Autosomal DNA Testing and Your Genealogy

Tony Bandy examines a new form of DNA testing and its implications for genealogists

Taking my first genealogy DNA test last year, I was amazed at the results and quickly added the information to my family research file. Today, the popularity of this type of research shows no signs of waning, and dozens of companies continue to offer a barrage of tests and associated products.

However, as scientists continue to learn more about the complex structure of DNA and its role in determining your family’s genealogy, a new method of utilizing this personal information code is emerging: Autosomal DNA testing. This new form of research compares a different part of your DNA than most genealogical DNA tests—a part that, up until now, has not been used much and promises new information about your family history and ancestors.

Should you consider this autosomal DNA testing for your own family project? Would this help you to break out of some brick-walls or dead-ends you might be having with your research? It’s difficult to say for certain, if only because autosomal DNA testing for genealogical research is fairly new. However, let’s take a closer look into the facts and see what we can find out.

What’s The Difference?
Before we can truly understand autosomal testing, it’s important you know how DNA has been used so far in genealogical research. Since DNA contains the genetic code for all of us, most tests today examine the parts of our DNA known as Y-DNA and mtDNA. These specific “pieces” are transferred from our maternal and paternal sides and down through family generations.

Depending upon the scope, this type of examination can often be quite accurate in determining direct family lineage and ancestry information. Further examination of these same parts can also determine “haplotype” or “haplogroup”, helping to pinpoint population groups your ancestors may have been part of. These types of testing and research reports have become sort of an industry “standard” and are offered by many companies in differing forms.

Autosomal Testing
Autosomal DNA testing, however, examines the other parts of your DNA that have, up until now, not been used in standard genealogical examination. By matching your patterns, known to scientists as “SNP’s” or “single nucleotide polymorphisms”, to larger results gathered through previous samples and studies, it’s quite possible to give individual information about your ancestor’s population groups (European, Asian, African, etc.), genetic traits, and much more. Current thoughts are the better the match, the more conclusive the results can be.

Autosomal DNA testing also differs from regular genealogical testing in that this process will sometimes use collected databases of genetic markers and sequences in comparing submitted DNA samples. Some of these databases include:

- CODIS
  www.dna.gov/dna-databases/codis
- Autosomal STR Database
  www.strdna-db.org
- Omnipop
  http://en.wikipedia.org/wiki/Omnipop

These databases are not always necessary, but can help to accurately pinpoint historical population groups or other information according to researchers in the field.

Criticism?
Autosomal DNA testing is not without its critics, however, who argue this approach to genealogical research is untested and unproved. In an article from Science in October of 2007 entitled,  

Page from the Energy.gov website.  
(Image courtesy of the US Department of Energy Genome Programs, http://genomics.energy.gov)
A basic DNA test to complete packages, www.dnaconsultants.com, vary depending on the service and price you choose. Exactly is profiled and used, will aside, if you're considering getting there are many companies offering this type of service. The types of autosomal DNA testing done, and Donald Yates, I found the company has research roots beyond just standard genealogical DNA tests. Some of these projects include Melungeon ancestry, DNA testing, especially autosomal DNA examination, is at the forefront of genealogy investigation and research today.

Jewish population research and new forms of autosomal testing that focus on advanced research of under-reported values found in DNA samples. Says Donald: "In autosomal DNA, a good proportion of the values found on any given allele fall outside the reported range; they are rare. But a rare value comes from somewhere. So we are working on identifying the origins in human population history for rare alleles in your CODIS markers. It should be possible to develop a collection of these rare values tied to their origins in the world...."

Other companies to consider in the field of autosomal DNA testing include FamilyTree DNA, 23andme, and others, all of which offer different approaches and a variety of products and services for the genealogist just getting started. To find more information on these companies, try the following links:

- FamilyTreeDNA: www.familytreedna.com/products.aspx
- 23andMe: www.23andme.com/ancestry/

For More Information
In putting together this article and reading about the subject of autosomal DNA testing (and even other DNA methodologies), I found this is not a simple topic to understand, especially in relationship to how family researchers like you or me can incorporate this into our family genealogies and history. With this in mind, what follows are some links to more background information, published studies and blogs that can help you understand this wide-ranging topic a bit better.

- Autosomal DNA (Background) http://genealem-geneticgenealogy.blogspot.com/2008/10/autosomal-dna-atdna.html
- Genealogy.com: www.genealogy.com/index.html
- Genetic Genealogist: www.blegeneticgenalogist.com/

Final Thoughts
DNA testing, and especially autosomal DNA examination, is at the forefront of genealogy investigation and research today. Might this be the big breakthrough for your family research project, breaking down brickwalls and helping your ancestors to truly become part of your family? It very well could be. At the least, you will understand a bit more about your ancestors beyond just dates, names and faces.

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