Third Party Tools

By Marty Brady and Chip Mansure

Third party tools are tools for analyzing your DNA that have been developed by people who did not provide you with your DNA testing results (i.e., AncestryDNA, 23andMe, FTDNA, MyHeritage and LivingDNA). Can you get by without 3rd party tools……..probably. But many 3rd party tools provide ways to get more out of your DNA results (i.e., how different matches relate to you and each other, do your results indicate anything about you, etc.) We highly recommend going to the ISOGG wiki page and search for "Tools". They have lists of Autosomal DNA tools, MtDNA tools, Y-DNA tools, Third-party tools, Raw DNA data tools and Borland Genetics tools.

In order to learn about 3rd party tools, you have to use them. I'm sure Chip knows the tools much better than I and he will be showing you what mitoYDNA, charting, DNAgedcom and Genetic Affairs can do for you later today. I have done some work with Lazarus and looking at my DNA in Excel which I will talk a little about. In Excel, you can search for SNPs that are associated with certain traits and conditions or search for such things as the level of heterozygosity in your raw DNA data.

Things change very rapidly in this area. So, what we tell you today may not be true tomorrow. In preparing for this talk, I finally signed up for the Tier 1 tools on GEDmatch. Chip signed up for DNAGedcom and Genetic Affairs. We recommend trying them out for at least one month. I like the GEDmatch 3D clustering feature and the Lazarus tool. We are not going to go over all the tools listed below, because the listed videos cover the info better than we would. we will share some things we've recently done with our DNA data with various tools.

There are several excellent videos about 3rd party tools. Some links follow:

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Maurice Gleeson Maurice organizes the tools into 4 groups (A,B,C,D) as below.
https://www.youtube.com/watch?v=ofyLyspqHVU Maurice Gleeson "Tools for Effective Use of Your DNA" on Youtube

A. Sort Your Matches

1. Maternal vs Paternal
2. Sort by Specific Ancestor
3. Autocluster tools

Goal of clustering is to compare trees. The theory is that all members of a cluster have a common ancestor (Beware of double connections, half-cousins, & NPE's).
https://geneticaffairs.com/auto_cluster/examples/autocluster_40cM-400cM.html site by Evert-Jan Blom. Used to be able to run on 23andMe, FTDNA and AncestryDNA, but AncestryDNA can only do now with DNAGedcom. (www.DNAgedcom.com)
https://www.myheritage.com/dna/autoclusters?s=11862511
Family History Fanatics video on Clustering (Leeds, 2D & 3D)
https://www.youtube.com/watch?v=hpzQjqGmOeo&t=377s

B. Estimate the Probable Relationship to a Match

1. Shared cM tool www.DNApainter.com
2. WATO tool www.DNApainter.com
3. McGuire Chart https://thegeneticgenealogist.com/2017/03/19/guest-post-the-mcguire-method-simplified-visual-dna-comparisons/

C. Identify & Track Triangulated Segments

Chromosome browsing (MyHeritage, DNApainter, mega chromosome browser DNAgedcom)
https://youtu.be/wyjcJxywTZI Video by Blaine Bettinger on DNAPainter

D. Reconstruct Your Ancestors

1. Lazarus www.GEDmatch.com Tier one tool

https://www.youtube.com/watch?v=WzNNPB0C9lU Family History Fanatics "The Lazarus Tool: How to Bring DNA Back from the Dead" on Youtube
https://youtu.be/C8REqT7DDP0 "Raising the Dead" by Martin McDowell

Is there a one stop shop for all the data from all the companies: No, but Maurice recommends Genome Mate Pro as something close (takes 8 hours to set up) https://www.getgmp.com

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Blaine Bettinger

The Family Tree Guide to DNA Testing and Genetic Genealogy (Chapter 8)
Primary Tools

DNA Painter, GEDmatch, DNAGedcom

Others mentioned

David Pike's Utilities, DNA Land, Genealogical DNA Analysis Tools, Promethease, Segment Mapper, Steven Fox Visual Phasing Spreadsheet

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Michelle Leonard

"A Guide to Third Party tools for DNA Testing" by Michelle Leonard on Legacy Family Tree Webinars

Michelle covers the Shared cM Project, DNA Painter, Genome Mate Pro, Kitty Cooper's segment mapper (on GEDmatch), Chrome extensions (DNA Match Labelling, MedBetterDNA, AncestryDNA Helper, Pedigree Thief, DNArboretum, 529andYou (on 23andMe))(the extensions no longer work on Ancestry), GEDmatch, Genome Mate Pro, DNAGedcom, Genetic Affairs, Rootsfinder, MapS Phasing, and Visual Phasing.

This is an overview talk and does not go into great detail, but it is still a very informative video.

Diahan Southard

"DNA Third Party Tools You Actually Need" on Legacy Family Tree Webinars. Has since been removed. I think because much of the information is dated.

Some of the 3rd party tools Diahan refers to are Chrome extensions (same nones Michelle Leonard talks about) which no longer work on Ancestry.
Diahan also likes DNAgedcom.com and NodeXL, doublematchtriangulator.com, Rootsfinder.com (you can copy and paste your match list from GEDmatch and use their tools to make spirograph type charts and display the relationships of your matches – other companies may have this as well now) and DNAPainter.
And for health (fee based): GeneHeritage.com, Promethease.com and Livewello.com

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Roberta Estes

2019: The Year and Decade of Change

Charting	Charting Companion https://progenygenealogy.com/products/family-tree-charts/ Lucid Chart https://www.lucidchart.com/pages/, Exploring Family Trees http://learnforeverlearn.com/ancestors/
Chromosome browsing & mapping	MyHeritage, DNApainter, DNAgedcom, https://genetic.family, Autosomal DNA utility, Blaine Bettinger video on DNAPainter, Steven Fox Visual Phasing Spreadsheet ,
Clustering	Leeds method, Genetic Affairs, Genetic Affairs Manual, Genetic Affairs video, MyHeritage, GEDmatch See Family History Fanatics video on Clustering Rootsfinder (with cool graphics)
Triangulation	Double Match Triangulator, GEDmatch, https://drive.google.com/file/d/0B-wpDkkP5x0odkFRdDFaNHloOFk/view
Ancestor Reconstruction	HAPI-DNA.org - Reconstruct from 1 parent and children (with 3 children 79.3 to 91.7% reconstruction & with 8 children 98.8 to 99.9% reconstruction) Rootstech 2021 talk on HAPI-DNA Talk given at Rootstech 2021, MapS https://www.maps-phasing.com/ - Reconstruct from 1 parent and children GEDmatch - Reconstruct with children and cousins both parents gone or if one parent is still around Family History Fanatics video on Lazarus Borland Genetics - Reconstruct with children and cousins both parents gone or if one parent is still around
Health and Traits	SNPedia/Promethease, Livewello, GeneHeritage
Mitochondrial and Y DNA	mitoYDNA, SNP Tracker, Alex Williamson's Big Tree
Comprehensive Tool	Genealogical DNA Analysis Tools (formerly Genome Mate Pro). Genome Mate Pro Facebook Page,
ABC's of DNA Programs on 3rd Party Tools	GEDmatch: https://archive.org/details/using-gedmatch-and-its-free-tools DNA Painter: https://archive.org/details/dna-painter-presentation https://abqgen.org/wp-content/uploads/2021/02/DNApainter-Handout.pdf https://abqgen.org/wp-content/uploads/2021/02/DNAPainter-Clustering.pdf

The following is a copy of the 3rd Party Tool page on the ISOGG wiki. At least most of the links are still active, but some of the tools have already been incorporated into the main DNA testing companies' websites.

Using DNA match results

These tools use the DNA match results or segment match data for genetic relatives from autosomal DNA testing companies.

- 529andYou A Google Chrome extension for use with data from 23andMe. For details see the reviews by Kitty Cooper and Rebecca Walker
- ConnectedDNA A commercial service providing network graphs from match data to visualise clusters of matches. For full details see the review ConnectedDNA and graph views by Debbie Parker Wayne
- Ancestry match Connect and share photos/videos with DNA matches across the globe.
- Autosomal DNA utility A free tool provided by Wesley Erickson. It allows the user to compare multiple matches at 23andMe or Family Tree DNA in a single chromosome browser.
- DNAGedcom This site was created by Rob Warthen to help users quickly analyze their data. This site and related tools allows you to download data from FTDNA, Ancestry and 23andMe. In addition, it has the ability to compare many Gedcoms at one time through the GWorks utility. The Autosomal DNA Segment Analysizer provides a visual representation of your Family Finder matches and the overlapping segments. Additional tools are available for a small fee from the DNA Gedcom Client which allows the user to download a list of AncestryDNA matches with centiMorgan data and pedigrees. The information from here can then be uploaded to DNAGedcom and your matches Ancestors are then compared through the GWorks utility.
- DNA Match Labelling A Google Chrome extension which allows the use to add coloured dots to assign matches to different groups. For a description see the article by Gail Dever New DNA labelling tool for Ancestry users on Chrome. TinyURL : https://tinyurl.com/MatchLabeling.
- DNA Painter A free website created by Jonny Perl which allows the user to map DNA segments and identify patterns in the data. Additional tools available to subscribers.

- DNA Painter Shared cM tool A tool that provides relationship estimates and probabilities based on entered cM values.
- HAPI-DNA Tools and resources for genetic genealogists provided by Amy Williams of Cornell University. As of November 2020 two tools are available: a tool for simulating shared segments and a maternal and paternal relative detector.
- DNA Pool Analyser from Gigatrees A tool from Tim Forsythe which lets you "combine all your autosomal DNA matches from your various testing companies and validates that the shared segment lengths provided are consistent with the relationships found in your database. When no relationship is found, the most probable one is suggested."
- Double Match Triangulator A free program provided by Louis Kessler
- GEDmatch A free utility to compare autosomal DNA data files from all three testing companies and to compare Gedcom files. A number of other very useful tools are also provided, some for a fee.
- Genetic Affairs Genetic Affairs provides a tool which automates the retrieval of new genetic matches for 23andme, FamilyTreeDNA and AncestryDNA and presents all updates in a single e-mail. The first 200 credits are free. There is also an automatic clustering feature. For a review see the article Automatic clustering from Genetic Affairs by Kitty Cooper.
- Genome Mate A tool for comparing autosomal DNA data and identifying common ancestors developed by Becky Walker, a 23andMe member and a programmer.
- MapsS Europe A tool for advanced genetic genealogists which provides the facility to analyse segment data, calculate genetic distance and convert between builds 36 and 37
- MatchCompare A free Excel tool for finding in common with and not in common with matches.
- MedBetterDNA A Chrome extension which enhances the AncestryDNA match system. It allows you to see the full notes on the match list rather than the default two-line view. It also allows you to filter matches using up to 100 hashtags in your notes.
- NodeXL A free Excel template which can be used to visualise AncestryDNA matches. See the detailed tutorial from Shelley Crawford
    - Overlapping segments viewer A tool provided by Staffan Betnér for comparing all matching segments for all matches based on Family Finder data.
- Pedigree Thief A Chrome extension which reads pedigree trees (Geni and MyHeritage) and converts them to an Ahnentafel format. It will also read

information on matches from MyHeritage as well as adding a couple of utilities to some GedMatch web pages.
- Progeny Charting Companion Family tree software which includes a number of tools for working with DNA matches (DNA Matrix, DNA Simulation and DNA Matches)
- Relationship Estimator App A free utility provided by the DNA Adoption team.
- Reweighter of Family Finder matches list A free tool provided by Staffan Betnér which strips out the small pseudosegments under 7 cM to give a more realistic total of the shared cM
- What Are The Odds? Probability Tool at DNA Painter A free tool that uses an easy, mathematical approach to figuring out where someone belongs in a tree.
- WikiTree does DNA backwards. Users enter their DNA test information and WikiTree populates your shared ancestor profiles with their DNA. Imagine looking for an ancestor and finding DNA cousins too! DNA Features for the Global Family Tree.
- Your DNA Family A suite of tools for analysing autosomal DNA results. The app currently works with data from 23andMe.

Using manually input data

- Geography of Genetic Variants Browser See the preprint Visualising the geography of genetic variants by Joseph Marcus and John November for a detailed explanation.
- Segment Calculator A spreadsheet provided by Brian Densmore which allows the user to calculate the odds of a segment being shared by cousins in families of different sizes.
- Autosomal DNA Half Life Equation for autosomal DNA (atDNA) Genetic Distance (cousin level) calculations for each segment. Can be input into an Excel spreadsheet or calculated within a program. Can also be modified for segment sums, etc. The output from the equation can be used as Genetic Distance for the Kitsch program within the PHYLIP package. Multiple trees can be combined with the TreeDist program within the PHYLIP package. Works with individual segments in cMs or use the modified equation for total sums in cMs.

Using GEDCOM files

- DNAGedcom A free utility to compare Ancestry Match files, FTDNA Trees and other Gedcoms for common ancestors. The tool is called GWorks on the DNAGedcom web site.
- GEDmatch A free utility to compare autosomal DNA data files from all three testing companies and to compare Gedcom files. A number of other very useful free tools are also provided. Additional tools available for a small fee.
- Learnforever Learn B F Lyons' Exploring Family Trees site allows a user to upload a GEDCOM file to produce a visualisation of pedigree collapse. For further details see the review article The "Exploring Family Trees" Tool by Leah Larkin (*The DNA Geek* blog, 3 January 2016).

Mobile apps

- DIY Genomics
- DIY Genomics on AppBrain <--- Broken Link
- DNA Match for the iPAD An iPad app for the processing of autosomal DNA data which serves as an alternative to the use of conventional spreadsheets. See also the DNA Match YouTube channel

Communities

- GeneKnot An experimental community where you can compare your disease risk with other users.
- DIY Genomics
- Patientslikeme

No longer available/supported/maintained

- 23++ ("Customers tested in 2014 or later are on the new site and cannot benefit from the extension") A Google Chrome extension for use with data from 23andMe. For details see the 23++ Blog (domain no longer exists)
- AncestryDNA Helper A Google Chrome extension provided by Jeff Snavely which adds search functionality and allows you to extract and download a spreadsheet of your matches. Discontinued in July 2019. See this blog post on the *Data Mining DNA* blog.
- Athletigen (Tool no longer available to individuals, only a waitlist) A tool using 23andMe which gave you a report on athletic performance

- Autosomal (atDNA) Relationship Prediction Utility free by Gliesian, LLC. (Domain name now up for sale)
- DNA Match Manager A free tool from Heirloom Software that allows you to download your DNA match information from Ancestry (multiple tests supported), 23andMe, Family Tree DNA and GedMatch (multiple tests supported). (Non-functioning website)
- DNA Match Manager Helper A free tool provided by Monty Williams to create a sortable summary spreadsheet from DNA Match Manager output files. (Non-functioning website)
- FTDNA Ged to GEDCOM converter This site is no longer available with the change to FTDNA format. DNAGedcom will be providing an updated tool for this feature.
- GedMatch Plus (Chrome extension no longer exists) A free Google Chrome browser extension provided by Felix Immanuel which automatically cached your one-to-many, one-to-one, and X one-to-many analyses for seven days and helped to reduce the load on the servers.
- Genes and Us (domain no longer exists) A free service which allowed users to upload their 23andMe data to see which genes and traits they are likely to pass on to their children.
- Genetic genealogy tools ("ceased developing Genetic Genealogy Tools") A selection of genetic genealogy tools provided by Felix Immanuel in Adelaide, South Australia. The tools included a Build 36 to 37 converter for autosomal raw data files and a 23andMe genes converter.
- Ian Logan's minor allele program. (broken link) A program which identifies rare and uncommon SNPs. The program was designed to work with the v3 Illuminachip used by 23andMe and Family Tree DNA's Family Finder test.

Further reading

- Consumer genetic testing customers stretch their DNA data further with third-party interpretation websites by Sarah Catherine Nelson. *The Conversation*, 13 June 2019.
- DNA apps promise deeper insights for consumers but at what cost? by Sarah Catherine Nelson. *The Conversation*, 21 May 2018.
- What else can I do with my DNA results by Blaine Bettinger, *The Genetic Genealogist, 22 September 2013*.

Scientific papers

- Nelson SC, Bowen DJ, Fullerton SM. Third-party genetic interpretation tools: a mixed-methods study of consumer motivation and behavior]. *American Journal of Human Genetics*, published online 13 June 2019.
- Nelson SC, Fullerton SM. "Bridge to the literature"? third-party genetic interpretation tools and the views of tool developers. *Journal of Genetic Counseling*, first published online 7 February 2018.
- Wang C, Cahill TJ, Parlato A et al (2017). Consumer use and response to online third-party raw DNA interpretation services. *Molecular Genetics and Genomic Medicine*. Published online 2 November 2017.
- Badalato L, Kalokairinou L and Borry P (2017). Third party interpretation of raw genetic data: an ethical exploration. *European Journal of Human Genetics*advance online publication 23 August 2017.