

# **DNA Database Testing**

*What is it*

*and*

*How do I*

*Interpret the Results?*

**Damian Adams**

**1<sup>st</sup> National Donor Conceived Person Conference**

**Melbourne 27<sup>th</sup> June 2015**

# 2.9% Neanderthal DNA

(average person 2.7%)



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(average person 2.7%)

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# TYPES OF TESTS

## Numerous:

- **paternity/maternity**
- **sibship/avuncular**
- **GENETIC GENEALOGY (discussion focus)**  
**Y-DNA, autosomal, mtDNA, X-chromosome**
- **DNA health association (currently not available)**

## DNA:

- **23 pairs of chromosomes, 1 sex pair and 22 autosomes (autosomal DNA)**

# Y-DNA (PATERNAL)

Y-chromosome passes down father to son unchanged  
(almost – slow to mutate)

∴ good for identifying donor's family name.

For guys only (sorry girls)

Test between 12 and 111 STR markers

-recommend 67 markers through FTDNA

Many different companies (each company has own database, but there are free online databases to enter your own data, ie [ysearch.org](http://ysearch.org) + a few others)

# Y-DNA (PATERNAL)

Y-DNA - Standard Y-STR Values

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## PANEL 1 (1-12)

Marker	DYS393	DYS390	DYS19**	DYS391	DYS385	DYS426	DYS388	DYS439	DYS389I	DYS392	DYS389II***
Value	13	24	14	10	11-13	12	12	11	13	13	28

## PANEL 2 (13-25)

Marker	DYS458	DYS459	DYS455	DYS454	DYS447	DYS437	DYS448	DYS449	DYS464
Value	17	9-9	11	11	25	15	19	29	15-15-17-18

## PANEL 3 (26-37)

Marker	DYS460	Y-GATA-H4	YCAII	DYS456	DYS607	DYS576	DYS570	CDY	DYS442	DYS438
Value	11	11	19-19	15	15	20	16	38-38	11	12

## PANEL 4 (38-47)

Marker	DYS531	DYS578	DYF395S1	DYS590	DYS537	DYS641	DYS472	DYF406S1	DYS511
Value	11	9	16-16	8	10	10	8	11	10

## PANEL 4 (48-60)

Marker	DYS425	DYS413	DYS557	DYS594	DYS436	DYS490	DYS534	DYS450	DYS444	DYS481	DYS520	DYS446
Value	12	23-23	16	9	12	12	15	8	11	23	20	13

## PANEL 4 (61-67)

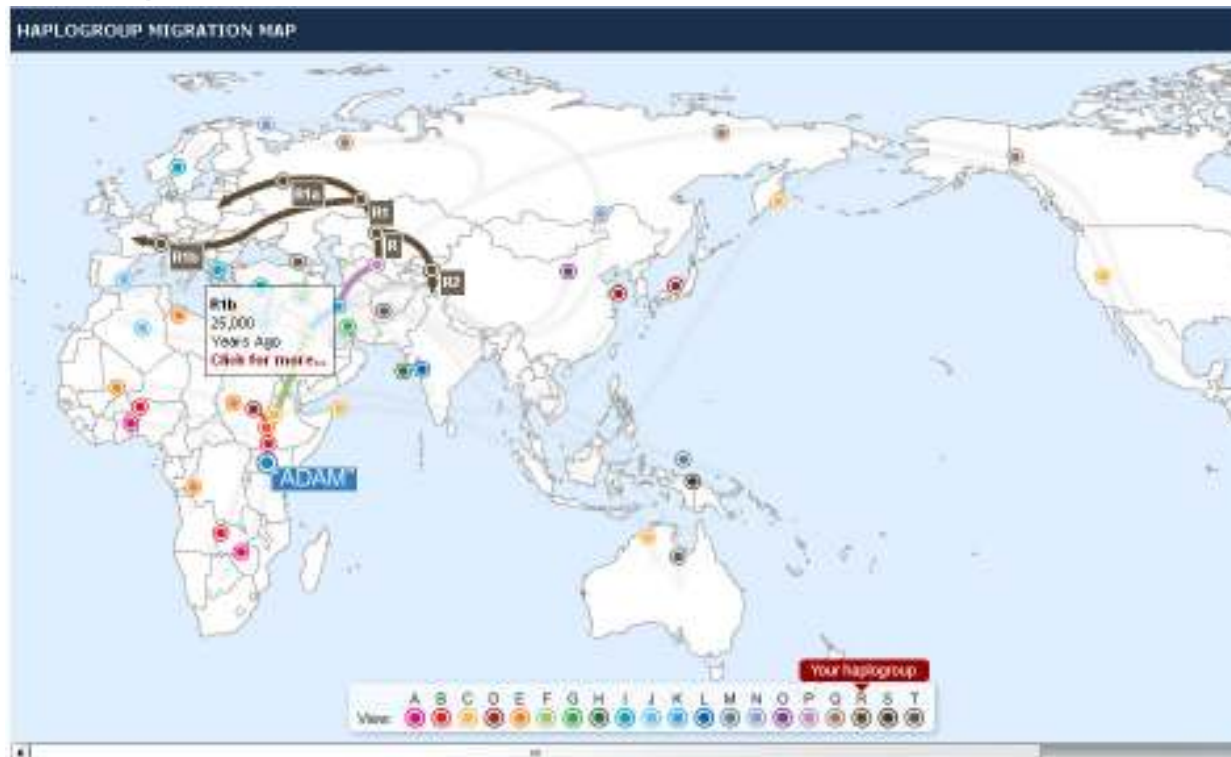
Marker	DYS617	DYS568	DYS487	DYS572	DYS640	DYS492	DYS565
Value	12	11	14	10	12	12	12

# Y-DNA (Haplogroup)

Instead of STR testing, SNP testing

(Deep Clade testing)

Haplogroups are derived from specific genealogical locations (ancestral home).



# **mtDNA (MATERNAL)**

**The mitochondria is the energy house of a cell and has separate DNA to the nucleus**

**-only inherited from the mother**

**Very slow to mutate**

**-Good – doesn't change from your mother**

**-Bad - can get too many matches as the matches to the most recent common ancestor (MRCAs) can go back further than Y-DNA**



# mtDNA (MATERNAL)



Family Tree DNA

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## mtDNA - Matches

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### FILTER MATCHES

Check Matches for:  Matches Per Page:

Last Name Starts With:  (Optional) New Since:

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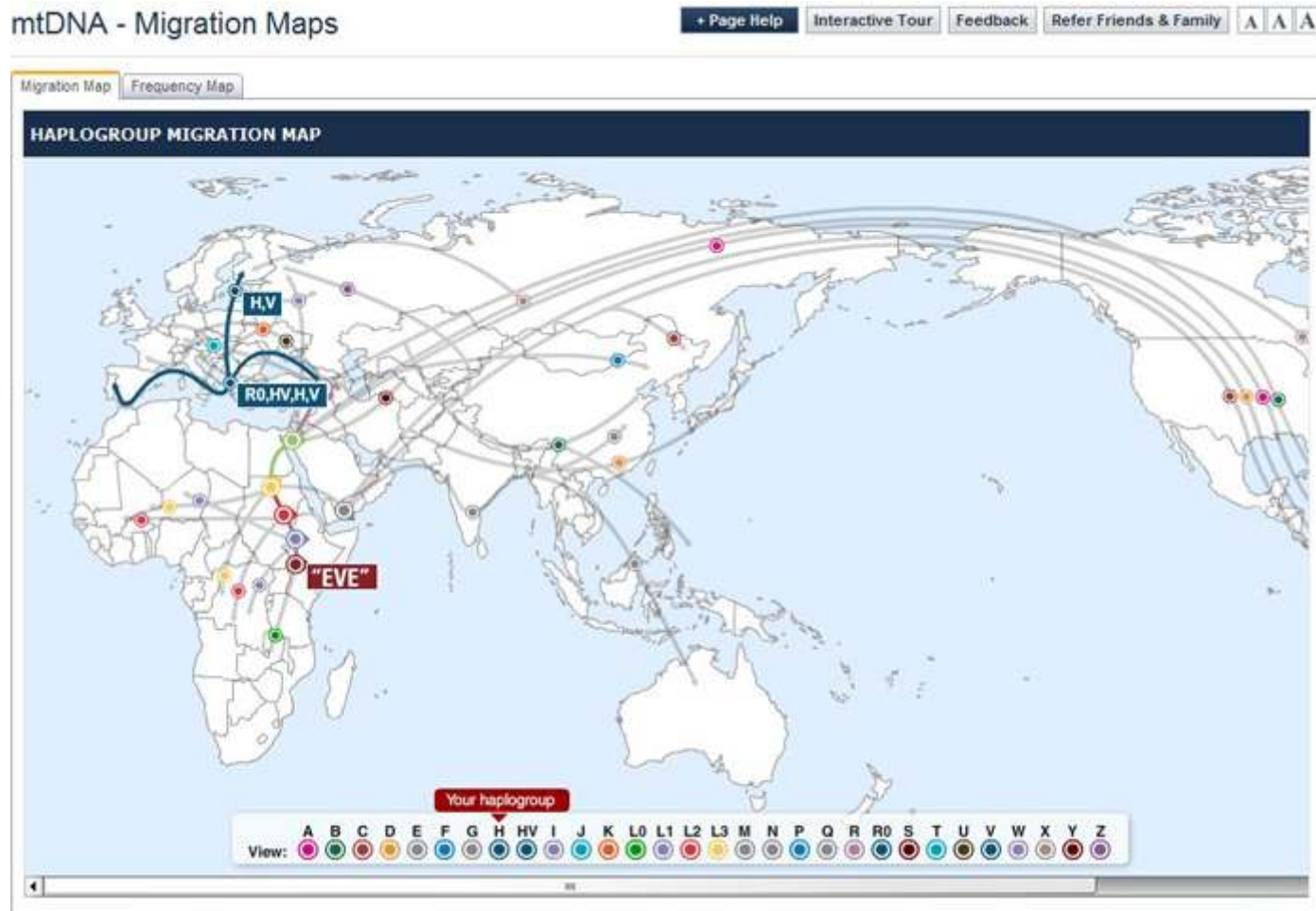
### HVR1, HVR2 - 97 MATCHES

Page: [1](#) [2](#) [3](#) [4](#) of 4

Name		Most Distant Ancestor	mtDNA Haplogroup	Match Date
<a href="#">Jane Doe</a>			H	2/13/2012
<a href="#">Joe Doe</a>		Private	Private	2/6/2012
<a href="#">Jane Smith</a>			H	12/12/2011
<a href="#">Joe Brown</a>			H	11/2/2011
<a href="#">John Doe</a>			H	10/17/2011
<a href="#">Mary Doe</a>		Austria	H	8/19/2011
<a href="#">John Smith</a>			H	8/19/2011
<a href="#">John Brown</a>			H	7/22/2011
<a href="#">John Smith</a>			H	7/15/2011
<a href="#">Joe Smith</a>			H	7/1/2011

# mtDNA (Haplogroup)

Similar to Y-DNA we can use the haplogroups to define a maternal ancestral origin.



# AUTOSOMAL

**23andMe**                      **90%US**                      **700,000 markers**

**Biggest database (doing it longer) now at 1 million**  
**Poorer response rate from matches**

**FamilyTree DNA**        **70%US**                      **600,000 markers**

**Biggest population outside US**  
**Large numbers from UK**  
**Better response rate from matches**

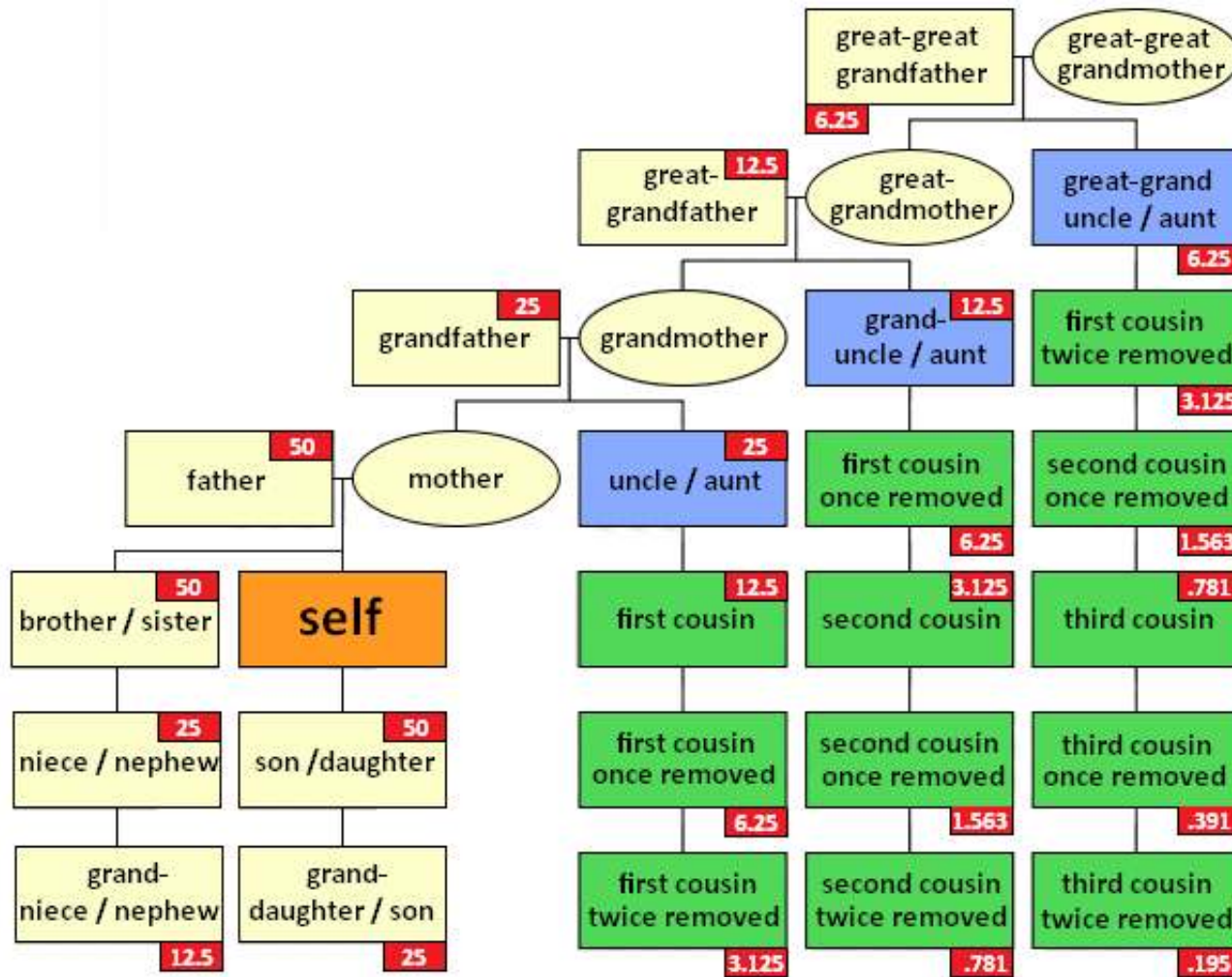
**Ancestry.com**                      **99%US**                      **500,000 markers**

**Only just started offering outside US.**

**23andMe and FTDNA \$99 US plus postage (big variability \$)**

**Ancestry \$149 AUS (postage ?)**

# SHARED AUTOSOMAL DNA



cM DNA Shared	Relationship
3400	Identical twins
3400	Parent/child
2550	Full siblings
1700	Grandparent/grandchild, aunt-or-uncle/niece-or-nephew, half siblings
850	Greatgrandparent, first cousins, etc
425	First cousins once removed, half first cousins
212.5	Second cousins, first cousins twice removed
106.25	Second cousins once removed, half second cousins
53.13	Third cousins, second cousins twice removed
26.56	Third cousins once removed
13.28	Fourth cousins
6.64	Fourth cousins once removed
3.32	Fifth cousins
1.66	Fifth cousins once removed
0.83	Sixth cousins
0.42	Sixth cousins once removed
0.21	Seventh cousins
0.1	Seventh cousins once removed
0.05	Eighth cousins

# 23andMe AUTOSOMAL RESULTS

## Haplogroups

PATERNAL LINE: R1B1B2A1A2F\*

MATERNAL LINE: U5A1A1

Overview

History

Haplogroup Tree

Community

R1b1b2a1a2f\* is a subgroup of R1b1b2

Locations of haplogroup R1b1b2 before the widespread migrations of the past few hundred years.



R1b1b2 is the most common haplogroup in western Europe, where its branches are clustered in various national populations. R1b1b2a1a2b is characteristic of the Basque, while R1b1b2a1a2f2 reaches its peak in Ireland and R1b1b2a1a1 is most commonly found on the fringes of the North Sea.

Overview

History

Haplogroup Tree

Community

U5a1a1 is a subgroup of U5

Locations of haplogroup U5 before the widespread migrations of the past few hundred years.



Haplogroup U5 arose among early colonizers of Europe around 40,000 years ago; maternal descendants of those early colonizers persist in the region to this day. After the last Ice Age two subgroups of U5 expanded across Europe and into northern Africa and the Near East. Today, one subgroup, U5b1b, is shared by groups as diverse as the northern African desert-dwelling Berbers and the Scandinavian Arctic-dwelling Saami, also known as the Lapps.

# FTDNA AUTOSOMAL RESULTS

**Plus many other analysis tools.**

**1) chromosome browser**

**2) surname search**

**3) my origins**

**4) matrix**

**5) advanced matching**

**\* Also has haplogroup and ancestry origins same as 23andMe**

# ONLINE RESOURCES

## Examples:

**YouTube Channel; DNA Lectures - Who Do You Think**

**You Are** <https://www.youtube.com/channel/UC7HQSISkiy7ujlkgQER1FYw>

**Maurice Gleeson - Solving adoption mysteries in your family tree (working with close matches 1<sup>st</sup>-2<sup>nd</sup> cousins)** [https://www.youtube.com/watch?v=6pPWHuCWV\\_4](https://www.youtube.com/watch?v=6pPWHuCWV_4)

**The Genetic Genealogist** <http://www.thegeneticgenealogist.com/>

**DNA-explained; post on strategies for adopted people**

<http://dna-explained.com/2015/06/17/dna-testing-strategy-for-adoptees-and-people-with-uncertain-parentage/>

**Make use of online genealogy forums (testing companies will have forums)**

# DNA TESTING

**Gives you the ability to do something for  
YOURSELF.**

**Take control back from the clinics and legislators.**

**Give yourself some autonomy over your own history.**

**Irony: The one thing your “donor” gave you under  
anonymity is the one thing that might identify them.**

**Adams D and Allan S, Building a Family Tree: Donor-Conceived People,  
DNA Tracing and Donor 'Anonymity' *Australian Journal of Adoption*,  
Vol 7, No 2, 2013.**

**<http://www.nla.gov.au/openpublish/index.php/aja/article/view/3024/3520>**