**Fine-scale genetic analysis tracks human populations through history**

**WHAT WAS KNOWN**
- The genetic composition of human populations varies throughout the world.
- In part, these patterns result from the demographic history of the populations – the migration, invasion, and admixture events, and the degree of isolation affecting the ancestors of modern populations.
- Unravelling the signals of admixture in modern populations could provide insights into how past events have impacted our DNA.
- Understanding variation in populations is also critical to genetic studies of disease.

**WHAT THIS ADDS**
- Reveals for the first time the subtle and striking patterns of genetic differentiation within a country, and the way in which these relate to geography.
- Many of the genetic subgroups identified within the UK closely match geopolitical boundaries from the time after the Anglo-Saxon migrations.
- Characterises the genetic legacy of past migrations from Europe into the British Isles and settled a number of outstanding historical controversies.
- Shows that it is possible to elucidate the effect of ancient and modern migration events and to provide fine-scale details of the sources involved, the complexity of events, and the timing of mixing of groups by using genetic information alone.
- Provides an atlas of worldwide human admixture history, encompassing over 100 events occurring over the past 4000 years, such as the Mongol invasions of Genghis Khan, and European colonisation of the Americas and of parts of Africa and Asia.

**REFERENCES**

**WHAT WE DID**
- Applied sophisticated fine-scale genetic analysis to 2000 samples from volunteers with grandparents from specific rural areas of the British Isles; and tracked DNA ‘chunks’ in 95 admixed populations across the world to their likely sources.