**[For RESEARCH Section]**

Mixed ancestry of Europeans who settled Iceland and Greenland: 3D geometric-morphometric analyses of cranial base shape

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**Detailed methods**

Photogrammetry was used to create 3D models of the crania in the manner outlined by Evin *et al.* (2016). First, using an eight-megapixel digital SLR camera mounted with a 50mm lens, each cranium was photographed 150 times at three different angles (level with the cranium, at 15° and at 40°). A PalaeoPi rotating table was used to aid photography of the crania. Each cranium was placed on the table, which systematically rotated while photographs were taken at 10° intervals. Next, Agisoft’s Metashape (2019 edition) software was used to align the photographs with the accuracy level set at ‘high’, which generated a 3D depth map of the cranium. Lastly, in Metashape, a mesh model was created from the depth maps, which was then exported as a 3D image file (.obj).

MorphoDig (Lebrun 2018) software was then used to record the XYZ coordinates of 34 anatomical landmarks that relate to the cranial base and temporal bones (see Figure 2 and Table S2). These landmarks are based on those used in Harvati & Weaver (2006). Seven of the landmarks are Type I and 27 are Type II, based on Bookstein’s (1991) landmark classification scheme. All of the data were collected by KAP.

Intra-observer error was assessed following the protocol set out in Neubauer *et al.* (2009, 2010). A single cranium was digitised ten times and Morphologika (O’Higgins & Jones 2006) used to compare the largest Procrustes distance between the repeated landmark configurations with the smallest Procrustes distance between the non-repeated landmark configurations for all crania in the sample. The latter distance was almost double the distances between the repeats, which is an acceptable amount of intra-observer error according to Neubauer *et al.* (2009, 2010).

Following this, the effects of several confounding factors were reduced, including translation (i.e. information associated with location of the cranium relative to the camera), rotation (i.e. information associated with the orientation of the cranium), size, and asymmetry. This was accomplished by reflecting the landmark coordinates, re-labelling them, and then subjecting the data to generalised Procrustes analysis. This procedure removes translational and rotational effects from the data, while also scaling the configurations to unit centroid size (Klingenberg *et al.* 2002). Centroid size is a mathematically derived proxy for the size of objects that is often used in geometric morphometric analyses. It is defined as the square root of the sum of squared distances of all the landmarks of an object from their centroid (Slice 2007). Next, the average Procrustes coordinates between the original and reflected landmarks were calculated, which removed asymmetry from the configurations. These procedures were performed in MorphoJ (Klingenberg 2011).

After minimising the confounding effects of translation, rotation, size, and asymmetry, the individuals were grouped into four Operational Taxonomic Units (OTUs): Greenlandic, Scandinavian, southern British, and Scottish and Irish (Table 1). The sample from the British Isles was divided into individuals from southern Britain and those that were from Scotland and Ireland to make the results directly comparable with those reported in Plomp *et al.* (2021).

Next, because the study was predicated on the existence of differences between the Scandinavian and British Isles samples, it was necessary to investigate whether the average shapes of the three potential source OTUs (i.e. the Scandinavian, southern British, Scottish and Irish OTUs) were significantly different. First the dimensionality of the data was lessened. To do this, the average Procrustes coordinates were subjected to Principal Components Analysis (PCA) followed by the principal component (PC) reduction procedure outlined by Evin *et al.* (2013, 2015). Evin *et al*.’s (2013, 2015) procedure aims to retain all relevant shape information, while also reducing noise from higher PCs that do not account for much variance. It accomplishes this by progressively adding PCs to a discriminant function analysis until the cross-validation percentage drops; only the PCs that contribute positively to the cross-validation percentage were retained for further analyses. Multiple analyses of variance (MANOVAs) were then run on the retained PC scores to assess the significance of the shape differences among the three potential source OTUs. The PCAs were carried out in MorphoJ (Klingenberg 2011); the discriminant function analyses and MANOVAs were performed in R (R Development Core Team 2018).

Following this, the similarities and differences in shape among all of the OTUs were explored through application of canonical variates analysis to the average Procrustes coordinates. Canonical variates analysis maximises between-group variation in relation to within-group variation, thereby facilitating interpretation of the differences among groups of individuals. The canonical variates analysis was carried out with the aid of MorphoJ (Klingenberg 2011).

Subsequently, the contribution of the potential source OTUs to the ancestry of the Greenlandic out was estimated, in two ways. First, the Procrustes coordinates for all the individuals were subjected to PCA and the PC reduction procedure outlined earlier was implemented. Linear discriminant analysis was then applied to the retained PCs. Following Evin *et al.* (2015), the potential source OTUs were designated as the known samples and the linear discriminant analysis was directed to indicate to which of them the Greenlandic individuals most likely belonged. This process was repeated 100 times for each Greenlandic individual and then the attribution percentages were averaged. An individual was deemed to be most closely related to a given OTU if the average attribution percentage for that OTU was more than or equal to 35 per cent. If none of the average attribution percentages for an individual was more than or equal to 35 per cent, ancestry was recorded as ‘uncertain’. Thereafter, the percentage of the Greenlandic individuals who were attributed to each of the potential source OTUs was calculated. The linear discriminant analyses were performed in R (R Development Core Team 2018).

In a second attempt to estimate the contribution of the potential source OTUs to the ancestry of the Greenlandic individuals, the steps outlined in the preceding paragraph were followed up to the point where average attribution percentages for each Greenlandic individual were obtained. At this point averages across all the Greenlandic individuals were calculated to arrive at a percentage contribution of each of the three potential source OTUs to the ancestry of the Greenlandic OTU. Treating the linear discriminant percentages in this way avoided the ‘forced choice’ with respect to potential source OTUs involved in first method.

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**Table S1. Details of skeletal individuals analysed in this study. Sp. code = collection number for individual.** ND = No data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Country** | **Institute** | **Site** | **Sp. code** | **Sex** |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 4 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 636 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 641 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 733 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 735 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 739 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 741 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 742 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 921 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 928 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 961 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 1012 | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | FP | F |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 7 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 640 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 743 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 901 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 909 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 910 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 911 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 913 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 915 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 917 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 918 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 920 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 945 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 946 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 948 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 990 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 992 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 993 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 1018 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 1062 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | 1090 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | F6 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | F3 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | F7 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | F8 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | F10 | M |
| Greenland | University of Copenhagen | Eastern Settlement (Kal) | F1102 | M |
| Norway | University of Oslo | Enkoping | 1653 | M |
| Norway | University of Oslo | Enkoping | 1652 | F |
| Norway | University of Oslo | Enkoping | 1651 | M |
| Norway | University of Oslo | Evenskjar | 1540 | F |
| Norway | University of Oslo | Finndal Solim, Telemark | 1508 | F |
| Norway | University of Oslo | Gjelvoll Orlandet | 3706 | M |
| Norway | University of Oslo | Krigsgraber D Agder | 4721 | F |
| Norway | University of Oslo | Kaupang | 5280 | M |
| Norway | University of Oslo | Kirkebakken, Utaug Orlandet | 5278 | M |
| Norway | University of Oslo | Ulhang Orland Sorxonelag | 5304 | M |
| Norway | University of Oslo | Megarden Haltsal | 4564 | M |
| Norway | University of Oslo | Nedre Eines Lindesis | 4007 | F |
| Norway | University of Oslo | Oharminak Oleogexina | 4008 | F |
| Norway | University of Oslo | Stonfosen gods | 4407 | F |
| Norway | University of Oslo | Sor Trondeley | 4565 | M |
| Norway | University of Oslo | Tjeldsun, Vikintid | 4727 | M |
| Norway | University of Oslo | Vando | 2815 | F |
| Norway | University of Oslo | Vando | 2814 | M |
| Norway | University of Oslo | Vando | 2816 | M |
| Norway | University of Oslo | Vando | 2817 | M |
| Norway | University of Oslo | Harberg Orlandet Sor Tromelang | 3983 | M |
| Norway | University of Oslo | Hindbohmen Tysfjord | 1513 | F |
| Norway | University of Oslo | Klepp Jaeren | 1537 | F |
| Norway | University of Oslo | Kamberg Humedal Stensen | 1526 | M |
| Norway | University of Oslo | Vinge Felemarken | V1 | F |
| Norway | University of Oslo | Lind Leinanger Olonland | 1511 | M |
| Norway | University of Oslo | Vando | 2853 | F |
| Norway | University of Oslo | Orlandet | 4764 | M |
| Norway | University of Oslo | Ostrax Orland | 4481 | M |
| Norway | University of Oslo | Skeie Klepp Rogland | 7087 | M |
| Norway | University of Oslo | Ulhang Orland Sorxonelag | 4503 | F |
| Denmark | University of Copenhagen | Lille Vasby | 19 | M |
| Denmark | University of Copenhagen | Krongmerken | 12 | F |
| Denmark | University of Copenhagen | Simonsborg | S1 | M |
| Denmark | University of Copenhagen | Simonsborg | S2 | F |
| Denmark | University of Copenhagen | Simonsborg | S5 | F |
| Denmark | University of Copenhagen | Simonsborg | S9 | M |
| Denmark | University of Copenhagen | Simonsborg | S14 | F |
| Denmark | University of Copenhagen | Simonsborg | S31 | M |
| Denmark | University of Copenhagen | Varpelev | 5 | F |
| Denmark | University of Copenhagen | Varpelev | E | M |
| Denmark | University of Copenhagen | Varpelev | J | M |
| Denmark | University of Copenhagen | Varpelev | N | M |
| Denmark | University of Copenhagen | Vester Egesborg | Ve1 | F |
| Denmark | University of Copenhagen | Vester Egesborg | VeA | M |
| Denmark | University of Copenhagen | Hesselbjerg | 2 | M |
| Denmark | University of Copenhagen | Hesselbjerg | A | M |
| Denmark | University of Copenhagen | Hesselbjerg | Gb | M |
| Denmark | University of Copenhagen | Hesselbjerg | G5 | M |
| Denmark | University of Copenhagen | Hesselbjerg | G6 | M |
| Denmark | University of Copenhagen | Hesselbjerg | G30 | M |
| Denmark | University of Copenhagen | Hesselbjerg | Ur | M |
| Denmark | University of Copenhagen | Hesselbjerg | 4005 | F |
| Denmark | University of Copenhagen | Hesselbjerg | 4 | F |
| Denmark | University of Copenhagen | Hesselbjerg | Kl | F |
| Denmark | University of Copenhagen | Simonsborg | S25 | M |
| Denmark | University of Copenhagen | Simonsborg | S26 | M |
| Denmark | University of Copenhagen | Simonsborg | S27 | F |
| Denmark | University of Copenhagen | Simonsborg | Sh | F |
| Denmark | University of Copenhagen | Skyttemarksej | 64 | M |
| Denmark | University of Copenhagen | Senderumgaard | Stby | M |
| Denmark | University of Copenhagen | Toksvaerd By | Tby | M |
| Denmark | University of Copenhagen | Varpelev | V3 | M |
| Denmark | University of Copenhagen | Varpelev | V82 | M |
| Denmark | University of Copenhagen | Varpelev | 1645 | M |
| Denmark | University of Copenhagen | Varpelev | VV1 | M |
| Denmark | University of Copenhagen | Smide | 3983 | M |
| Denmark | University of Copenhagen | Bakkendrub | 1513 | F |
| Denmark | University of Copenhagen | Trelleborg | 1537 | F |
| Denmark | University of Copenhagen | Kaagarden | Kel | M |
| Denmark | University of Copenhagen | Kaagarden | Kap | M |
| Denmark | University of Copenhagen | Kaagarden | Kay | F |
| Denmark | University of Copenhagen | Kaagarden | Nbh | M |
| Denmark | University of Copenhagen | Kaagarden | Kmlr | M |
| Denmark | University of Copenhagen | Kumle Hoje | Khh | M |
| Denmark | University of Copenhagen | Treleeborg | Tab | M |
| Denmark | University of Copenhagen | Treleeborg | Tsb8 | M |
| England | Natural History Museum London | Poundbury | 15 | M |
| England | Natural History Museum London | Poundbury | 94 | M |
| England | Natural History Museum London | Poundbury | 100 | F |
| England | Natural History Museum London | Poundbury | 107 | M |
| England | Natural History Museum London | Poundbury | 110 | F |
| England | Natural History Museum London | Poundbury | 114 | M |
| England | Natural History Museum London | Poundbury | 118 | M |
| England | Natural History Museum London | Poundbury | 119 | M |
| England | Natural History Museum London | Poundbury | 126 | F |
| England | Natural History Museum London | Poundbury | 142 | M |
| England | Natural History Museum London | Poundbury | 143 | M |
| England | Natural History Museum London | Poundbury | 144 | M |
| England | Natural History Museum London | Poundbury | 155 | F |
| England | Natural History Museum London | Poundbury | 177 | M |
| England | Natural History Museum London | Poundbury | 185 | M |
| England | Natural History Museum London | Poundbury | 207 | M |
| England | Natural History Museum London | Poundbury | 212 | M |
| England | Natural History Museum London | Poundbury | 255 | M |
| England | Natural History Museum London | Poundbury | 276 | F |
| England | Natural History Museum London | Poundbury | 284 | M |
| England | Natural History Museum London | Poundbury | 286 | M |
| England | Natural History Museum London | Poundbury | 290 | M |
| England | Natural History Museum London | Poundbury | 298 | M |
| England | Natural History Museum London | Poundbury | 309 | F |
| England | Natural History Museum London | Poundbury | 322 | F |
| England | Natural History Museum London | Poundbury | 381 | M |
| England | Natural History Museum London | Poundbury | 392 | M |
| England | Natural History Museum London | Poundbury | 393 | M |
| England | Natural History Museum London | Poundbury | 398 | F |
| England | Natural History Museum London | Poundbury | 401 | M |
| England | Natural History Museum London | Poundbury | 403 | M |
| England | Natural History Museum London | Poundbury | 500 | F |
| England | Natural History Museum London | Poundbury | 566 | F |
| England | Natural History Museum London | Poundbury | 568 | F |
| England | Natural History Museum London | Poundbury | 574 | F |
| England | Natural History Museum London | Poundbury | 625 | F |
| England | Natural History Museum London | Poundbury | 638 | F |
| England | Natural History Museum London | Poundbury | 642 | F |
| England | Natural History Museum London | Poundbury | 644 | F |
| England | Natural History Museum London | Poundbury | 650 | M |
| England | Natural History Museum London | Poundbury | 654 | F |
| England | Natural History Museum London | Poundbury | 658 | M |
| England | Natural History Museum London | Poundbury | 679 | F |
| England | Natural History Museum London | Poundbury | 684 | F |
| England | Natural History Museum London | Poundbury | 707 | F |
| England | Natural History Museum London | Poundbury | 1004 | F |
| England | Natural History Museum London | Poundbury | 1022 | F |
| England | Natural History Museum London | Poundbury | 1030 | F |
| England | Natural History Museum London | Poundbury | 1095 | F |
| England | Natural History Museum London | Poundbury | 1225 | M |
| England | Natural History Museum London | Poundbury | 19 | M |
| England | Natural History Museum London | Poundbury | 31 | F |
| England | Natural History Museum London | Poundbury | 103 | F |
| England | Natural History Museum London | Poundbury | 109 | M |
| England | Natural History Museum London | Poundbury | 113 | M |
| England | Natural History Museum London | Poundbury | 121 | F |
| England | Natural History Museum London | Poundbury | 208 | M |
| England | Natural History Museum London | Poundbury | 221 | M |
| England | Natural History Museum London | Poundbury | 247 | M |
| England | Natural History Museum London | Poundbury | 277 | M |
| England | Natural History Museum London | Poundbury | 305 | F |
| England | Natural History Museum London | Poundbury | 385 | F |
| England | Natural History Museum London | Poundbury | 515 | F |
| England | Natural History Museum London | Poundbury | 352 | F |
| England | University of Cambridge | Hallett’s Garage | 1347 | M |
| England | University of Cambridge | Hallett’s Garage | 1519 | F |
| England | University of Cambridge | Hallett’s Garage | 1887 | M |
| England | University of Cambridge | Hallett’s Garage | 1983 | M |
| England | University of Cambridge | Hallett’s Garage | 2045 | M |
| England | University of Cambridge | Maiden Castle | 64 | F |
| England | University of Cambridge | Maiden Castle | 69 | M |
| England | University of Cambridge | Maiden Castle | 78 | F |
| England | University of Cambridge | Maiden Castle | 80 | M |
| England | University of Cambridge | Maiden Castle | 92 | M |
| England | University of Cambridge | Maiden Castle | 94 | M |
| England | University of Cambridge | Maiden Castle | 95 | M |
| England | University of Cambridge | Maiden Castle | 97 | M |
| England | University of Cambridge | Maiden Castle | 98 | M |
| England | University of Cambridge | Maiden Castle | 101 | F |
| England | University of Cambridge | Maiden Castle | 105 | M |
| England | University of Cambridge | Maiden Castle | 110 | M |
| England | University of Cambridge | Maiden Castle | 112 | M |
| England | University of Cambridge | Maiden Castle | 61 | F |
| England | University of Cambridge | Maiden Castle | 62 | F |
| England | University of Cambridge | Maiden Castle | 71 | M |
| England | University of Cambridge | Maiden Castle | 115 | F |
| England | University of Cambridge | Maiden Castle | 63 | M |
| England | University of Cambridge | Maiden Castle | 74 | M |
| England | University of Cambridge | Maiden Castle | 75 | F |
| England | University of Cambridge | Maiden Castle | 76 | F |
| England | University of Cambridge | Maiden Castle | 77 | F |
| England | University of Cambridge | Maiden Castle | 79 | F |
| England | University of Cambridge | Maiden Castle | 90 | M |
| England | University of Cambridge | Maiden Castle | 99 | F |
| England | University of Cambridge | Maiden Castle | 102 | M |
| England | University of Cambridge | Maiden Castle | 104 | M |
| England | University of Cambridge | Maiden Castle | 959 | M |
| England | University of Cambridge | Maiden Castle | 60 | F |
| England | University of Cambridge | Maiden Castle | 70 | M |
| England | University of Cambridge | Maiden Castle | 89 | F |
| Scotland | Tarbat Discovery Centre | Portmahomack | 30 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 31 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 36 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 37 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 85 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 90 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 91 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 112 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 113 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 128 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 147 | ND |
| Scotland | Tarbat Discovery Centre | Portmahomack | 148 | ND |
| Scotland | National Museum of Scotland | Broomend of Criche | Br5 | ND |
| Scotland | National Museum of Scotland | Broomend of Criche | Br6 | ND |
| Scotland | National Museum of Scotland | Broomend of Criche | BrD2 | ND |
| Scotland | National Museum of Scotland | Broomend of Criche | Brlb | ND |
| Scotland | National Museum of Scotland | Broomend of Criche | Bromw | ND |
| Scotland | National Museum of Scotland | Dounreay | Dr252 | ND |
| Scotland | National Museum of Scotland | Cockenzie | C21 | ND |
| Scotland | National Museum of Scotland | Lesmurdie | L14 | ND |
| Ireland | Queen’s University Belfast | Carrow Keel | AC | ND |
| Ireland | Queen’s University Belfast | Lough Gur | 2904 | ND |
| Ireland | Queen’s University Belfast | No info available | 2337 | ND |
| Ireland | Queen’s University Belfast | No info available | Ai | ND |
| Ireland | Queen’s University Belfast | No info available | B385 | ND |
| Ireland | Queen’s University Belfast | Lough Gur | CH | ND |
| Ireland | Queen’s University Belfast | Lough Gur | Gt | ND |
| Ireland | Queen’s University Belfast | No info available | 966 | ND |
| Ireland | Queen’s University Belfast | No info available | 972 | ND |
| Ireland | Queen’s University Belfast | No info available | 977 | ND |
| Ireland | Queen’s University Belfast | No info available | 986 | ND |
| Ireland | Queen’s University Belfast | No info available | 2257 | ND |
| Ireland | Queen’s University Belfast | Lough Gur | Ph | ND |
| Ireland | Queen’s University Belfast | Lough Gur | Wb | ND |

**Table S2. Locations of the 34 cranial landmarks used in this study.**

|  |  |  |
| --- | --- | --- |
| **Landmark** | **Location** | **Side** |
| 1 | Anterior pterion | Left |
| 2 | Anterior pterion | Right |
| 3 | Asterion | Left |
| 4 | Asterion | Right |
| 5 | Lambda | - |
| 6 | Occipital protuberance | - |
| 7 | Parietal notch | Left |
| 8 | Most dorsal end of mastoid notch | Left |
| 9 | Most ventral end of mastoid notch | Left |
| 10 | Mastoidale | Left |
| 11 | Ventral most tip of jugular process | Left |
| 12 | Lateral most point of jugular fossa | Left |
| 13 | Base of styloid process | Left |
| 14 | Medial most point of carotid canal | Left |
| 15 | Ventral most tip of lateral edge of petrous pyramid | Left |
| 16 | Ventral most tip of medial edge of petrous pyramid | Left |
| 17 | Central point of superior border of the auditory meatus | Left |
| 18 | Inferior most point on the entoglenoid process | Left |
| 19 | Ventral most point of lateral border of glenoid fossa | Left |
| 20 | Dorsal most point of lateral border of glenoid fossa | Left |
| 21 | Parietal notch | Right |
| 22 | Most dorsal end of mastoid notch | Right |
| 23 | Most ventral end of mastoid notch | Right |
| 24 | Mastoidale | Right |
| 25 | Ventral most tip of jugular process | Right |
| 26 | Lateral most point of jugular fossa | Right |
| 27 | Base of styloid process | Right |
| 28 | Medial most point of carotid canal | Right |
| 29 | Ventral most tip of lateral edge of petrous pyramid | Right |
| 30 | Ventral most tip of medial edge of petrous pyramid | Right |
| 31 | Central point of superior border of the auditory meatus | Right |
| 32 | Inferior most point on the entoglenoid process | Right |
| 33 | Ventral most point of lateral border of glenoid fossa | Right |
| 34 | Dorsal most point of lateral border of glenoid fossa | Right |

**Table S3. Linear discriminate analysis scores for each Greenlandic individual analysed. Individual = collection number for individual, OTU = Operational Taxonomic Unit.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Individual** | **1st prob** | **OTU** | **2nd prob** | **OTU** |
| KAL–4 | 57% | Scandinavian | 25% | Southern British |
| KAL-636 | 53% | Scottish and Irish | 43% | Scandinavian |
| KAL-641 | 57% | Scandinavian | 39% | Scottish and Irish |
| KAL-733 | 50% | Scandinavian | 43% | Southern British |
| KAL-735 | 50% | Scottish and Irish | 39% | Scandinavian |
| KAL-739 | 100% | Scandinavian | 0% | - |
| KAL-741 | 54% | Scandinavian | 28% | Southern British |
| KAL-742 | 64% | Southern British | 32% | Scottish and Irish |
| KAL-921 | 54% | Scandinavian | 46% | Scottish and Irish |
| KAL-928 | 100% | Scottish and Irish | 0% | - |
| KAL-961 | 82% | Scottish and Irish | 18% | Scandinavian |
| KAL-1012 | 54% | Scottish and Irish | 43% | Southern British |
| KAL-FP | 75% | Scottish and Irish | 18% | Southern British |
| KAL-7 | 86% | Southern British | 7% | Scottish and Irish |
| KAL-640 | 78% | Scandinavian | 14% | Scottish and Irish |
| KAL-743 | 79% | Southern British | 21% | Scandinavian |
| KAL-901 | 50% | Southern Britsh | 43% | Scottish and Irish |
| KAL-909 | 96% | Southern British | 4% | Scottish and Irish |
| KAL-910 | 100% | Scottish and Irish | 0% | - |
| KAL-911 | 71% | Scottish and Irish | 29% | Scandinavian |
| KAL-913 | 75% | Scottish and Irish | 25% | Scandinavian |
| KAL-915 | 64% | Southern British | 18% | Scottish and Irish |
| KAL-917 | 93% | Scottish and Irish | 7% | Scandinavian |
| KAL-918 | 64% | Scandinavian | 36% | Southern British |
| KAL-920 | 93% | Scottish and Irish | 7% | Scandinavian |
| KAL-945 | 86% | Scottish and Irish | 11% | Scandinavian |
| KAL-946 | 75% | Southern Britsh | 21% | Scandinavian |
| KAL-948 | 93% | Scottish and Irish | 7% | Southern British |
| KAL-990 | 100% | Scandinavian | 0% | - |
| KAL-992 | 100% | Scottish and Irish | 0% | - |
| KAL-993 | 39% | Scottish and Irish | 32% | Southern British |
| KAL-1018 | 96% | Scandinavian | 4% | Southern British |
| KAL-1062 | 54% | Scottish and Irish | 46% | Scandinavian |
| KAL-1090 | 64% | Scandinavian | 36% | Southern British |
| KAL-F6 | 89% | Scandinavian | 11% | Southern British |
| KAL-F3 | 100% | Scandinavian | 0% | - |
| KAL-F7 | 86% | Southern Britsh | 14% | Scandinavian |
| KAL-F8 | 78% | Scandinavian | 21% | Scottish and Irish |
| KAL-F10 | 50% | Scottish and Irish | 46% | Southern British |
| KAL-F1102 | 93% | Scandinavian | 7% | Southern British |