DNA Bootcamp

With Michelle Leonard

We hope you enjoyed the first webinar. Here is a list of your ***optional*** DNA Bootcamp tasks. It's fine for everyone to learn at their own pace.

DNA Bootcamp Tasks To-Do:

TASK 1

Try out the Shared cM Project Tool

- Pick one or more matches on your DNA match list(s) and check the probabilities
- Assess each relationship on the probability table in conjunction with everything else you know about the match and see if you can rule any of them out

We'll talk about this in our first follow-up session!

You will find it at https://dnapainter.com/tools/sharedcmv4

TASK 2

Ask yourself "how robust is my family tree"?

- Have I got all my direct lines as far back as I can before they become brick walls?
- Have I been building forward the lines of the siblings of my direct ancestors?

If the answer to either question is 'no' then try to focus on rectifying this and making your tree a better reference to use with your DNA!

TASK 3

Were you aware of all of the different filtering and sorting options at your testing site(s)?

- If any of this was new to you go to your match list(s) and try the options out for yourself!
- Look at your match list (both main and individual) as if looking at it for the first time and scour it from top to bottom clicking on and investigating each and every filter, tool, option etc

We will discuss the results of this during the follow-up session

TASK 4

Try out the search facilities at each of your testing sites and try the following task:

- Look at your tree and pick out the most obscure surnames and locations on it
- Search on your testing site(s) for those surnames and locations and see if you get any match hits that are worth investigating further
- You can also search with just the surname (if obscure enough) or just the location to widen the net
- Experiment and see what you can find!

TASK 5

Here are some tasks for linked trees:

- Check that you have linked your DNA results and those of any tests you manage to the correct entries on the correct tree(s)
- Filter your Ancestry list by "public linked trees" and check out your highest results
- Take note of the gender on the main match page and check the gender on the linked tree as well as ages to see if you can spot any potentially problematic ones
- Also check the profile page of these matches and view their tree in full then filter it by "home person"

PLUS: Get in the habit of looking at your 'unviewed' DNA Matches on Ancestry.
To find unviewed: go to 'View all DNA matches' on the DNA homepage. Then you will find 'unviewed' as the first option to filter your match list by.

TIP: How to link your Ancestry DNA test to your online Ancestry tree:
To do this go to Ancestry, click DNA, then go to the Settings Cog (near the top right-hand of the web page). Scroll down to 'Tree link' then choose the correct tree and the correct entry on that tree.

Autosomal DNA Testing Strategy

1. Test at Ancestry first as they have the largest database and don't accept uploads
2. Upload your Ancestry raw data to MyHeritage, FTDNA, and LivingDNA to get into the databases that do accept uploads (make sure you are comfortable with all T&Cs before doing so and you may wish to pay small unlock fees to access additional tools such as chromosome browsers on MyHeritage and FTDNA)
3. Test at 23andMe to get into all of the different databases (they also don't accept uploads)
4. Look out for sales throughout the year (e.g. DNA Day, Black Friday etc)

(It is also possible to upload raw data to the third party site GEDMatch but again do your due diligence and make sure you are comfortable with the site policy and T&Cs)

Useful Resources

1. **Four important reference tables including range of sharing % and average cMs shared:**

Range of Sharing Percentages

Percentage	Relationships
50% (exact)	Parent/Child
50% (approx.)	Full sibling
25% (approx.)	Half Sibling Grandparent/Grandchild Aunt/Uncle/Niece/Nephew Double First Cousin
12.5% (approx.)	First Cousin Half Aunt/Uncle/Niece/Nephew Great Grandparent/Great Grandchild Grand Aunt/Uncle/Grand Niece/Nephew
6.25% (approx.)	First Cousin Once Removed Half First Cousin Half Grand Aunt/Uncle Half Grand Niece/Nephew
3.125% (approx.)	Second Cousin First Cousin Twice Removed Half First Cousin Once Removed
1.56% (approx.)	Second Cousin Once Removed Half Second Cousin First Cousin Three Times Removed Half First Cousin Twice Removed
0.78% (approx.)	Third Cousin Second Cousin Twice Removed

Average CentiMorgans Shared

Average Total cMs	Relationship Groups
3,500cM	Parent/Child/Identical Twin
2,600cM	Full Sibling
1,780cM	Half Sibling, Grandparent/child Aunt/Uncle/Niece/Nephew
875cM	First Cousin, Half Aunt/Uncle/Niece/Nephew Grand Aunt/Uncle/Niece/Nephew
450cM	First Cousin1xrem , Half First Cousin Half Grand Aunt/Uncle/Niece/Nephew
230cM	Second Cousin, Half First Cousin1xrem
120cM	Second Cousin1xrem, Half Second Cousin
75cM	Third Cousin
50cM	Third Cousin1xrem
35cM	Fourth Cousin

Remember to think in ranges and not absolutes though so consult the Shared cM Project!

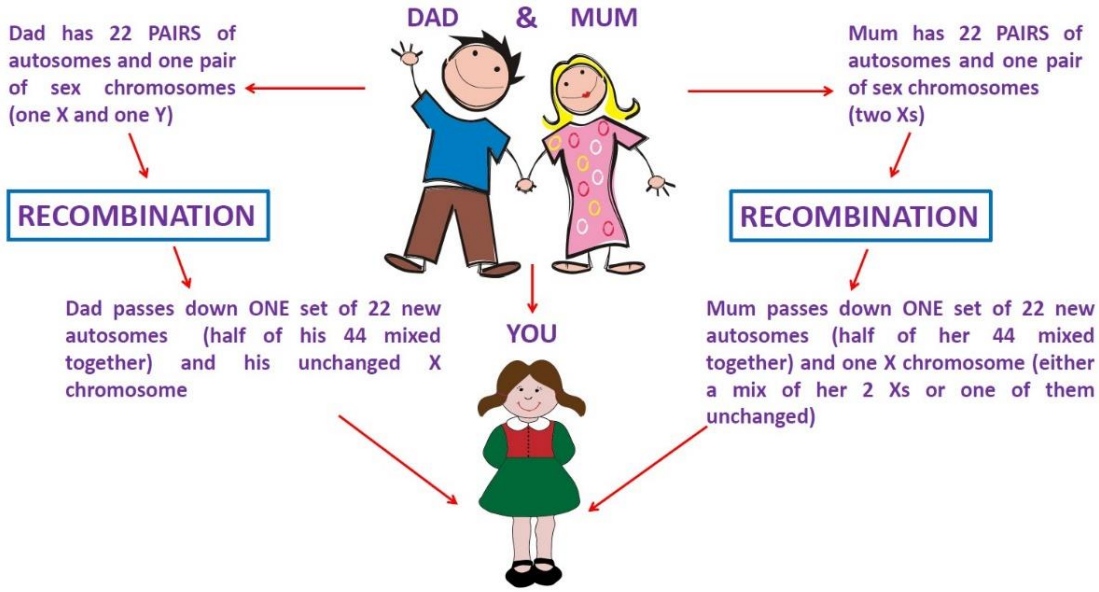
Chance of Matching…

RELATIONSHIP	CHANCE OF MATCHING
First Cousin	100%
Second Cousin	>99%
Third Cousin	>90%
Fourth Cousin	>50%
Fifth Cousin	>10%
Sixth Cousin or more distant	Remote (typically less than 2%)

Work With Your Highest Matches

Length of shared segment	Likelihood you and your match share a common ancestor within 6 generations
More than 30 centiMorgans	90%
20-30 centiMorgans	50%
12-20 centiMorgans	20%
6-12 centiMorgans	5%
6 centiMorgans or less	<1%

2. **A visual explanation of recombination:**



3. **Notes on the significance of segments:**

- Segments of DNA are measured in centiMorgans (cMs)
- The larger the DNA segment the closer the match
- The more DNA segments shared the closer the match (although be careful of matches without a significant largest segment – lots of tiny segments could indicate a more distant relationship or an endogamous situation)
- Many small segments are false – known as Identical By Chance (IBC)
- Research suggests 100% of segments 15cM or larger are IBD (Identical by Descent) but only 14% of 5cM segments are IBD (real)
- This does not mean totally discount smaller matches (especially if you find common surnames/locations) but just be careful with them and don't make them a main focus!

Michelle's Top DNA Tips

Set Yourself Up To Succeed!

- It's essential to build your own tree out as far, wide and deep as possible – if your third cousin tests neither of you can identify the connection if one or both of you don't know the names of your shared 2nd great grandparents. Pay particular attention to not only your direct ancestors but also your collateral lines (the lines of the siblings of your direct ancestors) as it is mainly from those relatives that the cousins on your match list will descend. The more collateral lines you work forward to modern times, the easier it will be to identify new matches.
- Once you have a robust tree for reference, make the different systems on the testing sites work for you by attaching/linking your tree to your DNA results. If you are uncomfortable attaching your full tree, create a bare bones skeleton direct ancestors tree with basic information and attach that instead but be aware if you wish to link matches to your tree then

you will need to build the lines on which those relatives belong. Also remember that your tree on Ancestry cannot be 'unsearchable' to obtain the benefits of linking it to your results.

a. MyHeritage: Create/upload a tree and attach DNA results to the correct person on that tree for Theory of Family Relativity Hints and Smart Matches
b. Ancestry: link trees to DNA results for Common Ancestor Hints, Thrulines, DNA Discoveries and highlighted shared surnames
c. FTDNA: Upload your tree and link confirmed relations to ther entries on it using the 'Linked Relationships' tool in order to populate paternal and maternal buckets
d. 23andMe: Fill in the 'Family Background' information (birthplaces of grandparents, ancestral locations and ancestral surnames) and a link to view your tree elsewhere

- Test as many older generation relatives as you can to both help with narrowing matches down and to give you more of your ancestors' DNA to work with and therefore more chances of verifying ancestors
- Test siblings if you have no older generation relatives and test cousins (especially cousins of parents) if no siblings; the more family members with unique DNA from your ancestors who test, the better your chances of finding useful matches
- Aim to get yourself and your family members into all of the major databases especially if you have a mystery to solve: the more DNA ponds you fish in the better chance you have of catching the "big fish" match that can unlock the answers you seek
- Start by investigating your largest matches but don't immediately discount lower matches especially if they have shared surnames and shared locations
- If you are an adoptee or have unknown parentage tree-building is challenging but other techniques can be employed; as a starting point examine the trees of your highest matches and try to work out how their shared matches match each other as this should be how they match you too
- Familiarise yourself with centimorgans (cMs) and ranges of sharing; The Shared cM Project can help with determining relationships; don't take company relationship estimates too literally as ranges of centiMorgans for relationships can be very wide
- The Shared cM Project tool on the DNA Painter website will provide the probabilities for the most likely relationships: https://dnapainter.com/tools/sharedcmv4
- Don't forget Ancestry now have a probability tool of their own so if researching matches on there you can consult that as well as the Shared cM Project tool
- Remember outliers exist (matches who share significantly more or less DNA than the average); always investigate any potential outliers thoroughly and don't assume a known paper trail relationship is an outlier when it's more likely the paper trail is incorrect; confirmation bias has to be avoided in these situations
- Use the Notes fields on your testing platform to organise the work you do with your matches but also make sure you have a "master" spreadsheet or similar for notes outside the companies as matches can disappear and if they do your notes will too
- Treat the features provided by the companies (Thrulines, Common Ancestor Hints, Theory of Family Relativity hints etc) as clues! Don't take them as fact; always spend time verifying them and seek out documentary evidence to prove or disprove the genealogical links
- The ISOGG wiki is a great reference source I would advise you to bookmark and use regularly: https://isogg.org/wiki/Wiki_Welcome_Page

- There are many DNA dedicated Facebook groups and these are three of the most active:
  https://www.facebook.com/groups/geneticgenealogytipsandtechniques
  https://www.facebook.com/groups/isogg
  https://www.facebook.com/groups/AncestryUKDNA (UK-based group)
- Watch webinars and read blogs – check out YouTube and Legacy Family Tree Webinars for many excellent webinars on DNA topics
- Read, learn, practice, don't be afraid to ask questions or make mistakes and have fun!

Refresher reading

What are the different types of DNA test you can take?

Y-DNA: Tests the direct paternal line (father's father's line); only males can take this test as only males have a Y-Chromosome; can reach much further back in time than autosomal tests; only tests one line of your tree but it is the surname line so can be used for surname studies and sometimes provide a surname clue for males with unknown male ancestors on direct paternal lines; often no surname clue will be revealed, however, and even if there is one there is always a chance that there has been a disconnect further back on the line so be cautious

Mitochondrial DNA: Tests the direct maternal line (mother's mother's line); again only tests one line of your tree; can also reach much further back in time; least genealogically useful due to slow mutation rate; best for testing hypotheses or if you have a brick wall on your direct maternal line

Autosomal DNA: Tests a mix of the DNA you inherited from all of your ancestral lines (50% inherited from each parent); a real all-rounder and the most popular test but limited to the past 5-7 generations due to its inheritance pattern; X-chromosome DNA is included with this test; by far the best test for identifying unknown ancestors and solving mysteries

You can use Autosomal DNA testing to:

- Verify your tree
- Add new branches to your tree
- Learn about your ethnic make-up
- Break brick walls
- Identify unknown ancestors
- X-chromosome DNA is included with this test
- Connect with new cousins
- Test hypotheses

Where can you get tested?

AncestryDNA: Only offers an autosomal test but has by far the largest autosomal database with over 18 million testers and growing; does not allow uploads from other sites; testing at Ancestry should be the first port of call for anyone with a mystery to solve or if you just want to go on a DNA testing fishing trip

23andMe: Offers an autosomal test bundled with Y-DNA and MtDNA haplogroup designations and health reports (optional); over 12 million testers are in the 23andMe database but many test solely for the health information and don't provide ancestral information or reply to contact; the site has a lack of tree provision; does not allow uploads from other sites; this is the second largest database, however, so shouldn't be overlooked when considering testing options

Family Tree DNA: The only company to offer Y-DNA and MtDNA databases as well as an autosomal database but the autosomal one is much smaller than those of the other big testing companies and you can transfer in Ancestry raw data for the best of both worlds - a small fee of $19 is required for access to advanced tools such as the chromosome browser and features such as the MyOrigins ethnicity estimate

MyHeritage: Offers an autosomal test (with optional health reports) and has a fast-growing database of over 4 million testers; also boasts some of the best tools available; you can transfer in tests taken elsewhere for free but there is a small charge (£35) to unlock important features such as the essential shared match lists and tools such as the chromosome browser

LivingDNA: Partners with FindMyPast and offers detailed UK & Ireland regional ethnicity estimates; launched a matching database in autumn 2018 but the pool is still extremely small; they do allow raw data transfers from other sites, though, and it's worth doing this just in case but note that there is currently no tree provision (this will be added in 2021 according to the website)

Recommended read

- **Further reading** – 'Understanding the principles of DNA testing for genealogy' and 'atDNA tests' chapters by Michelle Leonard in *Tracing Your Ancestors Using DNA: A Guide for Family Historians* (Pen & Sword, 2019, ISBN: 1526733099)

The DNA Bootcamp follow-up session

We look forward to seeing you at the Zoom meeting follow-up sessions on 11th Feb.
If you have yet to let me know your preferred time, please do so:
(5.30-6pmGMT, 6.30-7pmGMT or 7.30-8pmGMT)
I will send out the Zoom invitation links 48 hours before.

Any queries in the meantime, please email helen.t@family-tree.co.uk

Each week we will issue a new handout and recording
and the recordings will remain viewable until 18th June.

About Michelle

Contact & Social Media Links:

Email: michelle@genesandgenealogy.com
Facebook: www.facebook.com/genesandgenealogy
Twitter: www.twitter.com/genealogylass
LinkedIn: https://www.linkedin.com/in/michelleleonardgenealogist
APG: https://www.apgen.org/profiles/michelle-leonard
Ancestry Hour: http://www.ancestryhour.co.uk/michelle-leonard.html

Genes & Genealogy