

The Non-Scientist's Introduction to Genetic Genealogy & DNA

Michelle Goodrum

<http://turning-of-generations.blogspot.com/>

<http://www.theindepthgenealogist.com/>

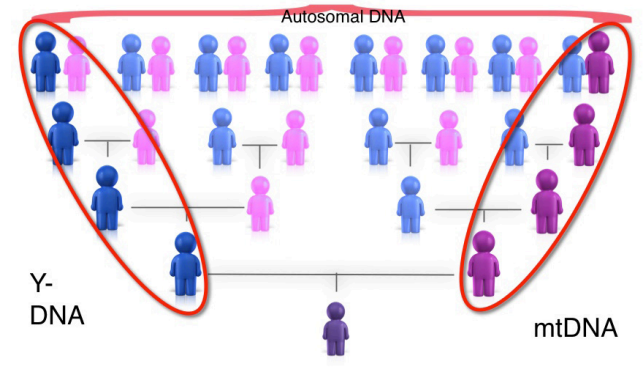
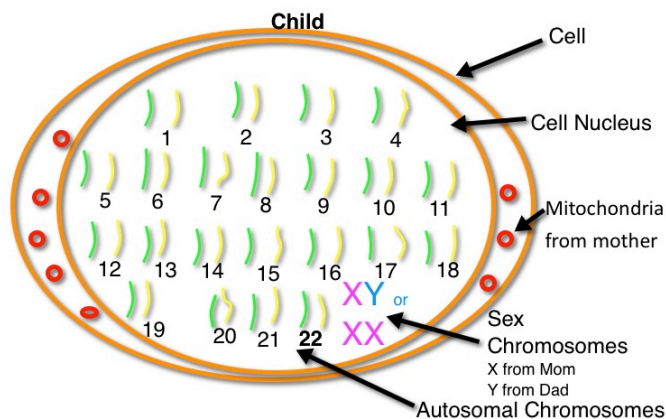
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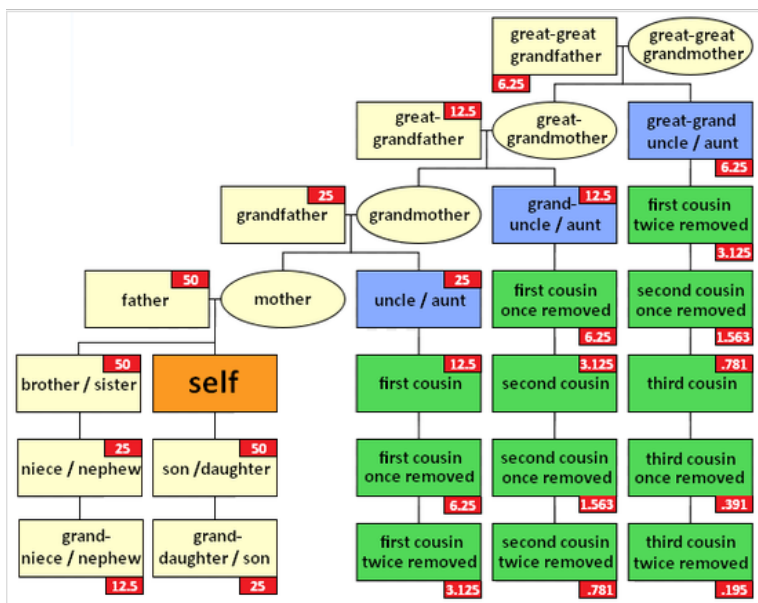
Four Kinds of DNA

1. **Y-DNA:** Father to son
2. **Mitochondrial DNA:** Mother to all children
3. **Autosomal DNA:** All ancestral lines
4. **X-DNA:** Specific inheritance pattern



Autosomal DNA (atDNA) is a “numbers game.” You are interested the total amount of DNA you share with another person and the lengths of the segments you share (measured in centimorgans – cMs). These

are used to estimate how you are related (i.e. 2nd or 3rd cousin). You can use these estimates to figure out where on your tree the common ancestor might be. Don't just look for surnames in common with your match but also similar *locations* at about the same point in *time*. It's also important to fill in your family tree with collateral lines as much as possible. The collateral lines are where you will find the matches that lead to your common ancestor.



Debbie Parker Wayne has a "Percentage Shared atDNA Chart," chart that lists more distant relationships at <http://debsdelvings.blogspot.com/2013/10/percentage-shared-atdna-chart.html>.

Courtesy Dimario, Wikimedia Commons.

http://www.isogg.org/wiki/Autosomal_DNA_statistics

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Autosomal DNA and your Genetic Family Tree vs. your Genealogical Family Tree: Your pedigree chart (genealogical tree) can go back to the beginning of time (theoretically). Every person who ever lived had parents. However, your genetic tree can only go back so many generations. This is because each of us has a finite amount of DNA. With each new generation, new DNA is introduced so some of our DNA has to “fall off.” It’s like having a bowl full of marbles. If you add more marbles to the bowl, some of the marbles that are already in the bowl fall out. It’s the same with autosomal DNA. So after about 6 generations, there is less likelihood of a match.



Courtesy of [Keerati](#), FreeDigitalImages.net
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Tips for Autosomal Testing:

1. Fill out your family tree and family group sheets as much as possible. This means collateral lines. Not just your direct line.
2. Dates and places are crucial.
3. Upload your family tree to the company(ies) you test with.
4. Test with all 3 companies if you can afford it: AncestryDNA, Family Tree DNA and 23andMe.
5. Test as many of your relatives as possible.
6. When your results come back determine how much DNA you share with a match and estimate an appropriate relationship range.

Mitochondrial DNA (mtDNA) and Y-DNA both deal with haplogroups.

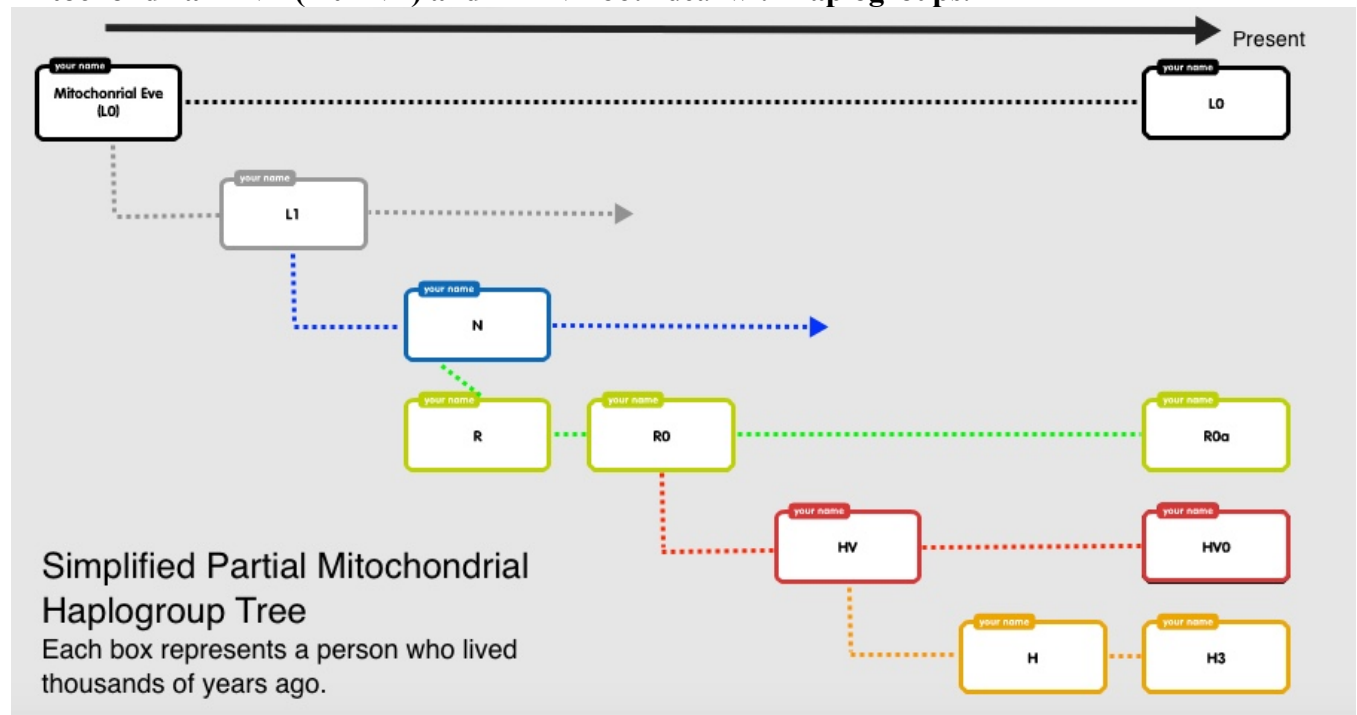
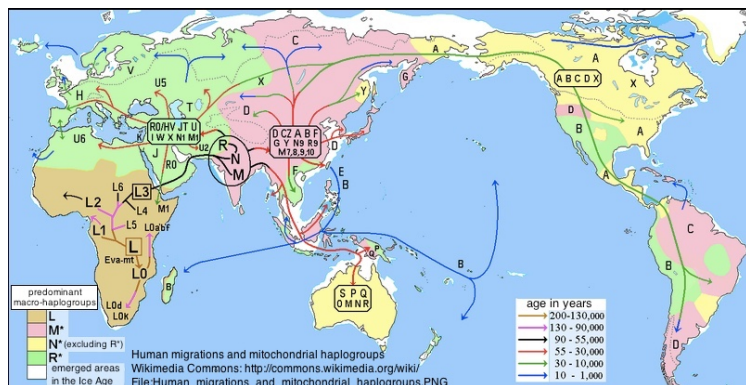


Image by Michelle Goodrum

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Haplogroups have to do with deep ancestry going back thousands of years. They tend to be associated with a geographic location. When there are mutations in the Y chromosome or in mitochondrial DNA, it leaves a signature, which is designated, by letter and number combinations. A Y-DNA haplogroup tree will look something like the “Simplified Partial Mitochondrial Haplogroup Tree” above. It will have different letter designations.

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With all genetic genealogy research, locations are important. This is true whether a few decades ago, or hundreds or thousands of years in the past.

Companies – Prices are for the U.S. Shipping is additional.

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|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------|------------------------------|---------------------------------------------------------------------------------|
| Company | Family Tree DNA | | AncestryDNA | 23 and Me |
| Test & Cost | Autosomal \$99 | | Autosomal/Family Finder \$99 | \$199 Includes low-level Mitochondrial and Y-DNA to determine deep ancestry. |
| Y-DNA Test & Cost | Y-37 | \$169 | | |
| | Y-67 | \$268 | | |
| | Y-111 | \$359 | | |
| Mitochondrial DNA Test & Cost | Full Sequence | \$199 | | HVR1 + HVR2* Selected branch-defining SNPs only. See above. |
| | HVR1 + HVR2* | \$69 | | |
| Website | familytreedna.com | | dna.ancestry.com | 23andMe.com |
| Refer to the ISOGG Wiki for more details: http://www.isogg.org/wiki/Portal:DNA_testing | | | | |
| * This is a low-level test to determine deep ancestry. | | | | |

Online Tools

Genomemate.org

Dnagedcom.com

Gedmatch.com

Resources in Print

Bettinger, Blaine and Matt Dexter. *I Have the Results of My Genetic Genealogy Test, Now What?* Self-Published, 2008. Current version is 2.1. https://www.familytreedna.com/pdf-docs/Interpreting-Genetic-Genealogy-Results_web_optimized.pdf.

Dowell, David R. *NextGen Genealogy: The DNA Connection*. Santa Barbara, CA: Libraries Unlimited, 2014.

Aulicino, Emily D. *Genetic Genealogy: The Basics and Beyond*. Bloomington, Indiana: Author House, 2013.

Kennett, Debbie. *DNA and Social Networking: A Guide to Genealogy in the Twenty-First Century*. The Mill, Brimscombe Port Stroud, Gloucestershire: The History Press, 2011.

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- Southard, Diahan. *Mitochondrial DNA for the Genealogist*. U.S.A.: Genealogy Gems Publications, 2014.
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- Sykes, Bryan. *The Seven Daughters of Eve: The Science that Reveals Our Genetic Ancestry*. New York: W. W. Norton, 2001.

Blogs & Websites

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- Aulicino, Emily. Genealem's Genetic Genealogy. <http://genealem-geneticgenealogy.blogspot.com>
- Bartlett, Jim. Segment-ology. <http://segmentology.org>
- Bettinger, Blaine. *The Genetic Genealogist*. <http://www.thegeneticgenealogist.com/>
- DNA Autosomal-DNA Mailing List. <http://lists.rootsweb.ancestry.com/index/other/DNA/AUTOSOMAL-DNA.html>
- DNA-Newbie Yahoo Group. <https://groups.yahoo.com/neo/groups/DNA-NEWBIE/info>
- Christmas, Shannon. Through the Trees. <http://throughthetreesblog.tumblr.com>
- Cooper, Kitty. Kitty Cooper's Blog. <http://blog.kittycooper.com>
- Dowell, David R. Dr D Digs Up Ancestors. <http://blog.ddowell.com>
- Estes, Roberta. *DNAeXplained – Genetic Genealogy*. <http://dna-explained.com/>
- ISOGG Wiki. http://www.isogg.org/wiki/Wiki_Welcome_Page
- Moore, CeCe. *Your Genetic Genealogist*. <http://www.yourgeneticgenealogist.com/>
- Perkins, Steve. *On-Line Journal of Genetic Genealogy*. <http://jgg-online.blogspot.com/>
- Russell, Judy G. *The Legal Genealogist*. <http://legalgenealogist.com/>
- Wayne, Debbie Parker. *Deb's Delvings in Genealogy*. <http://debsdelvings.blogspot.com/>

Other Helpful Items

- International Society of Genetic Genealogists (ISOGG)
http://www.isogg.org/wiki/Autosomal_DNA_statistics#DNA_percentages
- The Genetic Genealogist – X Chromosome
<http://www.thegeneticgenealogist.com/2009/01/12/more-x-chromosome-charts/>
- The Legal Genealogist – 2015: Most Bank for the DNA Buck
<http://www.legalgenealogist.com/blog/2015/02/02/2015-most-bang-for-the-dna-buck/>
- Your DNA Guide - <http://yourdnaguide.com>

Other

- Dear Myrtle's YouTube Channel
<https://www.youtube.com/user/DearMYRTLE/search?query=dna>

- Average Estimated Centimorgans for Autosomal Testing Comparison chart
<http://roots4u.blogspot.com/2015/01/centimorgans-or-percentages.html>