Fishing for Vikings in the gene pool of old Merseyside

Steve Harding
Watson-Crick DNA Anniversary award: Wirral and West Lancashire Viking DNA Project 2002-2007

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Government DNA Anniversary award:
Wirral and West Lancashire Viking DNA Project 2002-2007

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- Mark Thomas

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The genetic structures of past human populations are obscured by recent migrations and expansions and have been observed only indirectly by inference from modern samples. However, the unique link between a heritable cultural marker, the patrilineal surname, and a genetic marker, the Y chromosome, provides a means to target sets of modern individuals that might resemble populations at the time of surname establishment. As a test case, we studied samples from the Wirral Peninsula and West Lancashire, in northwest England. Place-names and archaeology show clear evidence of a past Viking presence, but heavy immigration and population growth since the industrial revolution are likely to have weakened the genetic signal of a 1,000-year-old Scandinavian contribution. Samples ascertained on the basis of 2 generations of residence were compared with independent samples based on known ancestry in the region plus the possession of a surname known from historical records to have been present there in medieval times. The Y-chromosomal haplotypes of these 2 sets of samples are significantly different, and in admixture analyses, the surname-ascertained samples show markedly greater Scandinavian ancestry proportions, supporting the idea that northwest England was once heavily populated by Scandinavian settlers. The method of historical surname-based ascertainment promises to allow investigation of the influence of migration and drift over the last few centuries in changing the population structure of Britain and will have general utility in other regions where surnames are patrilineal and suitable historical records survive.

Introduction

Studies of the human past draw on lines of evidence through studies of men sharing surnames (Sykes and Irven 2000; King et al. 2006; McEvoy and Bradley 2006). Although the link between surname and Y-chromosomal hap-
2001:

JULIAN RICHARDS

BLOOD OF THE
Vikings

[Image of a map of the UK with various locations marked.]
Trip to the dentist that tracked down a 1,200-year-old family of Vikings

Found on the Wirral, a man with the blood of a warrior

BILL Housley went to the dentist an ordinary fisherman and emerged a fully-fledged Viking.

The 63-year-old grandfather was asked for a saliva sample as part of a scientific study into the Norse invaders of Britain.

Amazingly, it proved he is a direct descendant of the sea-faring warriors who plundered the north of England 1,200 years ago.

The whole fish merchant's roots only emerged when he received a phone call from Professor David Goldstein of University College, London, who tested his saliva sample for the BBC2 programme Blood Of The Vikings.

Mr Housley's DNA matched ancient records from Norway and also of three modern-day Norwegians tested for the study.

Only three other matches were found - in Scotland and their genetic heritage was not as strong.

Mr Housley, from Meols, Wirral, said: 'I always thought we were an ordinary fishing family which could be traced back 150 years.'

'I was utterly amazed. I didn't know what I was going to be told but it certainly wasn't what I was a Viking. It means that my sons and their sons are also Vikings which is pretty spectacular when you think most people don't have that kind of history.'

'I was told there are three people in Norway with similar DNA. Sadly I don't know who they are because they were stopped in supermarkets and shopping centres and weren't asked for their details.'

'Now I am determined to try to find the rest of my relatives and ancestors.' Mr Housley was one of 2,000 men from Britain, Ireland, Norway, Denmark and northern Germany who took part in the random survey.

Their Y chromosome, which gives information about ancestry, was compared to DNA markers common in Scandinavians.

The research revealed that Norwegian Vikings settled in Scotland, Cumbria, the Isle of Man and as far south as Merseyside.

Shetland, Orkney and the far north of Scotland are the most Viking parts of Britain with 60 percent of men having Norwegian genes. In England, only Penrith in Cumbria has clear evidence of Norwegian influences, while York has the highest Danish genes.

Prof Goldstein said: 'Modern genetics has opened a powerful window on the past. We can trace movements of peoples that have proved difficult through history.'

a.powell@dailymail.co.uk

Norse code: Bill Housley is a true Viking

Invaders: The Viking warriors have descendants across Europe
Wirral & West Lancashire – Vikings in the DNA?
Króksstaðir: Krokr's Place
Trani-melr: Crane sandbank
Revisiting Dingemere

Paul Cavill, Stephen Harding and Judith Jesch,
University of Nottingham

Dingemere is a place known only from the Old English poem The Battle of Brunanburh, found in versions of the Anglo-Saxon Chronicle for the year 937 (A, Corpus Christi College Cambridge 173; B, London, British Library Cotton Tiberius A. vi; C, Cotton Tiberius B. i; and D, Cotton Tiberius B. iv and one manuscript now lost, but copied and published before 1731 when the original was destroyed, Cotton Otho B. xi). After the resounding victory of Æthelstan and Edmund at Brunanburh, the coalition of Dublin Norse, Strathclyde Welsh, Picts and Scots split up, with the survivors making their own way home. The Dublin Norsemen sailed away on dinges mere.

Gewitan hime þa Northmen negledcnearrum,
dreorig daraða laf, on Dingesmere,
ofer deep water Dřifelin secan,
eft Ira land, ñwiscmodæ. (53–6)
(Then the Northmen, dreary survivors of the spears, went in the nai- studded ships on Dingemere, over deep water, to seek Dublin, went back to Ireland ashamed.)

This is Campbell’s text (Campbell 1938), and with minor variations of word-division, punctuation and spelling, the text of more recent editors. The manuscript variants of the phrase on dinges mere found in the A and C texts are as follows: on dingemere in B, on dynigesmere in D and on dinemesere in Otho.

There are two main lines of interpretation in relation to this phrase. One is that it is not a place-name at all, but that dinges, or more particularly diness, is a noun in the genitive which qualifies mere and thus means ‘sea of noise’ (Bosworth-Toller 1898, s.v. dynge), i.e. ‘noisy sea’ (see, for example, Cockburn 1931). A corollary of this interpretation is that the phrase has no particular relevance to the localisation of Brunanburh: it could be any sea. The other approach is that dinges mere is a name, with a personal- or place-name in the
Heskeths, Irby

*ON hesta-skeið* “horse race track”
The Wallasey Breck (brekka)

pveit

MILLTHWAITE ROAD

THE BRECK
“Ye Clynsse” (1642) at the Wallasey Breck – ON klintr
Carr Lane

kjarr
14th Century Poem:

• Some of the important action takes place in Wirral
• Poet/scribe from or near the area – Sir John Stanley of Storeton
• Full of Norse dialect words: storr, gate, busk, felle, renk, karp, kest, derf, etc.
Castle Esplanade hoard, Chester
10th-Century Viking Treasure from Cuerdale
Hogback Tombstone (1000-1050 A.D.) West Kirby
Mini-hogback, Bidston
Viking cross fragments - Neston
Wirral & West Lancashire – Vikings in the DNA?
DNA - Messages from our ancestors:

Bases:
- adenine A
- Thymine T
- Cytosine C
- Guanine G
DNA - Messages from our ancestors:

- DNA is a ‘text’ that changes slowly through time, and varies between individuals.
- Analyse DNA from skeletons
  - ‘Real’ information about the past
  - Difficult, small sample sizes, prone to modern DNA contamination; maybe no descendants
- Analyse modern people
  - Easy to get samples
  - Can be unrepresentative of past populations, need methods of inference
Genetics of physical characteristics

- Dupuytren’s contracture
- Inherited - dominant
- Distribution suggests possible Viking origin
- Evidence from Icelandic sagas
- More frequent in regions of Britain influenced by Vikings
- But - genetic basis unknown
- Crops up in other populations
Genetics of physical characteristics

- Blood groups
- Poorly discriminating and widespread
- Pigmentation, stature, facial shape
- Complex, poorly understood, wide distribution in N.Europe
In a human cell nucleus there are 23 pairs of chromosomes
In a human cell nucleus there are 23 pairs of chromosomes.
Y-chromosome haplotypes

There are special patterns on the DNA called STRs, which scientists can test for.

The Y-chromosome can be “typed” by a set of 6 or more numbers – this is called a man’s haplotype.
SNP     STR

Male 1  GTACTAGA<frameset cols="3em,8em">T</frameset>ACTA<frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTG</frameset>GTG<frameset cols="2em">...</frameset>  5 repeats

Male 2  GTACA<frameset cols="2em">A</frameset>AGA<frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTG</frameset>GTG<frameset cols="2em">...</frameset>  6 repeats

Male 3  GTACA<frameset cols="2em">A</frameset>AGA<frameset cols="5em">CTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTA</frameset><frameset cols="5em">ACTG</frameset>G<frameset cols="2em">T...</frameset> GTG<frameset cols="2em">...</frameset>  7 repeats
SNP: Single Nucleotide Polymorphism: Haplogroup

Male 1  GTAC\textbf{T}AGA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{T}G\textbf{G}G\textbf{T}G...  
\hspace{1em} 5 repeats

Male 2  GTACA\textbf{A}AGA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{T}G\textbf{G}G\textbf{T}G...  
\hspace{1em} 6 repeats

Male 3  GTACA\textbf{A}AGA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{C}TA\textbf{T}G\textbf{G}G\textbf{T}G...  
\hspace{1em} 7 repeats
Y-chromosome haplogroups

Courtesy of the Sanger Institute
The Polymerase Chain Reaction “PCR” is used to amplify the signals from a person’s Y-chromosome:
Individual Viking ancestry?
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<th>A</th>
<th>BC</th>
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<th>F*</th>
<th>G</th>
<th>H</th>
<th>I</th>
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### Population

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166 matches / 13003
Richard Harding’s y-chromosome group

No mutation, top matches:
Ostgotland-Jonköping, and Gröningen, 
~8% of men have a match.

One step mutation of one of his STR’s:
Top matches for each mutation:
West Norway (2ce)
Oslo
Puglia
Vasterbotten, Sweden
Uppsala
Denmark
Wirral & West Lancashire – Vikings in the DNA?
Medieval Wirral Taxpayers/Criminals/Ale house records:

Volunteers

• “Modern” Wirral and West Lancashire Volunteers
  100 volunteers from Wirral and 49 volunteers from West Lancashire satisfying the “2 generation” criterion – paternal grandfather born in the area.

• “Old” or “Medieval” Wirral and West Lancashire Volunteers
  37 volunteers from Wirral and 42 volunteers from West Lancashire satisfying the “2 generation” criterion – paternal grandfather born in the area AND possessing a surname present in the area before 1600.
The “Medieval” names - the volunteers

- **Wirral** (1545 subsidy rolls of Henry VIII, criminal and ale house records):
  Barker, Beck, Bennett, Billing, Bird, Bryde, Bushell, Colley, Corfe, Edmunds, Forshaw, Gill, Green, Harding, Hesketh, Holmes, Hough, Joynson, Kemp, Kirk, Kirkby, Lunt, Rathbone, Richardson, Rimmer, Robinson, Sampson, Scarisbrick, Sherlock, Skinner, Taskar, Tellett, Tottey/Totty, Young, Oxton, Raby, Upton.

- **West Lancs** (names of those promising to contribute to the stipend of the priest of the altar of Our Lady of Ormskirk, 1366; plus place-names):
  Balshaw, Brown, Carr, Coly, Cook, Cooper, Fletcher, Gray, Holland, Holmes, Jones(son), Leyland, Melling, Molyneux, Otty, Prescott, Rimmer, Serjeant, Thomasson, Walsh, Webster, Westhead, Alker, Bilsborrow, Charnock, Corfe, Crombleholme, Gill, Hesketh, Hulme, Lunt, Pendleton, Penketh, Pennington, Rigby, Risley, Roby, Scarisbrick, Sephton, Swarbrick
Y-chromosome distributions for the north west
Viking admixture results

~ 50% Scandinavian
Tony Tottey (Moreton)

166 matches/13003

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The last of the Wirral Vikings.

by Jim Barrow

STORYTIME

... at Heswall library with 23-year-old Christine Payne of Irby.

THE NORSEMAN

Mr Gordon Totley, his forefathers landed with Vikings invaders.

Red Rocks is a tiny finger of sandstone pointing out into the Irish Sea from the extreme western point of the Wirral Peninsula.

Bright sunshine warmed the soft redrock and glinted on the tiny waves lapping on them, as Eddie Barfoot and I started our walk—with more than 100 miles of Cheshire and North Wales ahead of us.

Red Rocks, our starting point, looked out to Hoylake, and a deserted sweep of beach. To the West on Hilbre Island, in the Dee Estuary, now a bird sanctuary, the building sparkled while in sunshine.

The island, said to have been the home of a breeding flock, 800 years ago, was undergoing close scrutiny from two ladies sitting on the bare rock and looking out to sea.

We spoke briefly to 71-year-old Mrs Lncy Weston and 60-year-old Mrs Mary Winters, who were strolling at...
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My Viking Dad with my Viking dog!

From Abigail Forshaw
Merseyside Young Archaeologists, January 2003
Next project: N. Lancashire, Cumbria and N. Yorks
… and a closer look at old Scandinavia
Thingwall – Steve & Prof. T. Titlestad, Univ. Stavanger

www.nottingham.ac.uk/-sczsteve