

# New study cracks through ice around Levant's past

Genetics research provides insight into climate-driven migration in region

By **Susannah Walden**  
The Daily Star

BEIRUT: Populations in the northern Levant lived in isolation for more than 25,000 years during the ice age, research by a team of Lebanese and international geneticists revealed in a new study of the impact of climate on early human movement.

“One of the most striking things to me [was] I thought that when we migrated out of Africa ... we took one of two routes, either the direct route through the Sinai or through Yemen ... and populated the Levant and then we moved north,” Dr. Pierre Zalloua, geneticist and professor at the Lebanese American University in Beirut who co-authored the study, told The Daily Star. “But our research has shown totally the opposite, after the initial migration [from Africa] around 50,000 years ago ... we actually left the southern Levant empty and then after that we came back, which was really fascinating to me.”

The new study, released Wednesday in the academic journal “Scientific Reports,” culminates four years of studies to show how early communities migrated north after leaving Africa, only returning to the Levantine region when environmental factors in Europe forced the move back south. Using distinct genetic signatures of the area’s modern population, Zalloua and his co-authors were able to provide new understanding about the region’s history.

The last ice age (roughly 110,000 years ago to 12,000 years ago) forced populations onto the more limited habitable land in the northern Levant, around the Black Sea and in the Arabian Peninsula – the latter not previously identified through archaeology. The environmental conditions then caused them to be isolated for centuries.

While Zalloua said the exact geo-

graphical locations cannot be pinpointed, the northern Levant territory would include parts of Lebanon and Syria. Zalloua’s research team found that populations in these areas, called “refugia” would have had no contact or intermixing for more than 25,000 years, creating “distinct genetic signatures specific to each ‘refugium,’” according to Zalloua.

Isolation over 25,000 years is enough time to create distinctive genetic markers in a population, Zalloua said. “If you have multiple populations across the Levant where people are mixing and moving then you would see a lot of mixed [genetics]. Despite all of this we have specific signatures which ... are truly indicative of isolation,” he said.

While past archaeological finds have shown populations across the Levant during the last ice age, the

scarcity of evidence puzzled Zalloua. “When we did the study we realized that it was because there were not very many people across [the region] because of the climate,” he explained.

It was only after the first ice began to melt some 15,000 years ago that these isolated populations began to mix and migrate again, revealing that people from the Levant “migrated north around 12,000 years ago, and [therefore these populations were] not directly from Africa,” Zalloua said. He added that this means “we [in the Levant] have been living in some form of community over the last 15,000 years.”

The connections between climate changes and where and how human populations lived is not automatically taken into consideration in genetic studies, according to Zal-

loua. “Initially when people started doing genetics they really did not pay attention to the climate very much, but then you realize immediately that the climate played a very important role in how people moved and mixed,” he said.

Zalloua with LAU, joined by a team from New Zealand’s University of Otago, [Université St. Joseph](#) in Lebanon and tech company IBM, worked on the research for at least four years but did not begin with any expectations of what they would find. “You just look at populations and then the picture will be painted and you’ll see how to make sense of it,” he said.

In this case, after plotting their data on a map with climate and archaeological evidence Zalloua said they looked at the picture they had and said, “Yes wow, it makes sense.”



Zalloua, a geneticist and professor at the Lebanese American University in Beirut, co-authored the study.

Photo by Adib M