

Genealogy And DNA – Understanding Genetic Genealogy

Orin Wells

orinwells@wells.org

The Human Cell – what can be/is used for Genealogy purposes

- Y-chromosome DNA (YDNA)

- Mitochondrial DNA (mtDNA)

- Autosomal DNA

The y-Chromosome is the focus of today's DNA Testing for Genealogy

It is NOT the DNA used for

- Paternity Testing

- Identifying disaster remains

- Identifying genetic disease or medical problems

Mitochondrial DNA

- Passed mother to each child

- Can be used to identify deep ancestry (70,000+ years)

- Can be used to research maternal lines

- Difficult to apply to genealogy

y-Chromosome DNA testing

- Passed father to son for generations with little to no change

- Only limited Loci (markers) are tested

- Can match others who may not be from your surname family

Can my DNA be misused?

- Will the government get my DNA sample?

 - Prevented by Privacy Laws

 - Unlikely to know you have been tested

 - Would require a court order

 - They have easier ways of getting your DNA if they want it

 - A full forensics DNA test would cost \$8,000 to \$10,000

- Could someone sell my DNA sample to an insurance company?

 - High level of security maintained by testing companies

 - Restrictions imposed by consent forms

 - Great financial risk to the testing companies

 - Insurance companies can get your DNA anytime they want it

 - It costs thousands to run a complete DNA test for medical purposes.

Can the results be used against me?

- Genealogical DNA tests are worthless for identification purposes

- You will likely match thousands of your cousins

- Genealogical DNA is not suitable for criminal identification

Can they clone me?

Impossible with current technology

If possible, they are unlikely to start with cheek cells

Do you think your spouse would be interested in having you cloned?

Why it works

We each carry DNA from every one of our ancestors

If we can unlock their legacy, we can identify them

Autosomal DNA is passed on 50% from each parent

Mitochondrial is only inherited from the mother

Y-Chromosome DNA is inherited only from the father by each son

Why use DNA for Genealogy?

Reliably passed from father to son

No "dilution" by mothers

Your cousins will match you nearly exactly

Much easier to trace male ancestors through genealogy

There are many surname projects (over 2,500)

May match cousins with different surname

Adoptions, illicit affairs and name changes can cause surprises

The number of markers tested can be important

Solving the mysteries

Were your ancestors marooned on earth by passing aliens?

Where did parents of ancestor come from?

Who were the siblings and parents?

What was his ancestral family?

How do you make it work?

Establish a plan – what are you trying to accomplish?

Avoiding random testing

Find known cousins

Find likely cousins for deeper connections

How can it help find "Lost" Ancestors?

Finding willing participants for your project

You WILL match the families that are connected

You will NOT match those who are not connected

I am a Female – how do I make this work for me?

Use brothers, father, uncle, cousins

Trace parallel lines and find unknown cousins

Good traditional genealogy is still crucial

Success stories:

- Ken Wells – Wall Street Journal Editor found his family
- The Seven brothers who immigrated to America myth
- Cousins related by a common ancestor 375 years ago validated
- Decades of research on wrong family exposed
- Decades of clearly wrong information corrected
- Centuries of false genealogy corrected
- Long held but unproven genealogy validated
- Stories from a successful project

When you take a DNA Test, what do you get?

- You get a bunch of numbers
- If the numbers match others, you are related
- If the numbers don't match, you are not related

What Questions can be answered?

- Am I really descended from the ancestor I think?
- Were two men by the same name in Boston in 1700 brothers?
- Are there breaks in my family tree I didn't know about?
- Which ancestral family am I descended from?
- Can I tell where in the world my male ancestors came from?
- Can DNA prove who my immigrant ancestor was?
- If I think there was an adoption or illicit affair, will DNA prove it?
- Can DNA tell me who my ancestor's real father was?

DNA Surname Projects

- Going it alone versus joining a project.
 - If you can't find a project on the surname of interest
 - Plenty of experienced project managers who will help
 - Ask the testing companies for help
 - Join the various DNA Internet forums and read the archives
- Costs
- Choosing a testing company
- How many markers to use
- Recruiting participants
- What can I do with the results?
 - Search on-line databases
 - Add your results to other databases
 - Stay connected
 - Find others with the same surname and get them interested

Why join an existing project?

- Coordinated by a dedicated project manager
- Discounts over single tests
- Many projects are well organized with purpose and plan
- Encompass many families with same surname
- If you think you know the answer, the DNA can provide extra confidence
- A great way to meet new cousins

Resources

Check <http://www.dnalist.net> for some existing projects
Check the testing company websites for other projects

Testing opportunities and search data bases

Sorenson Molecular Genealogy Project: <http://www.smgf.org>

A research project with the goal of collecting 100,000 samples from around the world. Testing is free, but you don't get the results. If you can document 4 complete generations you are encouraged to participate. There are approximately 15,000 y-chromosome samples in their database as well as 5,000 in the mtDNA database

Relative Genetics : <http://www.relativegenetics.com>

This is the testing company the Wells project uses. They also have a searchable database with tens of thousands of y-chromosome tests.

FamilyTreeDNA: <http://www.familytreedna.com>

This is the other major commercial testing company in the US. They have 32,000 samples in their searchable database that can be accessed at <http://www.ysearch.org>

HeritageDNA: <http://www.heritagedna.com>

This is a UK testing company. They have over 8,000 y-chromosome samples in their searchable database that can be accessed at <http://www.ybase.org>

University Medicine Berlin: <http://www.yhrd.org>

This is a database with over 42,000 y-chromosome tests although they are only tested on 11 markers so these will yield a lot of false matches but it can give you a clue to your family's origin. This is not a commercial testing company.