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Researchers decode oldest DNA from South Africa to date

A series of 13 individuals from Oakhurst rock shelter who died between 1 300 and 10 000 years ago provides new insights

A team of researchers from the University of Cape Town (UCT) and the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany has analysed human remains from the Oakhurst rock shelter in southernmost Africa and reconstructed the genomes of 13 individuals, who died between 1 300 and 10 000 years ago, including the oldest human genome from South Africa to date.

"Oakhurst rock shelter is an ideal site to study human history, as it contained more than 40 human graves and preserved layers of human artefacts, such as stone tools, going back 12 000 years," says Victoria Gibbon, professor of Biological Anthropology at UCT and co-senior author of the study published in the journal [Nature Ecology and Evolution](#) on Thursday, 19 September 2024.

"Sites like this are rare in South Africa, and Oakhurst has allowed for a better understanding of local population movements and relationships across the landscape over nearly 9 000 years."

The successful genetic sequencing of 13 individuals from the site was not without its challenges, as Stephan Schiffels, co-senior author of the study, explains: "Such ancient and poorly preserved DNA is quite difficult to sequence, and it took several attempts using different technologies and laboratory protocols to extract and process the DNA."

The ancient genomes represent a time series from 10 000 to 1 300 years ago, providing a unique opportunity to study human migrations through time and the relationship to the diverse groups of people living in the region today.

A key finding was that the oldest genomes from the Oakhurst rock shelter are genetically quite similar to San and Khoekhoe groups living in the same region today. This came as a surprise, as Joscha Gretzinger, lead author of the study, says: "Similar studies from Europe have revealed a history of large-scale genetic changes due to human movements over the last 10 000 years. These new results from southernmost Africa are quite different, and suggest a long history of relative genetic stability."

This only changed around 1 200 years ago, when newcomers arrived and introduced pastoralism, agriculture and new languages to the region and began interacting with local hunter-gatherer groups.

In one of the most culturally, linguistically and genetically diverse regions of the world, the new study shows that South Africa's rich archaeological record is becoming increasingly accessible to archaeogenetics, providing new insights into human history and past demography.

Ancient DNA has provided spectacular insights into human history, particularly in Europe and Asia, where researchers have reconstructed the genomes of thousands of people. However, fewer than two dozen ancient genomes have been recovered from southern Africa – specifically Botswana, South Africa and Zambia – which has some of the world's earliest evidence of modern humans, with the oldest genomes in the region previously dating back around 2 000 years.



Cape Point promontory in the Cape Point Nature Reserve

Photo: Supplied

- [Read the full study.](#)
- [Download photos.](#)

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