

AUTOSOMAL DNA (atDNA) TEST INFORMATION

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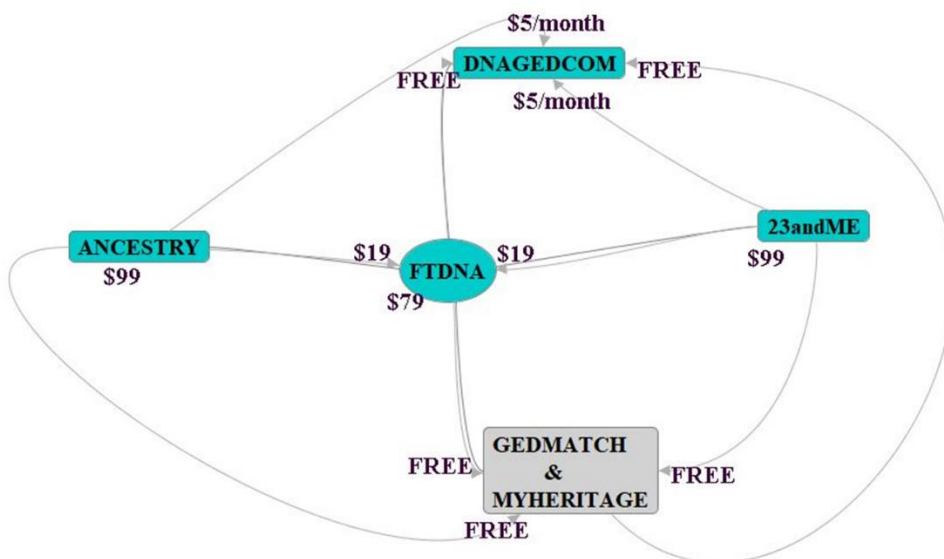
There are five major testing companies and one third-party company providing genealogical analysis tools for autosomal DNA testing (atDNA).

- Ancestry – www.ancestry.com
- FamilyTreeDNA (FTDNA) – www.familytreedna.com
- 23andMe – www.23andme.com
- MyHeritage – www.myheritage.com
- LivingDNA – www.livingdna.com
- GEDmatch – www.gedmatch.com
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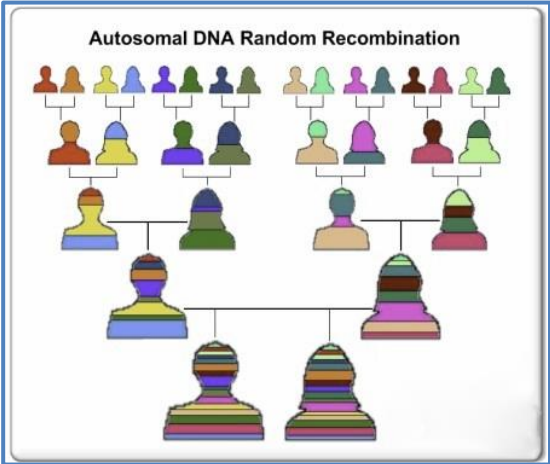
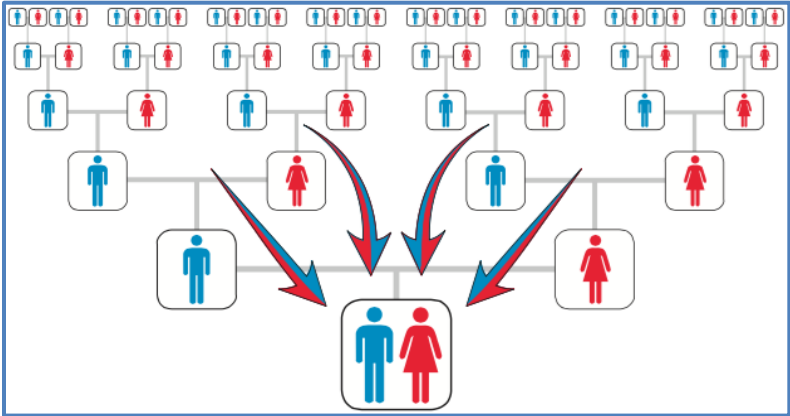
Company	Allows		Living					
	Import?	Fee?	23andMe	Ancestry	FTDNA	DNA	MyHeritage	Other
23andMe	No	n/a	n/a	n/a	n/a	n/a	n/a	
Ancestry	No	n/a	n/a	n/a	n/a	n/a	n/a	
Family Tree DNA	Yes	Yes*	Yes	Yes	n/a	No	Yes	Geno 2.0**
Living DNA	Yes	No	Yes	Yes	Yes	n/a	Yes	
MyHeritage	Yes	No	Yes	Yes	Yes	No	n/a	

* Only partial access for free; \$19 USD fee allows access to Chromosome Browser, myOrigins, and ancientOrigins; however, uploading MyHeritage DNA results allows full access at no charge

** Also known as Next Generation Geographic or National Geographic DNA

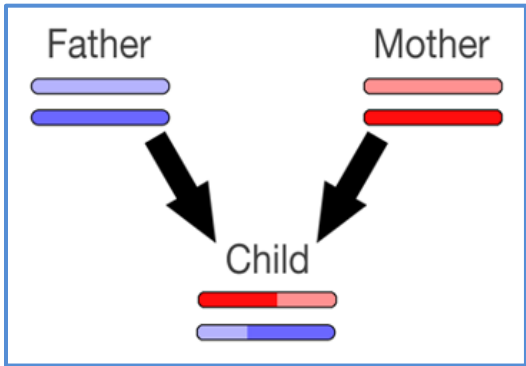


AUTOSOMAL DNA INHERITANCE PATTERN

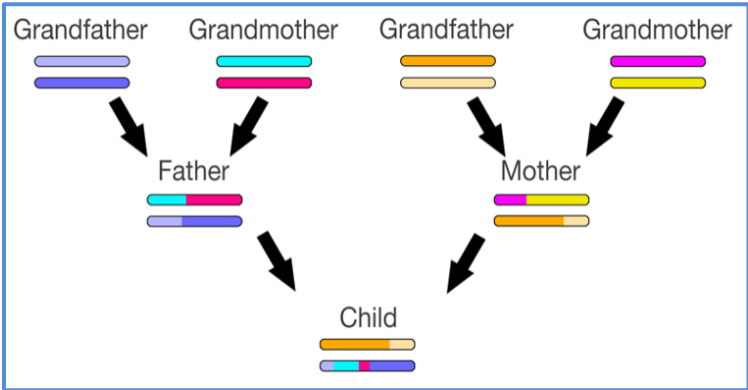


“RECOMBINATION”

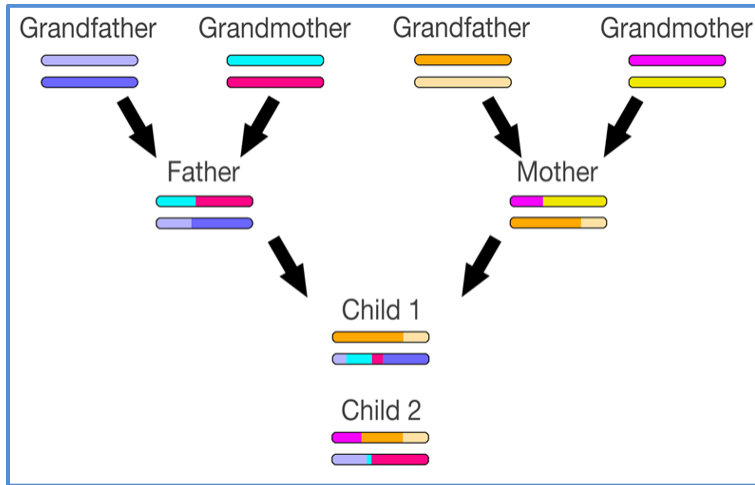
ONE GENERATION



TWO GENERATIONS



SIBLINGS



The Shared cM Project – Version 3.0
August 2017

For MUCH more information (including histograms and company breakdowns) see: goo.gl/Z1EcJQ

Blaine T. Bettinger
www.TheGeneticGenealogist.com
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How to read this chart:

Relationship
Average
Range (low-high)
(99% Percentile)

Aunt/Uncle
1750
1349 - 2175

Half GG-Aunt/Uncle		Great-Grandparent						Great-Great-Aunt/Uncle		GGGG-Aunt/Uncle		Other Relationships	
187 12 - 383		881 464 - 1486						427 191 - 885					
Half Great-Aunt/Uncle 432 125 - 765		Grandparent 1766 1156 - 2311				Great Aunt/Uncle 914 251 - 2108						6C 21 0 - 86	
		Half Aunt/Uncle 891 500 - 1446		Parent 3487 3330 - 3720		Aunt/Uncle 1750 1349 - 2175						6C1R 16 0 - 72	
Half 3c 61 0 - 178	Half 2c 117 9 - 397	Half 1C 457 137 - 856	Half-Sibling 1783 1317 - 2312	Sibling 2629 2209 - 3384	SELF	1C 874 553 - 1225	2c 233 46 - 515	3c 74 0 - 217	4c 35 0 - 127	5c 25 0 - 94	6C2R 17 0 - 75		
Half 3c1R 42 0 - 165	Half 2c1R 73 0 - 341	Half 1C1R 226 57 - 530	Half Niece/Nephew 891 500 - 1446	Niece/Nephew 1750 1349 - 2175	Child 3487 3330 - 3720	1C1R 439 141 - 851	2c1R 123 0 - 316	3C1R 48 0 - 173	4C1R 28 0 - 117	5C1R 21 0 - 79	7C 13 0 - 57		
Half 3c2R 34 0 - 96	Half 2c2R 61 0 - 353	Half 1C2R 145 37 - 360	Half Great Niece/Nephew 432 125 - 765	Great Niece/Nephew 910 251 - 2108	Grandchild 1766 1156 - 2311	1C2R 229 43 - 531	2c2R 74 0 - 261	3C2R 35 0 - 116	4C2R 22 0 - 109	5C2R 17 0 - 43	7C1R 13 0 - 53		
Half 3c3R	Half 2c3R	Half 1C3R 87 0 - 191	Half GG Niece/Nephew 187 12 - 383	Great-Great Niece/Nephew 427 191 - 885	Great-Grandchild 881 464 - 1486	1C3R 123 0 - 283	2c3R 57 0 - 139	3C3R 22 0 - 69	4C3R 29 0 - 82	5C3R 11 0 - 44	8C 12 0 - 50		

Minimum was automatically set to 0 cM for relationships more distant than Half 2C, and averages were determined only for submissions in which DNA was shared

Relationship to You	Likelihood of a Match	% of DNA Shared
1 st Cousin (common grandparents)	100%	7-13 (522 - 970 cMs)
2 nd Cousin (common great-grandparents)	>99%	3-5 (224 - 373 cMs)
3 rd Cousin (common great-great grandparents)	>90%	.3-2 (22 - 149 cMs)
4 th Cousin (common ggg grandparents)	>50%	<1% (<75 cMs)
5 th Cousin (common gggg grandparents)	>10%	Sometimes none detectable at match threshold
6 th Cousin (common ggggg grandparents)	<2%	Often none detectable at match threshold

DEFINITIONS

CHROMOSOME BROWSER – A tool that lets a test-taker see exactly what segment(s) of their chromosomes are shared with another test-taker.

DNA SEGMENT – A block, chunk, piece, string of DNA on a chromosome, determined by a start location and an end location and refers to all the DNA between these locations.

ANCESTRAL DNA SEGMENT – a DNA segment which is passed down from an ancestor

SHARED DNA SEGMENT – A DNA segment which both you and a DNA match have.

IBD – A shared segment that comes from a common ancestor (Identical By Descent)

IBC or IBS – A shared segment that does not come from an ancestor (Identical By Chance of Identical By State)

SHARED OR IN-COMMON-WITH (ICW) MATCHES – A list of matches from the match list that you and one of your matches both match.

AUTOSOMAL DNA TOOLS

SHARED CM PROJECT – A collaborative project created to understand the ranges of shared cMs
<https://thegeneticgenealogist.com/2017/08/26/august-2017-update-to-the-shared-cm-project/>

DNA PAINTER – Tool for mapping DNA segments to your ancestors
<https://dnapainter.com/>

NEW ANCESTRY DNA TOOLS

Shared DNA on main results page

Shows when match has unlinked tree

Compare icon shows shared matches between you and match

Matches Map (beta) shows matches location on map

CHROME BROWSER TOOLS

DNA MATCH LABELING – Chrome extension for sorting AncestryDNA matches

<https://thegeneticgenealogist.com/2018/09/16/introducing-dna-match-labeling-sorting-mechanism-ancestrydna-matches/>

ANCESTRYDNA HELPER – Chrome extension that gives ability to download list of matching users and ancestor information, search by user names or surnames, and new shared match icon allowing you to see which other tests also match this same result

MedBetterDNA – Chrome extension that displays the notes that you have made for a match directly on the main match page. It also has the ability to filter your matches.

ADVANCED TOOLS

GENOME MATE PRO - An app to help manage the data collected from autosomal DNA research
<https://www.getgmp.com/>

VISUAL PHASING –Used to determine which DNA segments can be assigned to grandparents
<https://thegeneticgenealogist.com/2016/11/21/visual-phasing-an-example-part-1-of-5/>

DNA COLOR CLUSTERING - The Leeds Method for Easily Visualizing DNA Matches
<https://dnawithdana.com/dna-color-clustering-the-leeds-method-for-easily-visualizing-matches/>

DNA LINKS

CONTACT INFORMATION

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PERSONAL SITES

DNA & GENEALOGY GROUP

<https://www.facebook.com/groups/1037858392921365/>

DNA REFERENCE AND INFORMATION

All the DNA testing companies and third-party DNA tool sites have help articles, information videos and webinars, learning centers, wikis, forums, frequently asked question pages, and guides to help with any questions you have

DNA CENTRAL – New resource for everything DNA! (subscription-based site – Blaine Bettinger)

<https://dna-central.com/>

ISOGG WIKI – A Free Genetic Genealogy Encyclopedia

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

YOUTUBE – 12,800 videos on Genetic Genealogy – many well know genetic genealogists

https://www.youtube.com/results?search_query=genetic+genealogy

DNA BLOGGERS

THE GENETIC GENEALOGIST – Adding DNA to the Genealogist’s Toolbox

Blaine Bettinger - <http://www.thegeneticgenealogist.com/>

WHO ARE YOU MADE OF – Tips and techniques on using your unique DNA to find your roots

<http://whoareyoumadeof.com/>

DNAeXplained – Genetic Genealogy – Discovering Your Ancestors – One Gene at a Time

Roberta Estes - <http://dna-explained.com/>

SEGMENT-ODOLOGY

Jim Bartlett - <http://segmentology.org/jim/>

KITTY COOPER’S BLOG – Musings on Genealogy, Genetics and Gardening

<http://blog.kittycooper.com/>

THE DNA GEEK – Mixing Science and Genealogy

Leah Larkin, Ph.D. – <http://thednageek>

DNA AND FAMILY TREE RESEARCH – Practical guidance on using DNA in genealogy research

Maurice Gleeson – <http://dnaandfamilytreeresearch.blogspot.com>

WHEATON SURNAME RESOURCES – Beginners Guide to Genetic Genealogy – Kelly Wheaton

<https://sites.google.com/site/wheatonsurname/beginners-guide-to-genetic-genealogy>

KERCHNER’S DNA TESTING AND GENETIC GENEALOGY INFO AND REFERENCE PAGE

<http://www.kerchner.com/dna-info.htm>

CRUWYS NEWS – Day-to-day activities of the CruwysCruse one-name study.
<https://cruwys.blogspot.com/>

ADOPTees & GENETIC GENEALOGY

DNA ADOPTION – Find Your Roots Through DNA – Information and DNA courses
<http://dnaadoption.com/>

DNA SEARCH ANGELS – Using DNA Testing and Traditional Adoption Search Methods
<http://dnaadoption.com/index.php?page=search-angels>

TESTING ADVISOR – The Independent Guide to DNA Testing
<http://www.dna-testing-adviser.com/>

DNA BOOKS

The Family Tree Guide to DNA Testing and Genetic Genealogy by Blaine T. Bettinger

Genetic Genealogy in Practice by Blaine T. Bettinger and Debbie Wayne Parker

NextGen Genealogy – The DNA Connection by David R. Dowell

Genetic Genealogy – The Basics and Beyond by Emily D. Aulicino

DNA and Genetic Genealogy: An Introduction by Diahhan Southard

Stranger in My Genes by Bill Griffeth



GETTING STARTED IN DNA FOR GENEALOGY

1. Order Ancestry.com DNA test (ancestry.com/dna) – the autosomal test, the only one they offer. If you do not have an ancestry subscription you will need to consider purchasing one of the following to take full advantage of the tools provided by Ancestry:

Feature	+ Subscription	- Subscription
Ethnicity estimate	X	X
Migrations	X	X
DNA matches	X	X
Contacting matches	X	X
Automatic updates to results	X	X
Shared matches	X	X
New Ancestor Discoveries	X	
DNA Circles	X	
Shared ancestor hints	X	
Full access to matches' public trees	X	
List of surnames in matches' trees	X	
List of birth locations in matches' trees	X	

- a. U.S. Discovery Subscription - \$189/year which provides full DNA results plus access to Ancestry records. Can subscribe to this level online or by phone.
 - b. DNA Insights Subscription - \$49/year which provides full DNA results with no Ancestry records access. Will be necessary to call Ancestry support (1-800-262-3787) to purchase this level of subscription.
2. While waiting for the DNA test results to come back begin to build the most complete family tree you can. This tree needs to be as complete as you can make it back four to six generations (second to fourth great-parents). This will enable you to successfully work with your matches to determine which family liner you are related on. This tree can be:
 - a. Created online at Ancestry.com
 - b. Uploaded to Ancestry.com by creating a gedcom file from your personal family tree program on your computer and uploading it to Ancestry.com
 3. When your test results come back from Ancestry:
 - a. Link your DNA test results to yourself on your family tree on Ancestry to take advantage of DNA cousin matching, tree matching and DNA circles

- b. Give Ancestry some time to work its magic and begin to contact your closest new DNA cousins and work with them to find even more cousins.

To transfer and compare your DNA to test-takers on other sites and utilize the tools on these sites follow these steps:

1. Download your DNA raw data to your computer for the next three steps.
2. Transfer your DNA raw data to GedMatch.com (Free Transfer)
3. Transfer you DNA raw data to MyHeritage.com (Free Transfer until 01 December 2018).
4. Transfer your DNA raw data to Family Tree DNA (ftdna.com) and upgrade for \$19 (one-time fee) to take full advantage of FTDNA's great tools.
5. Begin to contact your closest new DNA cousins at the new DNA sites.

Detailed instructions for downloading your DNA raw data and transferring to these sites can be found on Thomas MacEntee's "DNA Bargains" at this link

<https://dnabargains.com/dna-downloading-uploading-dna-test-data/>

NOTE: Be sure and write down the usernames, passwords and kit numbers for each DNA test site and store in a secure location that you will remember.

Here is a table listing each of the five major DNA testing companies and how they handle import of DNA test data:

Company	Allows		Living					
	Import?	Fee?	23andMe	Ancestry	FTDNA	DNA	MyHeritage	Other
23andMe	No	n/a	n/a	n/a	n/a	n/a	n/a	
Ancestry	No	n/a	n/a	n/a	n/a	n/a	n/a	
Family Tree DNA	Yes	Yes*	Yes	Yes	n/a	No	Yes	Geno 2.0**
Living DNA	Yes	No	Yes	Yes	Yes	n/a	Yes	
MyHeritage	Yes	No	Yes	Yes	Yes	No	n/a	

* Only partial access for free; \$19 USD fee allows access to Chromosome Browser, myOrigins, and ancientOrigins; however, uploading MyHeritage DNA results allows full access at no charge

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