

Ancient African empires' impact on migration revealed by genetics

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Traces of ancient empires that stretched across Africa remain in the DNA of people living on the continent, reveals a new genetics study led by UCL researchers.

Published in *Science Advances*, the collaboration between UCL geneticists working alongside anthropologists, archaeologists, historians and linguists in Africa and beyond found evidence for when different peoples intermixed across the continent. Their findings indicate migration is linked to vast empires such as the Kanem-Bornu and the kingdoms of Aksum and Makuria, as well as the spread of the Bantu language group, now spoken by close to one in four Africans.

Much of their study focused on Cameroon, where the researchers had collected the most genomes, and they show that the central African country has as much genetic diversity by some measures as the whole of Europe.

Representing one of the most densely sampled studies of African genomes to date, the study used new genetic data from more than 1,300 individuals from 150 ethnic groups from across Africa (primarily Cameroon, Republic of the Congo, Ghana, Nigeria, and Sudan, plus some more in southern Africa). By comparing genetic variation patterns between present-day people from different parts of Africa and elsewhere, they identified when intermixing occurred between different ethnic groups, which likely indicates relatively high migration at specific times and places.

First author of the study, Ph.D. candidate Nancy Bird (UCL Genetics Institute) said, "We found evidence that roughly 600 years ago people from north and east Africa were migrating into the region of the Kanem-Bornu Empire, likely reflecting its huge impact on trade across Africa. Historical records of the empire are poor, so it is exciting to show how it possibly had such a geographically widespread impact on the continent, perhaps bringing in people from over 1,000 kilometers away."

The Kanem-Bornu Empire, which covered present-day northern Cameroon and Chad, emerged around 700 CE and existed for more than

1,000 years, at its height spanning almost 2,000 kilometers across north and central Africa. It had vast trading networks linking northern, eastern and western Africa, resulting in genetic traces from all corners of the continent remaining in the DNA of the present-day people of Cameroon.

The study also sheds light on the Kingdom of Aksum, which encompassed northeast Africa and southern Arabia in the first millennium, and was considered one of the world's four great powers of the third century alongside contemporary empires in China, Persia and Rome, as well as the Kingdom of Makuria, which spread along the Nile in Sudan between the fifth and 16th centuries and signed one of the longest lasting peace treaties in history with Egyptian Arabic groups.

Nancy Bird said, "We see evidence of migrations from the Arabian Peninsula into Sudan during the era of the Kingdom of Aksum, highlighting its importance as a global center around 1,500 years ago. We also see evidence of Arabic groups migrating into Sudan down the Nile, but importantly these genetic signals almost entirely originate after the peace treaty between Makuria and Egypt had started to break down."

Furthermore, while previous studies have highlighted the wide-ranging genetic impact of the migration of Bantu speakers from Cameroon into eastern and southern Africa, this study provides compelling evidence that expansions may have also extended to the west, possibly linked to [climate change](#).

Nancy Bird said, "There is some evidence from other researchers of climate change altering the environment around 3,000 years ago, reducing forest coverage. That this corresponds with the timings of some ancient migrations we are detecting suggests climate change may be instigating or facilitating these large-scale movements of people."

Senior author Dr. Garrett Hellenthal (UCL Genetics Institute) said, "The

African continent has an immense and complicated pre-colonial history often overlooked by western curricula. The legacy of colonialism means that many events in African history have been deliberately obscured or lost. This includes the range and influence of historical African empires."

The staggering amount of genetic diversity uncovered in this paper and other emerging studies highlights the vital importance of analyzing diverse African genomes from across the continent.

Dr. Hellenthal added, "Despite the clear insights into medicine and human history that studying the immense genetic diversity found among African peoples can provide, African genomes have been, and still are, underrepresented in genetic studies compared to other regions of the world."

Co-author Dr. Forka Leypey Matthew Fomine (University of Buea, Cameroon) said, "There are still lots of [ethnic groups](#), for example in Cameroon, that have not yet been studied, whose genomes likely hold many other secrets. We have the capability to collect these samples and are looking for interested collaborators."

More information: Nancy Bird et al, Dense sampling of ethnic groups within African countries reveals fine-scale genetic structure and extensive historical admixture., *Science Advances* (2023). [DOI: 10.1126/sciadv.abq2616](https://doi.org/10.1126/sciadv.abq2616). www.science.org/doi/10.1126/sciadv.abq2616

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