

CCGS DNA Basics Handout

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Basic Types of DNA Tests & Testing Companies

- **Autosomal (“atDNA”) – “All in the Family” Line**
 - DNA markers from 23 chromosomes including the X chromosome (sometimes called X-DNA)
 - atDNA passes 1/2 from each parent, 1/4 from each grandparent, 1/8 from each great grandparent, 1/16 from each 2g-grandparent, etc.
 - Amount of matching DNA is measured in centimorgans (cM)
 - Total is about 6,800 cM, so child has about 3,400 from each parent, grandchild is about 1,700 from each grandparent
 - atDNA often not very useful beyond 4 to 6 generations back – test parents & grandparents
 - Offered by all major testing companies: Ancestry, Family Tree DNA (FTDNA, called Family Finder), 23andMe, and MyHeritage
 - Provides ethnicity and genetic matching information. Ethnicity is not an accurate predictor of parentage (see Roberta Estes, *DNAeXplained* at: <https://dna-explained.com/2017/07/02/ethnicity-and-physical-features-are-not-accurate-predictors-of-parentage-or-heritage/>)
 - To obtain the broadest base of potential matches, test once (e.g., on Ancestry), then transfer your results to other sites like FTDNA (\$19), GEDmatch (free), MyHeritage (currently free). These sites also provide additional tools not available on Ancestry.
- **Y-DNA – Father’s Line**
 - Passes relatively unchanged from grandfather to father to son, etc. (males only as females do not have a Y-chromosome)
 - Helpful for tracing paternal line back hundreds of years or more
 - Helps place tester into a paternal “haplogroup” related to ancient migration patterns
 - Females need to find a close male relative in order to test (e.g., brother, paternal uncle, etc)
 - Typical tests are for STR (Short Tandem Repeat) 37, 67 or 111 markers. Y-12 and Y-25 marker tests also available, but Y-37 is the minimum recommended.
 - Another type of more advanced Y-DNA test is called SNP (Single Nucleotide Polymorphism or “snips”)
 - Test offered by FTDNA (Y-37 is \$169, Y-67 is \$268, Y-111 is \$359), can upgrade without new sample. Discounts offered several times each year (e.g., Fathers Day)
 - Can participate in “surname projects” to help identify matches.
- **Mitochondrial DNA (“mtDNA”) – Mother’s Line**
 - Passes from mother to both male and female children. Only females pass mtDNA, but males receive mtDNA from their mother.
 - Several types of tests are available. Many experts recommend starting with the full mtDNA sequence test.
 - Helpful for tracing maternal line back hundreds of years or more
 - Helps place tester into a maternal “haplogroup” related to ancient migration patterns
 - Test offered by FTDNA (mtFull Sequence is \$199)
- **Testing Companies – The Big 4 and What They Offer**
 - Ancestry – AT only (\$99)
 - 23andMe – AT only (\$99), AT+Health Information (\$199)
 - Family Tree DNA – Only company that tests Y (starts at \$169), mt (Full Sequence \$199) and AT (AT is called Family Finder, \$89). Can upload AT test from another company (\$19)
 - MyHeritage – AT only (currently \$79 introductory rate)
 - Watch for discount sales (e.g., Christmas, Fathers Day, National DNA Day-April 25th, etc)

Points to Remember

- DNA is not a substitute for traditional genealogy
- Privacy considerations are important – Ancestry blocks names of living people (except some matches)
- Be prepared for surprises (e.g., an NPE)
- Discuss possible outcomes and how you should handle time with test taker if you're administering for him/her. See *Genetic Genealogy Standards* <http://www.geneticgenealogystandards.com/> for guidance.
- Test older family members (parents, grandparents, cousins, etc.) while they're still with us

Resources

Websites and Blogs

- <http://DNAAdoption.com> is a site devoted to adoptees desiring to find their biological parents. They have developed a methodology, some tools and several DNA courses. Their tools and courses are excellent and are very helpful to non-adoptees as well.
- “DNA Basics”, Kitty Cooper's blog, <http://blog.kittycooper.com/dna-basics/> There are a number of excellent articles on various DNA topics.
- DNA eXplained – Genetic Genealogy, <https://dna-explained.com/> an excellent blog by Roberta Estes – some examples:
 - “Which DNA Test is Best” <https://dna-explained.com/2017/04/24/which-dna-test-is-best/>
 - “Concepts – Percentage of Ancestors’ DNA” <https://dna-explained.com/2017/04/21/concepts-percentage-of-ancestors-dna/>
 - “Autosomal DNA Transfers – Which Companies Accept Which Tests?” <https://dna-explained.com/2017/04/11/autosomal-dna-transfers-which-companies-accept-which-tests/>
 - “Nine Autosomal Tools at Family Tree DNA” <https://dna-explained.com/2016/07/21/nine-autosomal-tools-at-family-tree-dna/>
- Wheaton Surname Resources series, “Beginners Guide to Genetic Genealogy”, <http://tinyurl.com/geneticgenealogyguide> 19 lessons.
- “Genetic Genealogy using GEDmatch” by Jared Smith <http://smithplanet.com/stuff/gedmatch.htm>
- International Society of Genetic Genealogy (ISOGG) <https://isogg.org> lots of good information for beginners and more advanced DNA topics
- Shared cM Project by Blaine Bettinger, https://isogg.org/wiki/Autosomal_DNA_statistics Chart near end indicates theoretical cM for each relative and range of actuals based on surveys.
- There are many videos available on YouTube.com. Search for “DNA Genealogy” or “Genetic Genealogy.”

Facebook User Groups

- If you upload to GEDmatch.com and Family Tree DNA “Family Finder” you will want to join their user groups on Facebook for additional questions and answers on how to use DNA tools that are available.
 - GEDmatch Group is at <https://www.facebook.com/groups/gedmatchuser/>
 - FTDNA User Group is <https://www.facebook.com/groups/FTDNAUserGroup/?fref=nf>
- There are many useful Facebook groups. If they are “closed”, click the button to join (usually no problem).

Recommended Books:

- *Stranger In My Genes*, by William Griffeth,
- *The Foundling* by Paul J. Fronczak
- *The Family Tree Guide to DNA Testing and Genetic Genealogy*, by Blaine Bettinger
- *Genetic Genealogy in Practice*, Blaine Bettinger & Debbie Parker Wayne, published by National Genealogical Society. Excellent material with exercises at end of each chapter.

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