

# Long lost sisters

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The human race was divided into two separate groups within Africa for as much as half of its existence, says a Tel Aviv University mathematician. Climate change, reduction in populations and harsh conditions may have caused and maintained the separation.

Dr. Saharon Rosset, from the School of Mathematical Sciences at Tel Aviv University, worked with team leader Doron Behar from the Rambam Medical Center to analyze African DNA. Their goal was to study obscure population patterns from hundreds of thousands of years ago.

Rosset, who crunched numbers and did the essential statistical analysis for the National Geographic Society's Genographic Project, said the team was trying to understand the timing and dynamics of the split into at least two separate groups.

“We wanted to look into the ancient history of our species. How did we live throughout most of our existence as a species? Did we live as one — or were we fractured into small groups? Until now, it wasn’t really clear,” says Rosset.

## **A Picture of the Ancient Past**

Researchers believe that about 60,000 years ago, modern humans started their epic journeys to populate the world. This time period has been the primary focus of anthropological genetic research. However, relatively little is known about the demographic history of our species over the

previous 140,000 years in Africa.

The current study returns the focus to Africa and thereby refines the understanding of early modern Homo sapiens history.

Rosset, who is also affiliated with IBM's T.J. Watson Research Center in New York, says the study provides insight into the early demographic history of human populations before they moved out of Africa. "These early human populations were small and isolated from each other for many tens of thousands of years," says Rosset.

The team's research was based on a survey of African mitochondrial DNA (mtDNA) and is the most extensive survey of its kind. It included over 600 complete mtDNA genomes from indigenous populations across the continent.

## **How Old Was "Mitochondrial Eve"**

MtDNA, inherited down the maternal line, was used in 1987 to discover the age of the famous "Mitochondrial Eve," the most recent common female ancestor of everyone alive today. This work has since been extended to show unequivocally that "Mitochondrial Eve" was an African woman who lived sometime during the past 200,000 years.

Recent data suggests that Eastern Africa went through a series of massive droughts between 90,000 and 135,000 years ago. It is possible that this climate shift contributed to the population splits. What is surprising is the length of time the populations were separate — for as much as half of our entire history as a species.

Dr. Spencer Wells, director of the Genographic Project and Explorer-in-Residence at the National Geographic Society, said, "This new study illustrates the extraordinary power of genetics to reveal insights into

some of the key events in our species' history. Tiny bands of early humans, forced apart by harsh environmental conditions, coming back from the brink to reunite and populate the world. Truly an epic drama, written in our DNA."

Adds Rosset, "Israelis and Jews are always curious about looking into their roots. Just in this study, we were digging deeper than we normally do."

Source: American Friends of Tel Aviv University

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