ILMO

SEPTEMBER 2018

Tasmanian Family History Society Inc.
Mersey Branch

From the Editor's Desk

Peter Marlow

This September Newsletter has a **focus on DNA** testing. Are you familiar with this new but growing, approach to genealogical research? You may want to know if it is for you and how to get started. You may already have explored DNA testing but aren't sure how to interpret the results. This special issue explains what the options are and how to make sense of matches once you have them. Finding connections in DNA database can be a very powerful tool for genealogy, but to make sure you get the most out of a test, it's best to be prepared.

Three months have passed since we made changes to our hours of opening to give Patrons and Members extended time to research their family history. The response has been a little mixed and perhaps it is appropriate to remind everyone that we **are open from 10am to 3pm every Wednesday and Friday**. Membership enables access to the Library free of charge while other Patrons are asked to pay $10- for unrestricted time. We do ask that if anyone wishes to use the internet they should make an appointment to ensure that priority access and assistance is given.

Our Librarian has placed **ten new publications** on the Library shelves (refer to titles shown in this issue). These and all books on our shelves may be used for reference purposes at any time during open hours.

Wanted - articles for ILMO

We are always looking for articles of interest or upcoming events to be included in the ILMO.
If you have any items you woukld like to be included please either bring them to the History Library or Email to
secretary@tfhsdev.com

Programme 2018-19 Year

September
17th (Monday) - Committee Meeting

October
15th (Monday) - Committee Meeting

November
2nd (Friday) - Invitations to Dinner & Raffle Books
19th (Monday) – Committee Meeting

December
7th (Friday) Library Closes for Christmas Break
9th (Sunday) Christmas Lunch

2019

January
16th (Wednesday) Library Re-Opens
21st (Monday) Committee Meeting

February
2nd (Saturday BBQ for all Members)
18th (Mondasy) Committee Meeting

Committe Members

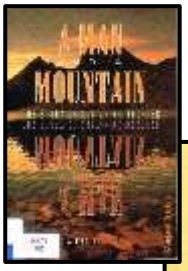
President …….	Ros Coss
Vice President .	.Peter Marlow
Secretary……	Sue-Ellen McCreghan
Minute Sec …	Helen Anderson
Treasurer……	Gary Bryant
Librarian…….	Rosie Marshall
Committee -	Ross Warren
	Gloria Bowden
	Neville Bingham
Research	Ros Coss
	Gary Bryant
Library Assistant .	Marilyn Oakley
Publishing / Ilmo	.Peter Marlow
Book Sales	Anne Kiely
Library Assistants	Anne Lowe
	Denise Young
	Sandra Henwood
	Pat Coy
Delegates State Committee	
	Sue –Ellen McCreghan
	Ros Coss
	Gary Bryant
Maintenance	Neville Bingham

Recent Accessions

At our Library as reported by our Librarian

Rosie Marshall

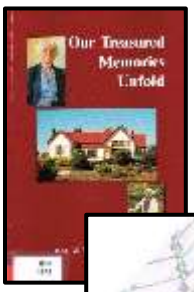
Giordana, Margaret; *A Man and a Mountain* –
The Story of Gustav Weindorfer



Dunstan Reunion Committee, *Dunstan John and Ann 1847-1978*

Brand,Ian; *Sarah Island*

Harnett, Ray W; *Our Treasured Memories Unfold*



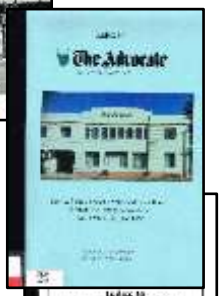
Baade, Elizabeth & Naden, Janine; *Down Memory Lane*–
The History of Fulton Street, Ulverstone

Nickols, Elizabeth; *Fair Dinkum Dutch Courage*
Stories of the Dutch Settlers of Ulverstone

Gill, Jenny; *Engraved in Memory*

Wherrett, D.G.; *Around Another Corner*
Camera Views of Launceston in the 1940s

TFHS Inc., Burnie Branch; *Index to The Advocate*
1. Oct.1960 to 31.Dec.1960



TFHS Inc., Hobart Branch; *Undertakers of Hobart Vol* 1V.
Index to H.C. Millington Pty Ltd., Funeral Records, Pt. 9,
June 1970 to April 1973

What is DNA and how does it work?

Last updated Thu 11 January 2018 By Tim Newman

DNA is perhaps the most famous biological molecule; it is present in all forms of life on earth. But what is DNA or deoxyribonucleic acid? Here, we cover the essentials.

Virtually every cell in your body contains DNA or the genetic code that makes you *you*. DNA carries the instructions for the development, growth, reproduction, and functioning of all life.

Differences in the genetic code are the reason why one person has blue eyes rather than brown, why some people are susceptible to certain diseases, why birds only have two wings, and why giraffes have long necks.

Amazingly, if all of the DNA in the human body was unraveled, it would reach to the sun and back more than 300 times.

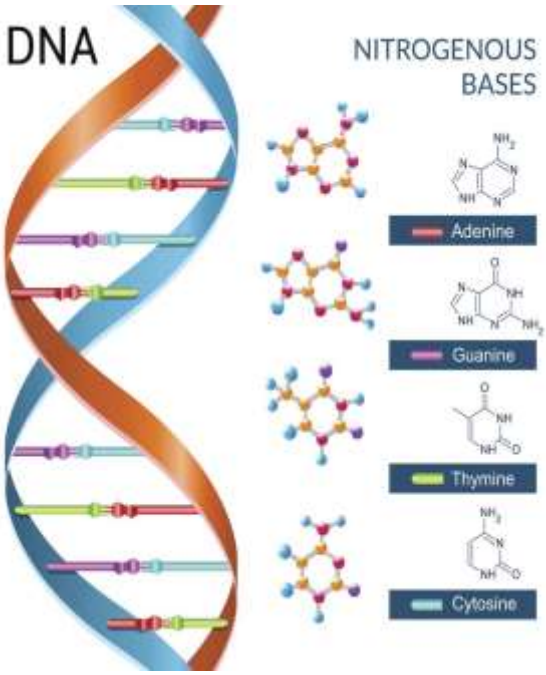
In this article, we break down the basics of DNA, what it is made of, and how it works.

What is DNA?

In short, DNA is a long molecule that contains each person's unique genetic code. It holds the instructions for building the proteins that are essential for our bodies to function.

DNA instructions are passed from parent to child, with roughly half of a child's DNA originating from the father and half from the mother.

Structure



DNA's double helix.

DNA is a two-stranded molecule that appears twisted, giving it a unique shape referred to as the **double helix**.

Each of the two strands is a long sequence of **nucleotides** or individual units made of:

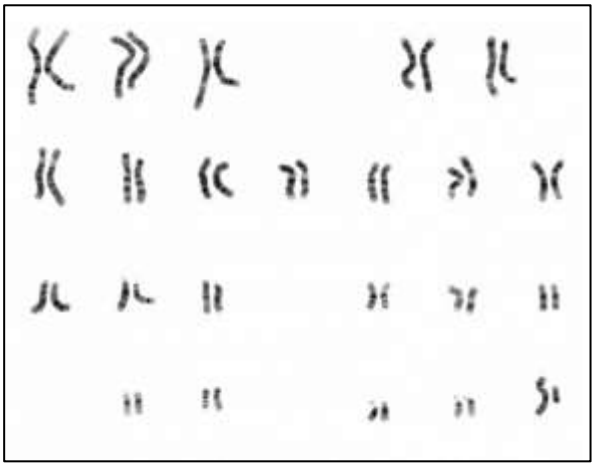
- a phosphate molecule
- a sugar molecule called deoxyribose, containing five carbons
- a nitrogen-containing region

There are four types of nitrogen-containing regions called **bases**:

- adenine (A)
- cytosine (C)
- guanine (G)
- thymine (T)

The order of these four bases forms the genetic code, which is our instructions for life.

The bases of the two strands of DNA are stuck together to create a ladder-like shape. Within the ladder, A always sticks to T, and G always sticks to C to create the "rungs." The length of the ladder is formed by the sugar and phosphate groups.



The complete set of chromosomes in a human male.
Image credit: National Human Genome Research Institute

Packaging DNA: Chromatin and chromosomes

Most DNA lives in the nuclei of cells and some is found in mitochondria, which are the powerhouses of the cells.

Because we have so much DNA (2 meters in each cell) and our nuclei are so small, DNA has to be packaged incredibly neatly. Strands of DNA are looped, coiled and wrapped around proteins called **histones**. In this coiled state, it is called **chromatin**. Chromatin is further condensed, through a process called **supercoiling**, and it is then packaged into structures called **chromosomes**. These chromosomes form the familiar "X" shape as seen in the image above.

Each chromosome contains one DNA molecule. Humans have 23 pairs of chromosomes or 46 chromosomes in total. Interestingly, fruit flies have 8 chromosomes, and pigeons have 80.

Chromosome 1 is the largest and contains around 8,000 genes.

The smallest is chromosome 21 with around 3,000 genes.

Each length of DNA that codes for a specific protein is called a gene. For instance, one gene codes for the protein insulin, the hormone that helps control levels of sugar in the blood. Humans have around 20,000–30,000 genes, although estimates vary.

What is a gene?

Our genes only account for around 3 percent of our DNA, the remaining 97 percent is less well understood. The outstanding DNA is thought to be involved in regulating transcription and translation.

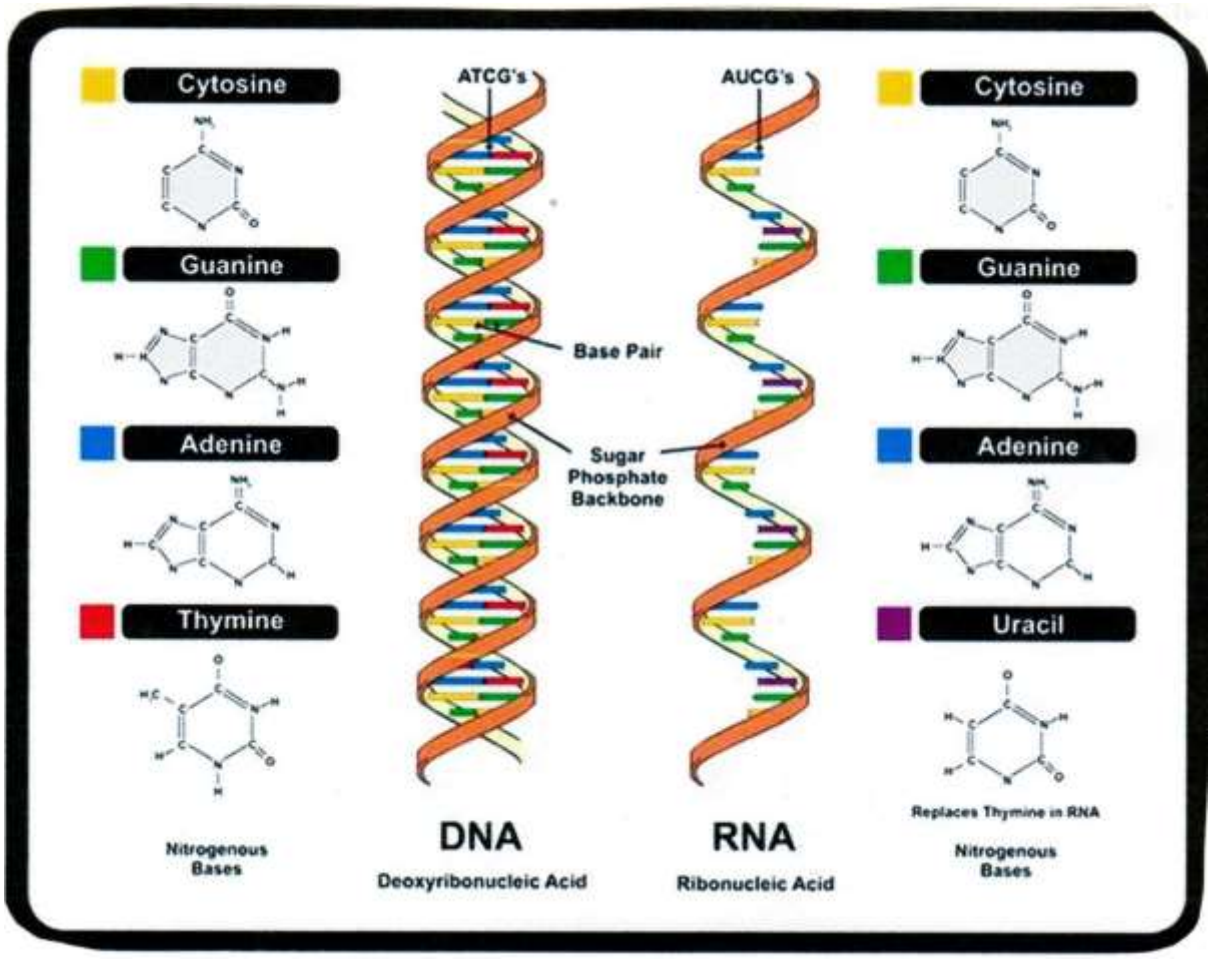
Genes affect many aspects of our lives, possibly even our empathy levels.

How does DNA create proteins?

For genes to create a protein, there are two main steps:

Transcription: The DNA code is copied to create messenger RNA (mRNA). RNA is a copy of DNA, but it is normally single-stranded. Another difference is that RNA does not contain the base thymine (T), which is replaced by uracil (U).

Translation: The mRNA is translated into amino acids by transfer RNA (tRNA). mRNA is read in three-letter sections called **codons**. Each codon codes for a specific amino acid or building block of a protein. For instance, the codon GUG codes for the amino acid valine
There are 20 possible amino acids.



In a nutshell
Chromosomes are tightly coiled strands of DNA. Genes are sections of DNA that code individual proteins.
Put another way, DNA is the master plan for life on earth and the source of the wonderful variety we see around us.

How DNA Testing Can Help Your Family History

DNA testing and how it supports family history is one of the hottest topics in the field of Family History Research. Jim Brewster, Group Project Liaison at FamilyTree DNA recently spoke at RootsTech 2016. He explained the top 10 reasons to take a DNA test. Among other things, they include contributing to breakthrough research, learning the ethnic makeup and migrations of your ancestors and discovering new cousins.

As a reminder of your biology class, you get your DNA from your parents. DNA tests analyze the chromosomes that are found in your cells. You have several types of DNA that can be used for genealogical testing, including mitochondrial, autosomal and X and Y chromosomes that determine your gender. Think of pictures of tightly wound thread-like structures (shown below).

There are three main types of DNA testing, including: autosomal DNA, YDNA and mitochondrial DNA (mtDNA).

Autosomal DNA testing is the most common test and the results provide you with your ethnic background percentages by regions and subregions. In addition, autosomal DNA test results will provide you with family members (who have also been tested) who share common ancestry in the last five generations. The results also show how closely they are related to you, based on your DNA results. Autosomal DNA test results include both your maternal and paternal family lines.

YDNA testing traces the direct paternal line for men who get this test. If you think of your family tree in landscape mode, YDNA testing traces the direct male line across the top of your tree or pedigree chart. Similar to other DNA test results, YDNA test results provide a list of others who have been tested and that have a common male ancestor within the last 25 generations. YDNA testing also provides the haplogroup and sub-groups that you belong to and the migration patterns of the haplogroup. For YDNA testing, you can choose to test 37, 67 or all 111 DNA markers — as you might expect, the more markers you choose to test the more detailed your results and the more you can expect to pay for the testing. FamilyTree DNA allows

Mitrochondrial DNA testing traces your maternal direct line for up to 52 generations. Similar to YDNA testing for a man's direct paternal line, mtDNA test results can provide both the haplogroup and ancestral migration routes of your maternal line. And like other DNA testing, mtDNA testing provides you a list of others who have been tested and to whom you are related to and how closely related.

All three types of DNA test results can help your family history efforts by confirming things you already know as well as connecting you with others. Many people are able to break through the all too common brick walls with the help of a second- or third-cousin whom they have never met.

DNA testing is available from FamilyTree DNA and several other companies. If you've already had your DNA tested, consider uploading your results to additional DNA databases to learn even more and to find additional cousins. One such DNA database that is relatively new, yet growing rapidly is DNA.land — DNA.land is both the name of the project and its URL web address. DNA.land accepts DNA file uploads from FamilyTree DNA, Ancestry.com and 23andme. The consent agreement is both short and simple enough to understand in a few minutes. 90% of DNA.land users have one or more cousin matches — and this will grow as more people upload their autosomal DNA test results.

Finally, consider joining a group project to learn even more. Group projects are organized by surnames, haplogroups, geographical locations or a combination of these. Try an internet search for your surname and DNA — in my case, I searched for "Davidson DNA" to find my surname group project. Each group project has a volunteer administrator that can help you get started.

Focus on: DNA and Genealogy

Now that it has become more affordable, DNA testing among family historians has exploded in popularity. There are millions of people who have put their DNA results in genealogy databases and the numbers are growing every day. Have you taken a test or are you considering doing so? If you are thinking about it or have taken one but are not sure how to interpret the results, this DNA special will endeavor to explain the pros and cons, and will show you how to make the most of testing.

A DNA test can be very insightful, enabling you to make connections with distant relatives, verify your research and potentially break down brick walls. There are some downsides to bear in mind, however. Firstly, a note of caution. How prepared are you to be surprised? How would you feel if you discover that your family line wasn't actually yours? Be prepared to uncover that you might not be related to whom you think you are. You might discover illegitimacy or adoption in your recent past that you were unaware of.

Also understand that DNA testing is not a substitute for genealogy research; rather the two approaches help corroborate each other. A DNA test on its own can be a fairly fruitless for a family historian. Most companies who provide a service to family historians give some kind of ethnic result indicting where your forebears came from thousands of years ago, but these profiles are fairly imprecise.

One last point: just because you are presented with a match in the database doesn't mean you are actually related. The test does not tell you for sure, it gives you a probability. The closer the match, the more likely the connection is to be real.

What Can DNA Tests Do For You?

DNA can help verify your research. It can indicate that you have the correct ancestor, when you match people who also descend from that person. DNA testing can reassure you that your paper research is correct. This is a real benefit to testing. Finding matches in the database will corroborate your research.

Another reason to test is to connect with relatives in the databases. The vast majority of connections will be distant cousins, just because statistically we have many, many more distant cousins than close relatives. Making contact with your newly discovered cousins, particularly those to whom you are more closely related, may assist your research. For example, they may be able to tell you what happened to people who disappeared from your tree, if they are a descendant. They may have family stories or documents that you do not have. They may have broken through a brick wall that you are confronted with. In working together you might be more successful in progressing your research than you would be alone.

When you look at the matches you may also get tantalizing clues that you can explore further. For example you might find that particular locations keep coming up. While you might not think you have anyone in your tree from that village or town (or even country), this may be an indication that in fact you do.

There are challenges thrown up by DNA testing. As well as the potential shock of finding that your tree is right or discovering paternity surprises, a downside is that making the most of the results can be time consuming. It may be fairly obvious how you are connected to people. Many people in the database will not have a public tree or maybe have not done any genealogy at all, so unless you contact them and they are responsive, many matches can be a dead-end.

Another limitation for those living outside of America is that most people who have tested to date are in America. Unless you have Irish ancestry, this can mean that for many people in the British Isles or Australia, those matches can be of little use.

The American matches are often very distantly related and it is difficult to work out how they might be connected to you. (Those with Irish ancestry however could have more success as so many Americans have Irish forebears.) If you are not British or Irish in ancestry do check how many people are in a database from your country of origin and consider if it is worthwhile going ahead

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.Different Types of Test

As we are all human, we have pretty much the same DNA – over 99% of your DNA will be the same as another random person you walk past in the street. DNA tests compare mutations, hat is the differences between us. We all have small amounts of these and when we compare our mutations sometimes we get matches. Matches like this indicates that we are related. The trick for the genealogist is to find out how. How the various providers do the tests and what mutations they look for is outside the scope of this newsletter, but the main take away for your purposes is to understand that various databases

will host your DNA results and match them to others with the same mutations.

There are three tests on offer which look at different types of DNA – autosomal, mitochondrial and Y-chromosome. Autosomal is the most commonly taken test by family historian, for good reason. Mitochondrial and Y-chromosome may not be so useful for you, as explained below.

We all inherit autosomal chromosomes from our parents, so both men and woman can take this test. Half of this DNA comes from one parent and half from the other. However, due to the way the DNA is shuffled, interestingly we do not pass on our parent's DNA in equal amounts to our children, the amount varies. This means that after a few generations you have very little DNA from certain family lines. Therefore you might get fewer matches from that line. It doesn't mean you are not related, just that the test can't pick it up. To compensate for this, you could test a parent, if that is a possibility. He or she will have twice as much DNA from their particular family lines, doubling the chance of finding a match in those branches of the tree.

Generally autosomal DNA tests are sensitive enough to tell us about connections going back 200 years; this will be the mid to late 1700s typically – which is why they can corroborate our paper research. If you have an elderly relative who you can test, possibly you could push this range back a decade or two.

Another test available is a mitochondrial DNA test. We all have this so anyone can take the test. However, what is key is that mitochondrial DNA is passed from mother to child. This means it follows the female line, as sons do not pass on their mitochondrial DNA. If you take this test you might find very few matches. It is only really useful if you want to check if you match someone who you think will have the same mitochondrial DNA.

The final test is the Y-chromosome test. This chromosome is passed from father to son and therefore can correlate to surnames. If you are female you can't take it as you don't have Y chromosome. You need to find a close relative from the line of interest to take the test on your behalf. As for mitochondrial DNA if you just take this speculatively you are unlikely to find matches in the databases. It is mainly used by people wanting to know if they are related to a particular person, or by one-namers.

Both mitochondrial and Y-chromosome tests have a range that goes back hundreds of thousands of years. That means they can tell whether you and another person are related that far back, but they can't tell you when your common ancestor lived.

Who Should I Test With?

There are various DNA testing services available, including those from Family Tree DNA, Ancestry DNA and My Heritage. Then price is around A$100- including postage.

Key questions to ask yourself are:

- What kind of test do I need? Autosomal, mitochondrial or Y-chromosome.
    - How much does the test cost including shipping?
    - Do I need to pay a subscription fee to use the database?
    - . How many people are in the data base from my country of origin?
    - How interested in family history is the database
    - Am I allowed to export my results and put them on other databases?
    - Who owns my data and what will they use it for?

How to Interpret the Results?

There are two main ways you can approach DNA testing. One is to just test one person (it could be yourself or another relative) and see who matches the data base. If you are doing this then an autosomal test is the best one to take. It will generate the most matches and cover all of your pedigree lines. Furthermore, your approach will be more effective the more databases you have your results in.

Once you are in the databases, you can review your matches. There are various ways to shortlist them, as you could have thousands. You can look at matches which are close, ie fourth cousins or closer. A fourth cousin will be separated from you perhaps by 10 degrees. So, it could be someone who shares your great, great grandparents. If you and a match both have family tree going back this far, then you can compare the trees and try to work out how you are related. Another way of shortlisting is to search for surnames or locations in common. Looking at surnames works best if you choose unusual names. Many people have a Smith in their tree, but if you have a more unusual name, then finding a shared surname is more likely to throw up a common ancestor.

When you have worked out how you are connected to someone, then the Ancestry DNA database will tell you if they have any matches in common with you. If you know how you are connected to the first match, it will give you a clue a how you are connected to any joint matches.

The second approach to testing is to set out to answer a specific question, such as:

- I think I am related to this person.
- I have the same surname as this person, are we related?
- I am doing a one-name study and want to find out how holders of the same surname (and variants) are related.

In this case you would need to test at least two people and work out which type of test (autosomal, Y-chromosome or mitochondrial) will be most likely to tell you if you are related