Genomic analysis of ancient individuals from south-western England

Nikola Vukovic¹ Carolina Bernhardsson¹ Phillip Endicott¹,²,³ Gabrielle Delbarre⁴ Martin Smith⁵ Timothy Darvill⁶ Martin Green⁵ Mattias Jakobsson¹
¹ University of Tartu ² University of Bournemouth ³ University of Natural History Museum of France ⁴ Down Farm Museum, Doncaster, UK

A WEST COUNTRY STORY

Neolithic Britons’ sedentary lifestyle & strong communal structure are reflected in their funerary traditions (Powell et al., 2012).

After the Bell Beaker migration into Britain (2400 – 2000 BCE), more than 90% of the genetic composition of the British Isles is of Yamnaya ancestry (O’Malley et al., 2018).

The main characteristics of the Bronze Age in Britain are the occurrence of distinctive bell-shaped vessels and a fundamentally different approach to the burying of the dead.

In contrast to the Neolithic, a shift in focus to the individual, rather than the ancestors as a collective, is visible in the Bronze Age (McKieyn et al., 1997).

Despite the shift in customs, ancient burials and burial mounds find continued use during the Bronze Age, with smaller tombs often cut into the primary mounds.

We analysed 30 ancient individuals from south-western England, excavated from different cultural contexts: Neolithic: (n=15), Chalcolithic: (n=1) to the Bronze Age: (n=14).

We find evidence of this dramatic population turnover.

In these instances we discover Bronze Age Britons buried within Neolithic burial grounds.

First kin relationships between four individuals provide a direct insight into the makeup of a Neolithic family.

By integrating genetic and archaeological analyses, our study delivers a snapshot of one of the most influential demographic shifts in British history, shedding light on both the individual history of these tombs as well as the region’s broader cultural transformations.

Visible signs of population turnover in England after the Bell Beaker migration

Two distinct clusters are visible on the PCA plot:

- British Neolithic samples fall inside the range of variation of other European Neolithic populations.
- British Bronze Age samples follow the broader European Bronze Age cluster.
- Anatolian Neolithic & Yamnaya occupy the extremes of the two clusters.

Four outgroup statistics were employed to test for differences in affinity between the British samples and two possible sources of gene flow (Neolithic Farmers & Yamnaya, respectively):

- The majority of Neolithic individuals show significant positive Z values (Z>3) while the Bronze Age samples display significant negative Z values (Z<-3).
- An exception to this trend was observed in three samples (db016, lot001 & muw005), all of which exhibit a clear genetic affinity to the Yamnaya (Z<3).

Admixture analysis reveals that the Neolithic samples share a large blue component common among Neolithic populations & a small grey component corresponding to the WHG population.

The Bronze Age samples consist of a large yellow component, present in the Yamnaya & smaller continental Neolithic and WHG components, similar to other Bronze Age populations in Europe as well as modern English individuals.

Despite evident signs of admixture, the distinct clusters remain support a history of population replacement and assimilation.

A Neolithic family tomb

Strong kinship between the two male and two female individuals at Monkton-up-Wimborne, suggesting a Neolithic family burial site.

All sharing K1a+195 mt haplogroup

Possible tomb reuse?

3 exceptions to the “genetic makeup following the archaeological context” rule.

All exhibit very high affinity to the Yamnaya source.

Different haplogroups than others in their burial sites:

- Muw002 & Muw003 mt haplogroup (db016 & lot001) & Muw005 (H1f mt haplogroup (rest are K1a+195))
- Muw001 - K1a16 mt haplogroup (lot001 is K1b1a1)

Something to think about

Wore the Bronze Age Britons paying attention to bury the dead at sites that held significance at more ancient times?

Maybe a way of showing continuity in island traditions?

Bell Beaker Pioneer

a female Bell Beaker individual buried at a Neolithic Long Barrow burial

‘Bronze Age’ genetic profile

H1a16 mt haplogroup.

2622 – 2467 BCE

Very early radiocarbon date

Potentially one of the earliest Bell Beaker burials in Britain.

Found this interesting?

@nikolavukovic nikola.vukovic@ebc.uu.se