

Basque roots revealed through DNA analysis

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The Genographic Project announced today the most comprehensive analysis to date of Basque genetic patterns, showing that Basque genetic uniqueness predates the arrival of agriculture in the Iberian Peninsula some 7,000 years ago. Through detailed DNA analysis of samples from the French and Spanish Basque regions, the Genographic team found that Basques share unique genetic patterns that distinguish them from the surrounding non-Basque populations.

Published in the [American Journal of Human Genetics](#), the study was led by Lluís Quintana-Murci, principal investigator of Genographic's Western European regional center. "Our study mirrors European history and could certainly extend to other European peoples. We found that Basques share common [genetic features](#) with other [European populations](#), but at the same time present some autochthonous (local) lineages that make them unique," said Quintana-Murci. "This is reflected in their language, Euskara, a non-Indo-European language, which altogether contributes to the cultural richness of this European population."

The genetic finding parallels previous studies of the Basque language, which has been found to be a linguistic isolate, unrelated to any other language in the world. It is the ancestral language of the Basque people who inhabit a region spanning northeastern Spain and southwestern France and has long been thought to trace back to the languages spoken in Europe prior to the arrival of the Indo-European languages more than 4,000 years ago. (English, Spanish, French and most other European languages are Indo-European.) Genographic Project researchers studied mitochondrial DNA ([mtDNA](#)), which has been widely applied to the

study of human history and is perhaps best known as the tool used to reveal 'Mitochondrial Eve,' the female [common ancestor](#) of all modern humans who lived in Africa approximately 200,000 years ago. It has also been used to study regional variation both within and outside Africa, providing detailed insights into more recent migration patterns.

"This Genographic study tells a realistic story of gene and language continuity in a defined region that nevertheless was also subject to repeated gene flow. It is a perfect example of why insisting and persisting on accuracy and the deepest possible phylogenetic analysis is a standard to be followed. We simply could not detect the signal in a lower level of resolution — it may have even led us to a completely opposite conclusion," said Dr. Doron Behar, a population geneticist and co-author of the paper, based in the Rambam Medical Center, Haifa, Israel.

The Genographic Project, launched in 2005, enters its eighth year this spring. Nearly 75,000 participants from over 1,000 indigenous populations around the world have joined the initiative, along with more than 440,000 members of the general public who have purchased a testing kit online, swabbed their cheeks and sent their samples to the Genographic lab for processing. This unprecedented collection of samples and data is a scientific resource that the project plans to leverage moving forward.

Genographic Project Director and National Geographic Explorer-in-Residence Dr. Spencer Wells noted, "The Basque research is a wonderful example of how we are studying the extensive Genographic sample collection using the most advanced genetic methods. In some cases, the most appropriate tool may be mtDNA, while in others the Y-chromosome or autosomal markers may be more informative. Ultimately, the goal of the project is to use the latest genetic technology to understand how our ancestors populated the planet."

More information: www.ncbi.nlm.nih.gov/pubmed/22365151

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