

DNA Problem Solving

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Research your brick wall in all existing genealogical records first. After no success, try DNA testing. Use the 2 types of research in concert with one another.

Research Plan for DNA Testing:

1. Identify your research problem
2. Summarize your genealogical research results
3. Choose most relevant DNA test/tests to order
4. Choose most relevant family member to test
5. Complete the rest of your family tree back to 4th great grandparents or farther, if possible

DNA test options

1. Autosomal DNA, inherited 50/50 from both father and mother, and from all ancestors going back to about 5-6 great grandparents (GGs)
2. Y Chromosome – inherited by males only, from their father; test of direct paternal line
3. Mitochondrial – inherited by males and females, only passed on by females, test of direct maternal line
4. X-DNA – included in autosomal test of both males and females; has a unique inheritance pattern

Sara's test recommendations:

1. Always start with an autosomal test unless mystery person is 5th-6th GG or farther back
 - a. Sara's recommended Autosomal testing path; evaluate after each step
 - i. Start with largest testing database first. Right now, this is Ancestry DNA
 - ii. Upload your raw data file to MyHeritage and FamilyTreeDNA – both accept uploads from other companies
 - iii. Order 23andme
2. Y chromosome test may be relevant for some cases, but must find male relative on the correct Y chromosome inheritance path from mystery man. Available from Family Tree DNA testing company. Order at least a 37 marker test.
3. Mitochondrial DNA test may be relevant in fewer cases, but must find relative on the correct mtDNA inheritance path from mystery woman. Also, be aware that matches could be related to a common maternal ancestor up to 1,000 years ago. Available from Family Tree DNA testing company. Order the full spectrum test.
4. X chromosome may be relevant in fewer cases. Will not be discussed in this program tonight

Who should you test?

1. For autosomal testing, test the closest living relative to the mystery person
2. Try to go back 1 or 2 generations further from yourself

- a. For example:
 - i. Test your parent, grandparent, aunt/uncle, great aunt/uncle, or first cousin of your parent
 - ii. This earlier generation will have more autosomal DNA than you do from the mystery ancestor
3. May need to test at all 4 autosomal testing companies

Autosomal test shortcomings:

1. Not useful after about 5th-6th great grandparents. Must use other tests for farther back mysteries.
2. Half-relationships, double relationships and endogamy make interpreting DNA results more difficult
3. Under-represented groups in testing databases include:
 - a. Recent immigrants to US
 - b. Non-Caucasian groups
 - c. Natives of non-Western countries

Analyzing autosomal test results:

- 1) Sort matches out by known family lines, surnames, common ancestor couple
 - a. Look at match list for known relatives, known surnames, pictures of matches that you recognize
 - b. View match's trees (linked and unlinked) looking for common ancestors or surnames, build trees for close matches without trees
 - c. View common ancestor hints
 - d. Use "shared matches" feature with known relatives to help you sort
- 2) At Ancestry DNA can create and sort matches into 24 color coded groups.
- 3) Search your matches' trees or surnames of interest for surnames in your tree
- 4) Utilize hints, Thrulines (Ancestry DNA), and Theory of Relativity (MyHeritage DNA) as hints or leads to follow up in genealogical records. Don't blindly accept as gospel truth.

At all points in search, DNA and more genealogical research may lead you in a new direction

1. Follow up on all leads
2. Revise theories as you go
3. Do more genealogical research!!!
4. Test hypothesis with Genealogical Proof Standard