

Researchers find genetic 'fingerprints' of ancient migrations in modern-day United Arab Emirates

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A team of geneticists and archaeologists have analyzed the fine-scale genetic structure and ancestry of nearly 1,200 people from the United

Arab Emirates (UAE), and found genetic traces of population mixing spanning thousands of years.

The research team from Oxford University and the Imperial College London Diabetes Centre Abu Dhabi (ICLDC) think that these genetic traces reflect the movement of people in the Middle East after major cultural transitions, such as the invention of agriculture, as well as desertification of the region in the past 6,000 years.

The research team (including University of Birmingham researcher), co-led by Professor Houman Ashrafi from Oxford University's Radcliffe Department of Medicine, think that the unique family histories within the United Arab Emirates will make it easier to spot otherwise rare genetic variants related to diseases such as type 2 diabetes. This means that geneticists could potentially use this [population](#) as a microcosm to find and understand otherwise difficult-to-find genes related to metabolic diseases.

The United Arab Emirates is a Middle Eastern federation of seven Emirates, situated at the crossroads of Africa, Europe and Asia. Archaeologists have found evidence of people migrating across the Middle East because of climatic events such as droughts, as well as population expansions after humid 'greening' events. Trade hubs, such as pearl diving, also led to the mass movement of people.

The research study, published in the journal *Molecular Biology and Evolution*, compared the genetics of their sample from current day UAE to those of people from Sub-Saharan Africa, the wider Middle East, Europe, the Caucasus and South Asia, and found that the genetic admixture of their UAE sample reflected its intercontinental location between Africa, Europe and Asia. The team also analyzed the genetic makeup of the Y chromosome (which is only passed along the male line) and a cell component called the mitochondria (which is only passed

along the female line). This too found genetic mixtures consistent with previously known migration events.

The study's first author, Dr. Kate Elliott, from Oxford University's Nuffield Department of Medicine, said: "We know tribal culture is very important to Emiratis and we saw these tribal patterns in their genetics. Different Emirates had distinct genetics signatures matching the geographical position of the Emirates across the country. Through collaborations with many experts, particularly Dr. Marc Haber's group at the University of Birmingham, we have been able to deliver such an important contribution to the field."

Oxford University's Professor Houman Ashrafian, said: "This is the first fine-scale genetic analysis of the Emirati population, and in addition to finding genetic traces suggestive of migration events from thousands of years back, we think that this is a useful population to find genetic variants linked to type 2 diabetes, which would have been hard to spot in any other population.

"The Middle East is relatively understudied when it comes to population genetic studies, despite being home to over 460 million people. The unique population history of the United Arab Emirates makes it a good site to understand the genetics of this region, helping reduce health disparities and promote genomics-driven precision medicine through a deeper understanding of population-specific genetic variation."

"Fine-scale genetic structure in the United Arab Emirates reflects endogamous and consanguineous culture, population history and geography" is published in the journal *Molecular Biology and Evolution*.

More information: Katherine S Elliott et al, Fine-scale genetic structure in the united arab emirates reflects endogamous and consanguineous culture, population history and geography, *Molecular*

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