



## **Whithorn: dental clues examined**

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Many researchers have identified a strong genetic component in dental characteristics, some of which have been shown to occur more frequently in populations with certain ancestries. This makes dental morphology a convenient method for investigating population affinities, and this was the method that I used on my visit to Scotland last summer in order to investigate the possibility of identifying genetic differences in different parts of the country. Research on skeletal material from six sites with different population histories was carried out using the Arizona State University Dental Anthropology System (ASUDAS), a non-destructive technique that analyses frequencies of genetic dental traits.

The main influences to be considered were those of the peoples of the four regions which gradually united to become Scotland – the Scots of Dalriada (originally from Antrim), the Britons of the kingdom of Strathclyde, the Picts to the north of the Forth, and the Angles, who pushed north from Northumbria as far as the Forth and possibly beyond. Viking influences also entered the picture. The primary site studied was Whithorn, in Galloway, but three Carmelite friaries (Aberdeen, Linlithgow and Perth) and three sites at St. Andrews were also studied for comparison.

These sites provided a wide spread of genetic influences. The major influences on Whithorn came from the Britons, Gaels, Northumbrians, and Vikings. The influences on the Carmelite friaries, however, were mainly Pictish and Northumbrian. The indigenous inhabitants of Aberdeen and Perth were Picts – the name conferred by the Romans on tribes to the north of the Forth. Linlithgow, being so close to the Forth-Clyde line, was probably influenced to some extent by the Britons as well. Linlithgow and Perth probably had some Northumbrian influence, while Aberdeen may have been far enough north not to have been affected by these influences. The original inhabitants of St Andrews, like those of Aberdeen, were Pictish, but it seems likely that the Northumbrians had some influence on this region during their period of expansion between the seventh and the tenth centuries. Whithorn, where St Ninian introduced Christianity in 397 AD - a century and a half before Columba landed in Iona - had been subjected to Roman influence for a relatively short period and for that reason remained a centre of Brittonic culture for longer than many places to the south. Northumbrians, however, are believed to have gained control of the area at the end of the seventh century and retained their hold till the Viking raids of the ninth century, which were followed by new trading links and something of a resurgence of Celtic culture, with considerable influence from Ireland.

Most of the burials from Whithorn are dated between 1250 and 1600. The densely populated graveyard shows that a large local population resided in the area. The burials date from a time of upheaval in Scotland, and it has been suggested that perhaps some of the people who were buried there had been merely passing through the region. Burial patterns, age and sex profiles, and absence of trauma all indicate, however, that they were inhabitants of Whithorn and not pilgrims or soldiers.



*Whithorn Priory*

The three Carmelite friaries – Aberdeen, Linlithgow, and Perth - had a very different historical background. While 12 medieval Carmelite friaries were found in Scotland, little is known about the order because of the destruction of the friaries during the Reformation. For this reason, the excavated sites are important, as much of what is known about Carmelite Scotland is derived from them.

The Carmelite friary in Aberdeen is thought to date from the late thirteenth century, although the first established date is 1336, when Edward III raided it. The site was destroyed during the Reformation. The first archaeological evidence for Carmelites in Linlithgow is from the end of the fourteenth century. This site, too, was destroyed during the Reformation. The site at Perth is thought to date from as early as the late thirteenth century and was destroyed in 1559.

The age and sex profiles of the people buried at all three cemeteries suggest that the majority belonged to the lay population and had no direct connection with the friary. This finding is in line with the papal decree of 1312 that permitted laymen to be buried in friary cemeteries.

The three sites at St Andrews were Kirkhill, Logies Lane and Hallowhill. At Kirkhill, to the east of St Andrews Cathedral, most burials date from early medieval times although some were much earlier. All the skeletal material dates from before the middle of the twelfth century. The Logies Lane material (which is combined with Kirkhill for analysis) is from a church graveyard and dates from the fifteenth century. Hallowhill was excavated in 1977 and was a pre-Christian Pictish cemetery.

In total, the remains of 786 people were examined, including 463 from Whithorn, 90 from Aberdeen, 87 from Linlithgow, 26 from Perth, 86 from St Andrews, and 34 from Hallowhill. In each case 95 traits were studied, although most analysis was based on 29 traits known to have the most reliability. The ASUDAS allows for missing data, so an individual was still included when only one tooth was present.

Preliminary analysis has shown that while all sites are very similar, some differences do exist. The characteristic that showed most difference between the samples was the mandibular torus, a bony swelling on the lingual surface of the mandible. The highest frequency, with 74% of the sample of 19 showing this trait, was at Hallowhill, followed by Aberdeen with 71% of the sample of 34. Linlithgow had 46% of 28, Perth

40% of 10, St Andrews 21% of 29, and last came Whithorn with 14% of a sample of 193.

An interesting observation is that this trait becomes more common as one moves north, except that the highest frequency of all was at Hallowhill, the Pictish cemetery at St Andrews. This could suggest that mandibular torus is a Pictish trait because Whithorn, which was never Pictish, had the lowest frequencies. In addition where the Northumbrian influence was lowest (in Aberdeen), this trait was highest. It is also interesting that Hallowhill and the other sites at St. Andrews were significantly different, although the sites were within a couple of miles of each other, suggesting it was the Pictish element of St Andrews that made it different.

A few other traits showed significant differences. Palatine torus (a bony torus on the palate of the maxilla) showed some significant differences. Because of sample sizes, only Aberdeen, Whithorn and Linlithgow were included for analysis. Aberdeen had significantly higher rates of this trait than Whithorn and Linlithgow. Again, the distribution is interesting: the frequency increases as one moves north.

Mandibular canine root number also showed some significant differences between sites. Again, Hallowhill and Perth were not included in the analysis. Aberdeen had significantly higher numbers than St Andrews and Linlithgow, and Whithorn had a significantly higher number than St Andrews. No significant differences existed for Aberdeen/Whithorn, Whithorn/Linlithgow, or Linlithgow/St Andrews. Carabelli's cusp also showed some difference between Aberdeen and St Andrews.

When significant differences were found for any trait, Aberdeen was significantly different from St Andrews. Overall, Aberdeen had the greatest difference from any other site. This could be due to Aberdeen being Pictish while the other sites had more genetic influences from other regions. It is unfortunate that the sample size for Hallowhill was too low to warrant statistical tests for any trait other than mandibular torus. It would have been interesting to see if Aberdeen was statistically similar to Hallowhill. In the future, it would be helpful to examine other Pictish sites to determine if the dissimilarity in Aberdeen was due to this Pictish influence. In total, there was some suggestion of change when moving north in Scotland. Cardy and Bruce (forthcoming), have noticed a similar trend in some of their research.

These results were based on contingency table analysis using the Chi-Square statistic, which calculates whether observed frequencies are significantly different. Also used for analysis was the multivariate statistic the Mean Measure of Divergence (MMD), which calculates distances between groups based on the frequencies of genetic traits. The results were similar, again with an interesting hint of a North-South divide.



More analysis needs to be done. In order to make more powerful conclusions, it would be helpful to have Brittonic sites, English sites, and Northumbrian sites as well as a greater sample size of Pictish sites. Additional multivariate statistics need to be performed on the data.

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### *Mandibular torus*

I spent six weeks in Glasgow, one month in Aberdeen and a week in St Andrews and also visited some of the sites for pictures and information on the data collected.

I enjoyed my stay in Scotland immensely, visiting different parts of the country at weekends, and would like to think that I was able to learn about both Scottish culture and history. I hope that I have a chance to come back and visit soon. More unfortunate consequences of my stay include an addiction to Irn Bru, curry, Scottish football and Eastenders. Thanks to cable TV I am able to continue with these latter two addictions, but I have yet to find as good a place to eat curry as in Glasgow.

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