



# ROOTDIGGER

3rd Quarter: July - September 2006

The Rootdigger is a publication of the Marion County Genealogical Society, a division of the non-profit Historic Marion County/ Ocala Preservation Society. Annual membership fee is \$15.00.

## DNA Testing for Genealogical Purposes:

### A Basic Introduction

By Rachael McKinnon

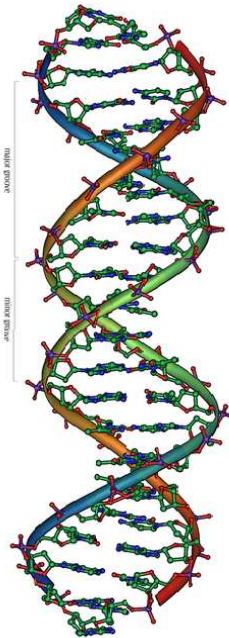
The science of DNA analysis is an amazing tool that many genealogists can benefit from in their efforts to link families together. However, like any tool, it is important to understand what a DNA analysis can and cannot reveal. Once you learn when to use DNA testing, you'll be able to solve genealogy problems that otherwise might be unsolvable.

The most important aspect of DNA testing, or any research project for that matter, is having an idea of what you want to determine, and defining the evidence that will prove or disprove a conclusion. With DNA testing this means selecting the right person (or people) to be tested. In some cases, testing the DNA of more than one person is the only way to solve genealogy roadblocks. In order to know whom to test, you must understand who has inherited the DNA in question.

### Why Use Genetic Genealogy?

Ask yourself the following:

- Are you looking to validate or invalidate genealogical records?
- Do you think you may have a surname spelling change or adoption in your line?
- Are you looking to verify relationships with a family from a region where you believe your line may have lived?
- Do you believe, for any other reason, that you have a common



The general structure of a section of DNA

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## Genographic Project

National Geographic and IBM scientists are assembling a massive worldwide database cataloging male and female genetic markers. The Genographic Project will collect 100,000 samples of indigenous populations around the world over the next five years. This will be the core of the database. People wanting to participate in addition will be able to learn their forbears origins and migrations going back up to 60,000 years ago. The cost is \$99.95. Learn more at [www.nationalgeographic.com/genographic](http://www.nationalgeographic.com/genographic). The Wall Street Journal described the project in a Wednesday, April 13, 2005, article.

Source: Ancestry Quick Tip 4/25/2005 (See also More on the Genographic Project on page 3)

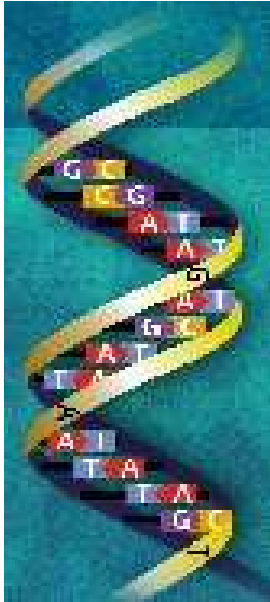
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<i>Have you Already been DNA tested?</i>	4
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### Special points of interest:

- Learn how DNA can assist you in Genealogical Research
- Find out if you have been DNA tested
- Participate in the Genographic Project
- Dive into your DNA
- One family's DNA record



***Exact matches of Y-chromosome tests will indicate that the two people are related within about five generations***



***Do you have some Knight's DNA in you?***

## DNA Testing for Genealogical Purposes

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*(Continued from page 1)*

ancestor with another individual or group?

If you answered "yes" to any of these questions, then a Genetic Genealogy test may help you find answers. Ancestry.com is once again offering several DNA testing kits that are helpful in family history research. For more information, visit: [www.ancestry.com/rd/prodredir.asp?sourceid=831&key=P1025994](http://www.ancestry.com/rd/prodredir.asp?sourceid=831&key=P1025994)

### **How it Helps**

1. DNA Matching—Comparing your results (your ancestral signature) against other people's DNA signatures can help you find new relatives and ancestors, or ancestors for whom there are no written records. The two primary tests for this purpose are the Y-chromosome test, and the Mitochondrial DNA sequencing. The Y-chromosome test relies on the male line while the Mitochondrial DNA sequencing needs a female line to test.

Both of these tests can be very helpful, but the Y-chromosome test has more scientific studies to support its use for genealogical purposes. While the Mitochondrial DNA sequencing is thought to be just as useful in proving relatedness, there are fewer tools and studies available to help interpret the results.

2. Proving Relationships—Proving relationships is one of the most useful aspects of DNA testing for genealogists. If you have a theory that two people might be related in your pedigree, but you have been unable to locate any documentation to prove your theory, DNA testing might be able to help. If the correct two (or more) people have their DNA analyzed, a signature match will indicate that they are closely related. A mismatch will confirm the two people are not closely related.

Exact matches of Y-chromosome tests will indicate that the two people are related within about five generations. If one or two markers on the signature are different, the two people are still related but the relationship is likely too distant to be genealogically relevant. A statistical model is used to determine the most likely number of generations between the two people.

Exact matches of Mitochondrial DNA sequencing also indicate relatedness, but there are not sufficient studies to determine the number of generations separating the two people.

3. Surname/Clan Reconstruction & Regional Migration—This is another common use of Y-chromosome tests (Y-chromosome Haplotype). Groups of families with a common or similar surname origin might want to know if (and how) they are related to one another. Individuals and groups can also discover genetic connection to others living in a country where the family is thought to have lived within a migration path. For example, a group of possibly related families with the surname of "Thomas" wants to find out if they all have a common male ancestor from whom they descended, who lived in a particular country. If a male surname representative from each family submits his DNA for the Y-chromosome test, the signatures can be compared to essentially reconstruct the tree back to a common ancestor.

Some individuals or families may have completely different signatures indicating

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they did not descend from the same common ancestor as the others. With a large enough sample of signatures, it is possible to tell which branch of the Thomas tree each family came from and how close that branch was to the common ancestor.

### What DNA Testing Will NOT Tell You

1. These tests will not reveal any information about your health or your predisposition for certain diseases. These tests do not look at the regions of your DNA that are associated with health information or genetic traits. Since the regions being examined are between your genes, regions called "Junk DNA," nothing in the results will imply any health-related information.

2. These tests do not create a unique personal genetic fingerprint that can be used to identify you. Since you and other family members will have exact matching results, these tests are not capable of proving unique identity. You can think of these tests as a unique family fingerprint.

3. These tests do not tell you which ethnic tribe you may belong to or the exact country of origin for your surname. They are designed, rather, to allow you to discover these genealogical answers by comparing to others who are proven to fall within certain genealogical characteristics.

For more information about ordering DNA testing kits, go to:  
[www.ancestry.com/rd/prodredir.asp?sourceid=831&key=P1025994](http://www.ancestry.com/rd/prodredir.asp?sourceid=831&key=P1025994)

Please direct any questions to Rachael McKinnon at: [rmckinnon@myfamilyinc.com](mailto:rmckinnon@myfamilyinc.com).

Source: *Ancestry Daily News* (<http://www.ancestry.com/dailynews>) 6/3/2003

## More on the Genographic Project

A couple of extra points may be of special interest to the genealogical community:

The "public participation" samples are being analyzed by Family Tree DNA, a company which specializes in DNA testing for genetic genealogy. Within the next few weeks, existing customers at Family Tree DNA will have the opportunity to add their results to the Genographic Project. Also, people who sign up for the Genographic Project can elect to share their results with others and obtain further, more detailed analysis from any of the genealogical testing companies.

The book I co-authored with Megan Smolenyak Smolenyak, *Trace Your Roots with DNA*, includes a chapter called "Around the World: Geographic Origins" which explains the techniques that will be used in the Genographic Project.

Ann Turner

GENEALOGY-DNA List Administrator

Search or Browse the archives, Subscribe or Unsubscribe at  
<http://lists.rootsweb.com/index/other/DNA/GENEALOGY-DNA.html>.

Co-author (with Megan Smolenyak Smolenyak) of *Trace Your Roots with DNA: Using Genetic Tests to Explore Your Family Tree*.

Source: *Ancestry Quick Tip* 5/2/2005



**Gregor Mendel**  
**1822-1884**  
**The Father of Genetics**

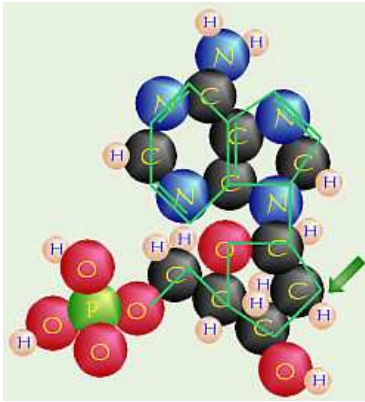
### What DNA Testing Will Not Tell You





## Have You Already Been DNA-Tested?

By Megan Smolenyak Smolenyak



*Deoxy nucleotide*

A few months ago, I was interviewed as part of an “expert panel” on the future of genealogy. Not surprisingly, I spouted off about my confidence in the ever-growing role of genetic genealogy, which I like to condense to ‘genetealogy.’

### Eye-Opener

When the article came out, I received a bit of an education. Others had remarked that genetealogy wouldn’t be much of a factor until the databases of genetic data were as large as those of genealogical data -- until the entries numbered in the millions as they do at Ancestry.com, FamilySearch.org and so forth.

It was only then that I realized for the first time that many -- and possibly most -- genealogists are unaware of an important, fundamental aspect of genetealogy. While it’s true that genetic databases are measured in the thousands rather than millions, each person whose results are included is representing tens or hundreds of relatives by proxy. In other words, the DNA databases are far beefier than their absolute numbers would seem to indicate.

### A Little Background

This might be a good time to back up a bit for a quick refresher. For those who are new to genetealogy, it helps to know that Y-DNA testing is by far the most popular. Only men have a Y-chromosome and it’s passed intact from father to son down through the generations. It travels through the centuries and worms its way through our family trees essentially the same way that surnames do, and that’s why surname projects are such a popular application.

Simply put, Y-DNA and surnames go hand-in-hand. Because of this, when one man gets tested, he represents a number of others sporting the same surname. His father, brothers, paternal uncles, and paternal cousins (both living and back in time through the generations) all share the same Y-DNA.

For instance, being female, I don’t have Y-DNA, so when I wanted to test the Smolenyak family I was born into, I asked my father. But I could have also turned to one of my brothers, my father’s brother, or a male Smolenyak cousin. Similarly, when I wanted to get my maternal grandmother’s maiden name (Reynolds) represented in a Reynolds surname project, I sought out a male Reynolds cousin -- in this case, a first cousin once removed -- to take the test.

### One Y-DNA Test Goes a Long Way

I was curious about the ripple effect of a single DNA sample, so as an experiment, I counted how many people in my family tree were represented by proxy by my father’s test. The result? 62. Of these, 32 are alive. Of course, that figure will grow over time as I continue my research and identify other Smolenyaks -- and as fresh sprouts are added to the branches of our family tree!

On the day I wrote this article, the largest testing company’s website indicated that their database contained 47,857 Y-DNA records. If my father is typical, then 47,857 x 62 people have been tested by proxy -- about 2,967,134 people by just one company.

How typical is my father’s 62? I have no idea. His family strikes me as fairly aver-

*(Continued on page 5)*

*Simply put, Y-DNA and surnames go hand-in-hand*



*Genealogists might be considered “Gene Detectives”!!!*

*(Continued from page 4)*

age size-wise, but even if we were to assume that his family is three times the average, this one company's database would still hold genetic clues for about a million people. And if his figure is on the low side, who knows how many millions have already been tested-by-cousin and simply don't know it?

### **Where to Dig?**

So how do you find out if you're one of the many whose distant cousin has already swabbed his cheek for your benefit? That's the tricky part. Ideally, in the future, genetic and genealogical databases will merge so that you'll be informed of DNA representation when you search on an ancestor's name in a conventional genealogy database, such as Ancestry World Tree.

Current DNA surname project managers might want to consider using the Post-em feature to add notes to relevant, existing family trees at Ancestry.com to inform others that a genetic project is underway and explain where to go for more information. Doing so could serve as a bit of a bridge for the time being. It's also possible to add a comment when uploading your own trees, although the only examples I can find at present are ones dealing with mtDNA, which focuses primarily on maternal lines.

But for now, if you want to find out if there's already a project on one or more surnames of interest to you, you'll have to do a little surfing as I explained in an earlier article.

To be thorough, you'll want to explore several DNA testing company sites and one or more of the online public access databases. Also, since the time I wrote this previous article, it's now become possible to search by surname at the Sorenson Molecular Genealogy Foundation site. Results come with pedigrees attached, so you can browse them for your ancestors -- a powerful option.

And the old standby -- googling a combination of 'DNA' and 'genealogy' and the surname of interest -- will frequently pop up a website dedicated to the relevant project. You might also want to try substituting a location or ethnic group for the surname, as there are more and more such projects. Louis Loccisano's Calabria DNA Project and Doug Miller's French-Canadian/Acadian/Metis/Cajun Heritage DNA Project are a couple of interesting examples (and if you have any roots in Osturna, Slovakia, be sure to contact me to join my village study!).

### **Already Tested?**

What if your surfing reveals that you're one of the lucky ones who have already been tested by proxy? Perhaps you've discovered that other descendants of your direct line great-great-great-grandfather have already participated in a project centered on your surname. If so, congratulations! Now what? You'll definitely want to communicate with the project's manager, and if the contact information is provided, that cousin of yours who was thoughtful enough to get tested. But if you want to learn still more, scribble down that pile of numbers that represents your DNA results and stay tuned for my next article on online resources for further analysis. That also goes for those of you who have just been tested yourselves and aren't sure what to do next!

Megan Smolenyak Smolenyak, co-author (with Ann Turner) of *Trace Your Roots with DNA: Using Genetic Tests to Explore Your Family Tree* (as well as *In Search of Our Ancestors, Honoring Our Ancestors and They Came to America*), can be contacted through [www.genealogy.com](http://www.genealogy.com) and [www.honoringourancestors.com](http://www.honoringourancestors.com).

Source: *Ancestry Daily News* (<http://www.ancestry.com/dailynews>) 12/8/2005 Copyright 1998-2005, MyFamily.com, Inc. and its subsidiaries.)



*All the flags blended into the Stars and Stripes.*

*So how do you find out if you're one of the many whose distant cousin has already swabbed his cheek for your benefit?*



*DNA may be the key to unlocking the door in that stone wall you have run into.*



*(Continued from page 6)*

common ancestor at some point. DNA testing can't reveal who that ancestor is, but you now know for sure that your lines converge at some point. And if you're really fortunate, you'll match with someone who's done a lot more research than you!

### **Testing Company's Database**

Even if your project lacks a dedicated website, the company you test with will notify you of any matches within your project or throughout its entire proprietary database. This assumes, of course, that you have signed the release form that allows the company to play matchmaker on your behalf. All this release permits the company to do is to seek matches and provide an email address to both parties when one is found.

Just as you might send an e-mail to someone who's posted a branch of your family tree online, you'll want to contact those who match you to compare notes. There is one caveat, however. As you peruse your project's results, you'll discover that haplotypes behave much like surnames in that some are more common than others. Some will have lots of matches -- almost the genetic equivalent of being a Smith -- while others will find that their results are very rare.

If your results are rare, by all means, contact your genetic mates. For instance, my father's Y-DNA is quite rare and has sat forlorn and matchless since 2001. Just when conducting research for this article, though, I discovered his first match -- a fellow from Poland. Did I email him? You bet.

But if your haplotype is very common, you might want to be more selective, just as you might think twice before emailing hundreds of Smiths. In fact, those with common haplotypes might want to consider upgrading to a higher resolution test to narrow the field of matches.

### **Public Access Databases**

When genealogy first came into being back in 2000, what I've outlined above were essentially our only analysis options -- that, and a scientific database ([www.yhrd.org](http://www.yhrd.org)) that genealogists tripped across and started using for our own purposes. Since then, several other databases have emerged. Now when you get your results, you can enter them at any or all of the following to see if any additional matches or other information are revealed:

- **YHRD:** A database for the scientific community that furnishes no genealogical data, but can be used for indications of geographic origin.
- **YBase:** Sponsored by DNA Heritage, but open to all regardless of which company you tested with. Can be searched by haplotype or surname, and has some fun features such one that plots your matches on a map.
- **YSearch:** Sponsored by Family Tree DNA, but open to all regardless of which company you tested with. Can also be searched by haplotype and surname and includes useful features such as the ability to attach a GEDCOM to your results.
- **SMGF:** This is where the Sorenson Molecular Genealogy Foundation (a topic for its own article) shares results, including pre-1900 pedigrees, from its worldwide study. Some of you may have participated if you gave a blood or mouthwash sample at a genealogical event over the last few years. You can add to the database (for free) by requesting a kit by mail and submitting it with your pedigree.
- **YFiler:** Another non-genealogical database that we've co-opted because of its ability to provide population group affiliation.

### **Happy Diving!**

For those of you who go database diving, I wish you good luck with your quest for genetic cousins. For those of you who would like to learn more, please explore my mini-library of articles on this topic.

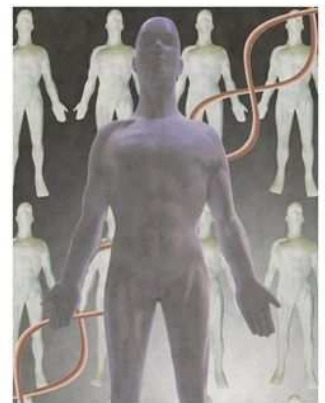
Megan Smolenyak Smolenyak,

Source: *Source: Ancestry Daily News* (<http://www.ancestry.com/dailynews>) 12/15/2005



*DNA, one more building block  
in your quest to find all the  
branches in your family tree.*

*If your results are rare, by  
all means, contact your  
genetic mates*



*The Human Genome  
Project*



**Marion County  
Genealogical Society**

*Mission Statement*

*The Marion County Genealogical Society is dedicated to creating and promoting an interest in genealogy, focusing on research in Marion County, Florida and in supporting members in their research.*

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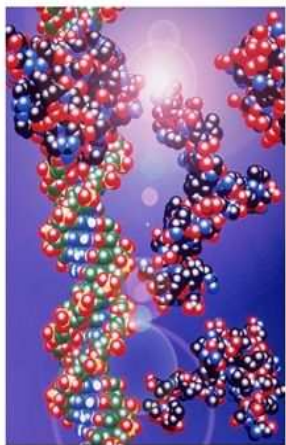
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**We're on the web:  
Mariongenealogy.tripod.com**

## DNA Testing

by Leslye Winslow



**DNA Double Helix and  
Protein**

Spurred by the recent PBS show *African American Lives*, I asked my dad to get a DNA test from Relative Genetics for the Winslow family project (at my cost). Although the results were mixed, I am very glad he participated. My dad is the only son of an only son of an only son, and he has no sons. Since the test is done on Y-chromosomes, through the male line, once he is gone (he's 75), that's it. Now his DNA is in the "permanent record" so to speak.

So if you have ever thought about a DNA sample, go ahead and do it. Even if it doesn't help you, it might help someone else in the future.

Leslye Winslow

Source: *Ancestry Daily News* (<http://www.ancestry.com/dailynews>)  
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