos.

Crucially, the Conversos surname continuity observed in 1749 persisted into the 1780s. The 1783-85 census data show that again about 70-80% of Spanish Gypsies bore surnames of Converso origin. For example, the traditionally Jewish surname *Salazar* appears *12 times* in the 1783-85 Gitano census records, indicating numerous Gitano families carried that name. Likewise, Converso surnames like *Heredia*, *Montoya*, *Reyes*, *Rodríguez*, and *Torres* are frequently recorded

In total, however, the diversity of Converso surnames had narrowed by 1785 compared to 1749. Whereas the 1749 round-up documented around 240 different Sephardic-origin surnames among Gitano families, the 1783-85 census found only 33 distinct Sephardic surnames in use. This suggests that over the intervening decades, many less-common Jewish family names had died out or been abandoned, even as the overall proportion of people with Converso names remained high (roughly 71% in 1785, versus 73.5% in 1749).

Genetic and Genealogical Continuity

The convergence of historical and genetic evidence reaches a culmination in the study's modern findings. As noted, 32 out of 76 tested Spanish Gypsies showed Sephardic Jewish genetic ancestry. Significantly, every one of those 32 individuals with Sephardic DNA also bore a traditionally Converso surname. In fact, when researchers examined all the surnames in the sample group, they found that 51 out of 59 surnames (86%) used by the test group are known Sephardic-Jewish/Converso last names. This is a remarkable confirmation that the surnames carried by these Gitano individuals are not coincidental: they may strongly correlate with actual Jewish ancestry.

The data implies that many of these families have verifiable Jewish-converso forebears in their family trees. The study suggests that with dedicated genealogical research, it would likely be possible to identify specific ancestors who lived as Jews in Spain, given the combination of Sephardic-Jewish DNA and continuous use of Converso surnames in these lineages.

The genealogical connections hinted at by the use of Converso surnames, backed up by genetic evidence, provide a road map for genealogists to find the connections between Conversos and Spanish Gypsies.

8. Language offers further evidence of Jewish origins

The 76 Spanish Gitano participants in this study speak *Caló*, a dialect traditionally considered part of the Roma language family. Linguistic research by Lisardo Cano Montes indicates that *Caló* contains many words of Hebrew origin. The presence of Hebrew words in the language the 76 tested Spanish Gypsies offers further evidence of a link between the Spanish Gitano and a Jewish past.

Linguistic Evidence in Caló-Gitanoní

Caló, exhibits a substantial layer of Hebrew-derived vocabulary. Lisardo Cano Montes, who is both a native *Caló* speaker and a meticulous researcher, spent decades documenting Hebrew influences in *Caló*. In his *Diccionario de Palabras Hebreo-Caló-Gitanoní*, Cano catalogued hundreds of *Caló* terms strikingly similar in pronunciation and meaning to Biblical Hebrew words.

For example, the *Caló* word *Devel* meaning “God” corresponds to Hebrew *Deuel*, the Word *chachipén* (“truth”) parallels Hebrew *emet*, and *kanría* (“priest”) mirrors Hebrew *kohen*. These parallels go well beyond chance resemblance or a few borrowings. Cano’s compilation suggests a systematic Hebrew substratum in the *Caló* lexicon. Based on this extensive evidence, Cano concludes that Hebrew is not merely a minor influence but forms the very basis of *Caló*. In other words, many of the core words and concepts in *Caló* may have originated from Hebrew rather than from the Indo-Aryan roots usually assumed for Roma languages.

Cano’s findings challenge the mainstream linguistic view, which traditionally derives Roma languages from Sanskrit or other Indo-Aryan sources with only scattered borrowings from languages like Greek, Persian, or local European tongues. Cano’s work aligns with earlier scholars who noticed Hebraic elements in Gitano speech. 19th-century philologist George Borrow, for instance, observed that the Spanish Gitano dialect shared many similarities with Hebrew. In his 1888 *Gitano Lavo-Lil* (Gitano word-book), Borrow highlighted lexical parallels such as *cam* “sun” in *Caló* akin to Hebrew *kham* and speculated that the Gitano might even be descendants of the Lost Tribes of Israel.

Even earlier, in 1697, Johann Christoph Wagenseil - a German orientalist - remarked on the unusually high concentration of Hebrew words in the clandestine *Rotwelsch* cant used by Gypsies in Germany. He famously asked, “*Where would so many Hebrew words come from among so few German words, if not from the Jews?*”. Wagenseil went so far as to suggest that the Gitano in German lands might *originally have been Jews*, or at least profoundly influenced by Jewish people, given the linguistic evidence. These historical observations, though speculative, established a pattern in the historical record: scholars across centuries repeatedly noted Jewish/Hebrew elements in Gitano speech.

Modern linguists have generally been cautious about these claims. The consensus today classifies Gitanoní as an Indo-Aryan language that left India around a thousand years ago, later picking up words from languages of the Middle East and Europe. From this

perspective, Hebrew or Yiddish words in Gitanoni are explained as borrowings due to contact between Gitano and Jewish communities, rather than evidence of Jewish origin. Indeed, Borrow's and Wagensel's theories were largely set aside in favor of an Indian origin of the Gitano. However, some contemporary linguists like Paul Wexler have revived these unconventional ideas. Wexler proposes a "*relexification*" hypothesis: he argues that while Gitano grammar might derive from an Indo-Aryan base, much of its vocabulary could have been replaced by Hebrew or other Jewish languages in the distant past.

According to Wexler, European Gitana dialects (including Caló) may essentially be Jewish languages in disguise - formed when Jews or Judeo-speakers adopted an Indian grammatical framework but kept many Hebrew words and Semitic idioms. This radical view remains controversial, but it is noteworthy that multiple independent sources (Wagensel, Borrow, Wexler, and Cano) - from the 17th century to the present - have all pointed to a profound Hebrew imprint on the speech of Gitano communities. The recurrence of this observation in disparate historical records underscores a persistent pattern suggesting closer Jewish-Gitano linguistic ties than traditionally assumed.

The previously described genetic results indicating Spanish Gypsies are of a Jewish origin, align with the linguistic evidence, reinforcing the idea that Hebrew words in Caló came via ancestors of Jewish origin. The fact over two-thirds of the group carry ancient Near Eastern (Semitic) DNA, and all carry medieval European-Jewish DNA, strongly supports the theory that the Hebrew words in the Spanish Gypsies language is because they are a Hebrew people. This is a critical insight: Hebrew words in their language are not just loanwords from neighbors, but echoes of their own Jewish heritage.

9. Conclusion

This study reveals the Spanish Gypsies (Gitanos, Calé) descend from Jewish people. That they are part of the Crypto-Jewish continuum. And, that the Spanish Gitano's Jewish ancestry is not from a single source, but from virtually every major Jewish Diaspora branch. The 76 participants collectively carry a mixture of Jewish ethnic lineages spanning multiple regions. These include: South Asian Jewish ancestry (from communities like the Bene Israel and Cochin Jews of India), Central Asian Jewish roots (e.g. Bukharan or Uzbeki Jews), Western Asian (Middle Eastern) Jewish ancestry (such as Iranian and Iraqi Jews), Caucasus region Jewish ancestry (e.g. Georgian and Azerbaijani Jews), North African Jewish heritage (e.g. Moroccan, Libyan, or Tunisian Jews), and European Jewish ancestry (both Sephardic Jews of Iberia/North Africa and Ashkenazi Jews of Central/Eastern Europe). In essence, the Spanish Gypsy (Gitano, Calé) appear to be an amalgamation of nearly all the world's Jewish Diasporas.

This comprehensive view of the Spanish Gypsy (Gitanos, Calé), through linguistics, DNA, and historical records, illustrates how multidisciplinary evidence can converge to illuminate hidden branches of Jewish family tree. It confirms that the Jewish ancestry of the Spanish Gypsies (Gitanos, Calé) and it opens the door to further research on how much of Roma heritage across the world may be intertwined with that of the Jewish Diaspora. This Project ends with questions the authors hope will be addressed by other researchers.

1. How did a group of people, of Jewish ancestry, transition from being Jewish to being Gitano?
2. How can the Spanish Gypsies diverse Jewish ancestry, hailing from virtually every known Jewish community in the Jewish world, be explained?
3. Do other Roma communities mirror Spanish Gypsy Jewish ancestry?
4. Can genealogical connections be made between the Spanish Gypsies and Iberian Jews?