Viking DNA

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But you just never know...

HOW TO AVOID A VIKING ATTACK ON YOUR WAY TO THE LIBRARY

1. Keep your head - don’t try to reason with them (they hate softies).
2. Show them you don’t wear a vest – you’re obviously a man to be reckoned with!
3. If they persist head directly to the public library.
4. Vikings are notoriously noisy, and will be expelled forthwith!
5. Once the coast is clear, head down to your nearest Cains’ pub and reward your ingenuity with a refreshing pint of Cains – you deserve it.

Tell us about your narrow escapes and win an ‘I KEPT MY HEAD’ T-shirt! Send your true stories to: I Kept My Head, Robert Cain Brewery, Stanhope Street, Liverpool L8 5XJ or e-mail: ikeptmyhead@cainsbeers.com. All respondents qualify to join the “Cains Survivors’ Club” and receive certificates for themselves and their local pub.
Viking DNA in Northern England Project


- Part 2 - North Lancashire, Cumbria and N. Yorkshire (2008-2012)
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

- Blood groups
- Poorly discriminating and widespread
- Pigmentation, stature, facial shape
- Complex, poorly understood, wide distribution in N.Europe

Genetics of physical characteristics 2
Genetics of physical characteristics 2

- Eye colour, hair colour, give an indicator and the genetics are now becoming better understood, but still not yet the basis for a scientific comparison.

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Dupuytren’s / digitopalmar contracture
Distribution suggests possible Viking origin
Evidence from Icelandic sagas: *Longer Saga of Magnus of Orkney*
More frequent in regions of Britain influenced by Vikings

But, crops up in other populations
Fortunately there is a more powerful method of genetic enquiry as we will now see
Genetic markers of inheritance

Chromosomes:

- Men have a Y chromosome - sex-determining
- Both sexes also have what’s called mitochondrial DNA, but inherited only from mothers to offspring
- So can probe one line of ancestry for a woman (maternal line) or two for a man (maternal and paternal lines)
for men we look for 2 types of variations in Y-DNA

- The SNP’s define a man’s HAPLOGROUP
- The STR’s define a man’s HAPLOTYPE
The major haplogroups – continents show major differences
In Europe we also see different distributions using sub-haplogroups.
2 recent papers resolving R1b

A major Y-chromosome haplogroup R1b Holocene era founder effect in Central and Western Europe

Natalie M Myres¹, Siiri Rootsi², Alice A Lin³, Mari Järve², Roy J King¹, Ildus Kuttuev², Vicente M Cabrera⁵, Elza K Khusnutdinova⁴, Andrey Pshenichnov²,⁶, Bayazit Yunusbayev²,⁶, Oleg Balanovsky²,⁶, Elena Balanovskaja⁶, Pavlo Rudan², Marian Baldovic²,⁸, Rene J Herrera⁹, Jacques Chiaroni¹⁰, Julie Di Cristofaro¹⁰, Richard Villems², Toomas Kivisild¹¹ and Peter A Underhill¹²,¹³

The peopling of Europe and the cautionary tale of Y chromosome lineage R-M269


Proc. R. Soc. B published online 24 August 2011
R1b- sub-haplogroups in Europe
Population Viking ancestry: admixture approaches

- Testing at an individual level gives “only an idea”
- More secure at *population* level (≥20 people)
- Volunteer selection and the problem of modern population movements
- 2 generation and old surname based selection criteria
- Compare distributions of Y-chromosome types – “Admixture analysis”
- Resolution of the method is improving all the time
Norse Viking ancestry in the British Isles: admixture approaches

- **Admixture:** parental and hybrid populations
- **Algorithms available to estimate proportions**

- Example: Orkney - hybrid of two parentals
- ‘Norse Viking’ parental - modern Norwegians
- ‘Celtic substrate’ - modern C.Irish - C.Scots
Goodacre, Helgason et al. 2005

- Analysed mtDNA and Y markers, and used admixture approach
- Close to home, male and female proportions similar, so family-based settlement
- Further afield, male-biased settlement
- Most biased in Iceland
Viking DNA in Northern England Project


- Part 2 - North Lancashire, Cumbria and N. Yorkshire (2008-2012)

Viking DNA in Northern England Project:
Part 1. Wirral & West Lancashire
Problem of large population movement following the “Industrial Revolution”

So, we tested 2 population sets tested for Wirral and West Lancashire

- “Modern” – men whose parental grandparents from that area

- “Medieval” – men whose parental grandparents from that area AND possessing a surname present in the area prior to 1600 (Medieval tax records, criminal proceedings, lists of people paying towards salaries of priests etc.)
Y-chromosome distributions for NW England

Note increase in R1a1!
Viking admixture results

- Increases in ‘medieval’ samples
- ~50% Norse ancestry


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Part 2: N. Lancashire, Cumbria and N. Yorks

… nearly complete, results 2012
> 1000 men tested
... includes “Old Norway” project
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• DNA taken from 400 men with ancestry from one of 10 regions:

  4 Fjord: Møre (Tingvoll), Sognefjord, Hardangerfjord, Ryflkefjord
  3 Inland: Namdalen, Gudbrandsdalen, Hedemark
  3 Coastal: Trondheim, Bergen, Stavanger

• Results will tell us about regional differences in “old Norway” – expected to be significant before the railways etc. were built

• And also provide improved Norwegian Viking control data for the North of England Project

• Results out in 2012
Perspectives

• Individual tests are interesting but you have to be careful.

• More powerful on a population basis: The results confirm the belief that the coastal regions of North-West England were once heavily settled by Norse Vikings

• Sampling strategy important in linking old genes with modern geography; surname method is very useful in Great Britain but only for male history
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All volunteers!
We can recommend....

[Image of book cover]

VIKING DNA
The Wirral and West Lancashire Project

Stephen Harding, Mark Jubling and Turi King
With Foreword By Michael Wood