

DNA and the Middlebrook(s) Family

By Dave Clark
Hillsboro, Texas
July 18, 2008

What will we cover?

- Problems we encounter with genealogy
- How can science help?
- What is DNA
- How is DNA used in genealogy?
- How does this apply to the Middlebrook(s)?

Problems we encounter with genealogy

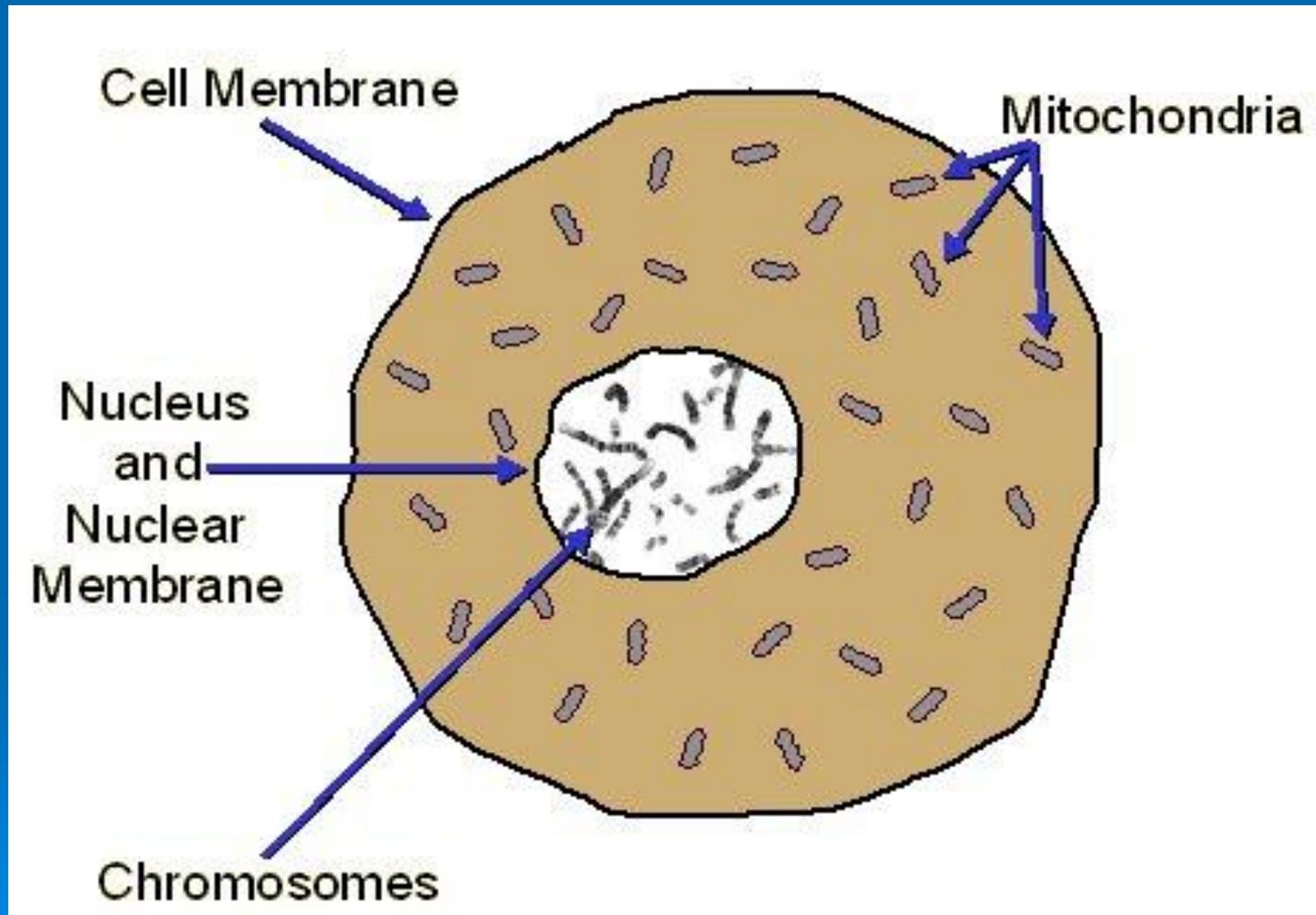
- Records are less reliable or non-existent the further back we go
- Records can be misleading...
 - Example: A US census list for a family
 - Does not reveal a “farm adoption”
 - May not reveal previous spouse: “Who is mom?”
 - Example: A Birth record
 - May not reveal the biological father (rape, etc)

How can science help?

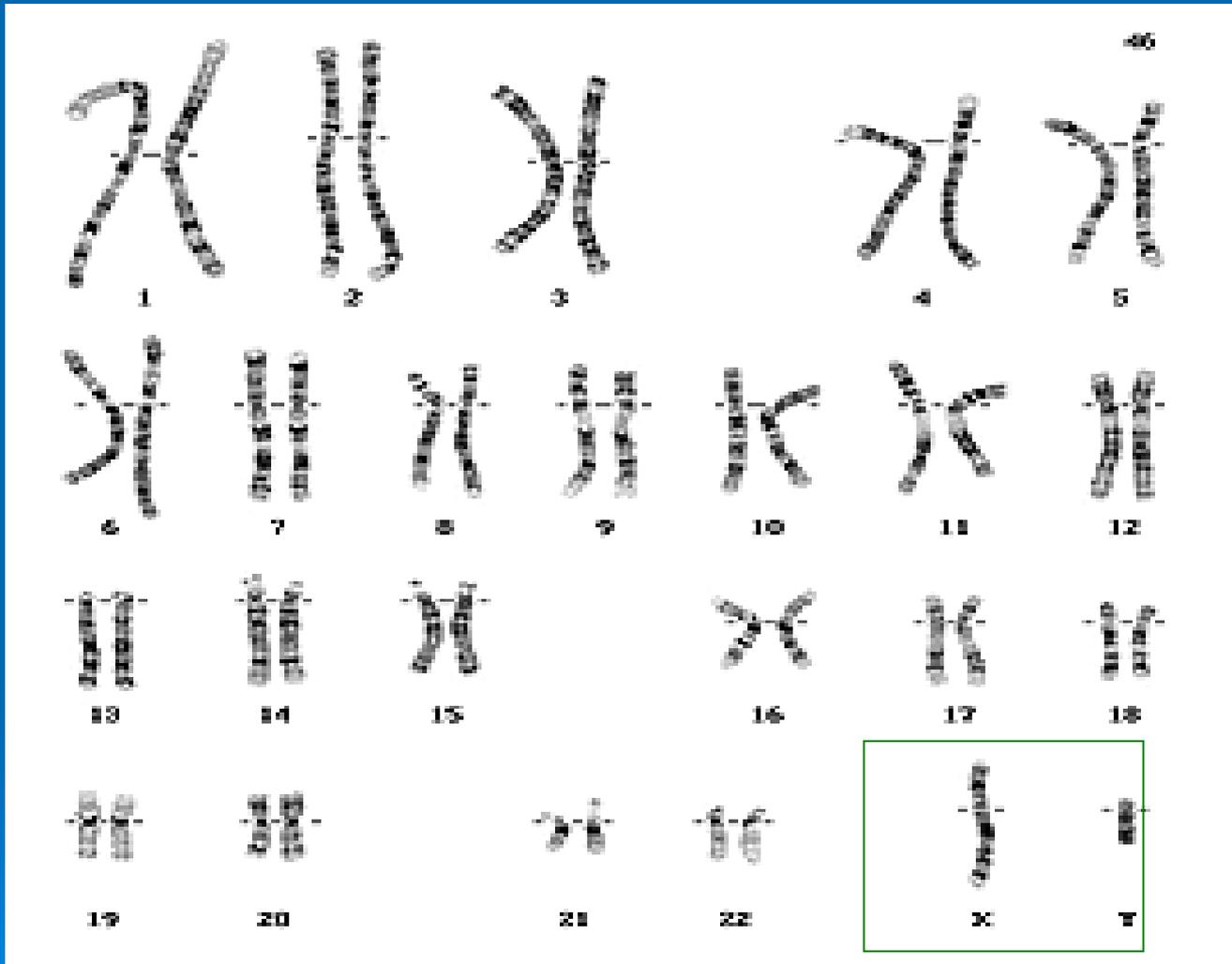
We now know that:

- Y-DNA is passed from fathers-to-sons
 - Mitochondrial DNA is passed from mothers to daughters
 - DNA tests give precise numerical values and highly-repeatable results
 - DNA tests can be used to determine the likelihood of a common ancestor for 2 people.
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The Human Cell



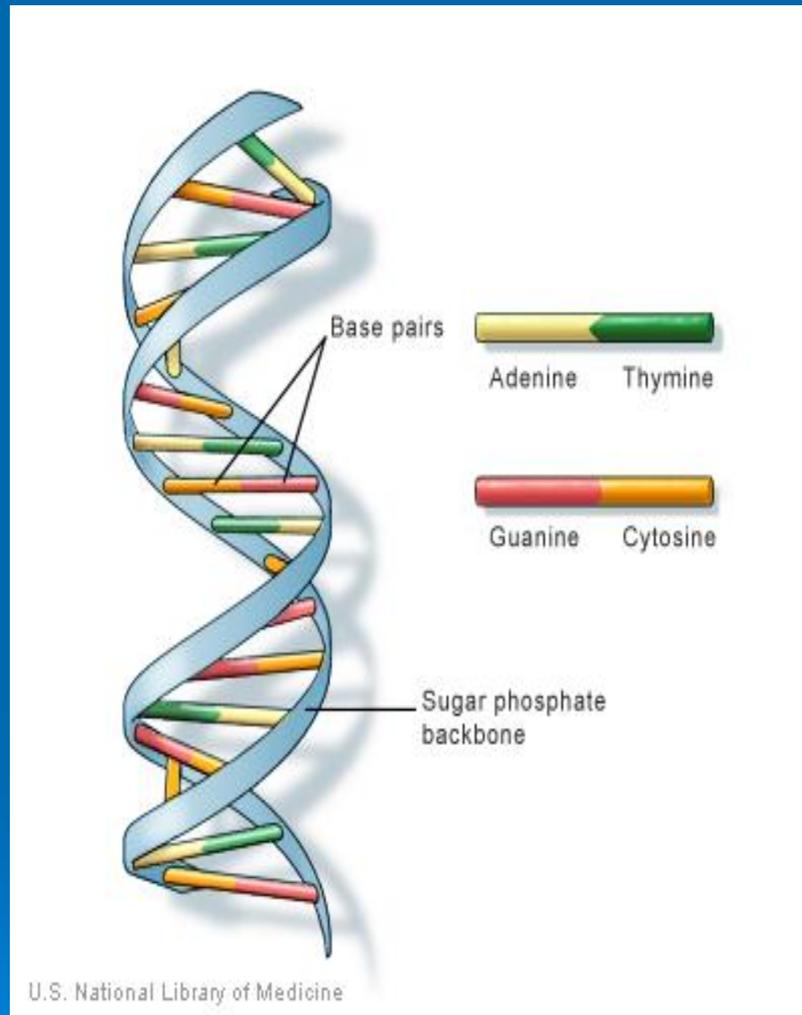
The Human Chromosomes



22 pairs
Autossomes

1 pair sex
chromosomes

DNA = Deoxyribonucleic acid



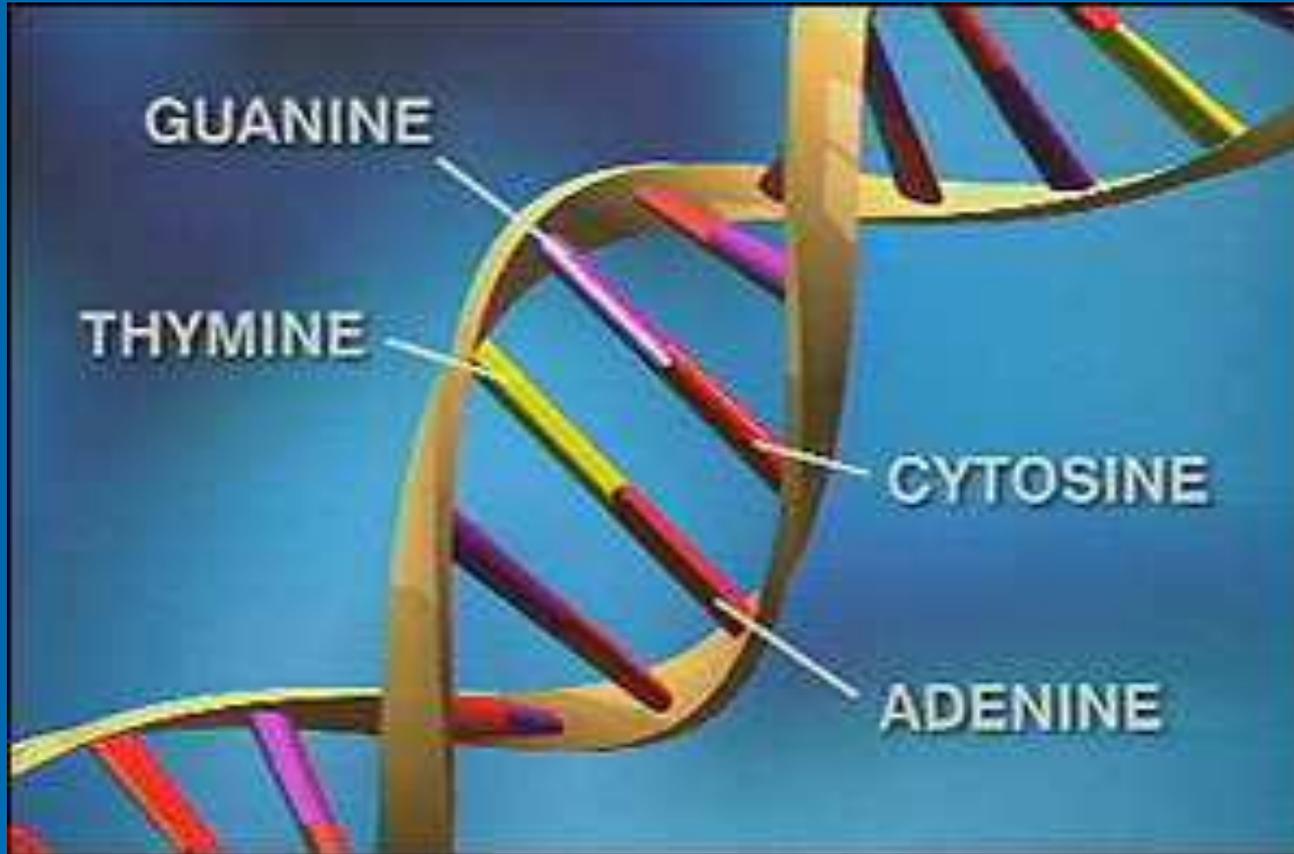
This helix spiral represents the structure of a human **Chromosome**.

Chromosomes are in the nucleus (center) of the cell.

There is also **mitochondrial** DNA that is found in liquid area surrounding the cell nucleus.

The “helix Spiral” in our cells has pairs of strands...

How can we use DNA info?



We count these pairs of strands, at different places along the chromosome.

A typical DNA test kit

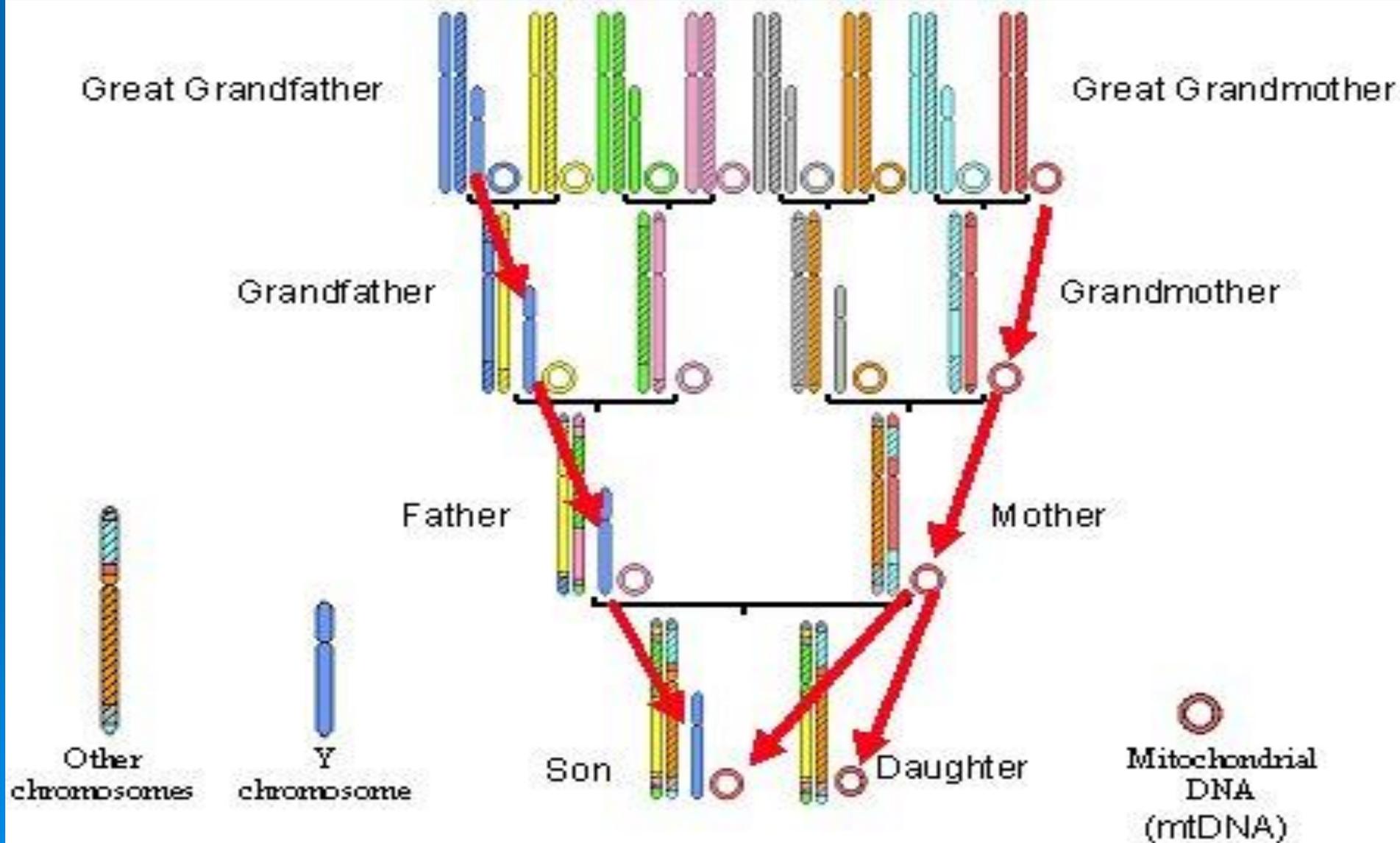
Not a
Blood test!



A simple painless cheek-swabber and storage bottle

Y-DNA Test

mtDNA Test



Typical Y-DNA Results

PANEL 1 (1-12)												
Locus	1	2	3	4	5	6	7	8	9	10	11	12
DYS#	393	390	19 [*]	391	385a	385b	426	388	439	389-1	392	389-2
Alleles	13	24	14	11	11	14	13	12	12	13	13	30

PANEL 2 (13-25)													
Locus	13	14	15	16	17	18	19	20	21	22	23	24	25
DYS#	458	459a	459b	455	454	447	437	448	449	464a ^{AA}	464b ^{AA}	464c ^{AA}	464d ^{AA}
Alleles	17	9	10	11	11	25	15	19	31	14	14	16	19

Markers = different locations along the chromosome
 (You can order a 12, 25, 37, or 67 marker test!)

Alleles = count of pairs at a specific location,
 ie “**Locus**” ... each is labelled with a **DYS #**

How do we Compare results?

ID#	Alleles										DYS#										
	3	3	1	3	3	3	4	3	4	3	3	3	4	4	4	4	4	4	4	4	4
	9	9	9	9	8	8	2	8	3	8	9	8	5	5	5	5	5	4	3	4	
	3	0	^	1	5	5	6	8	9	9	2	9	8	9	9	5	4	7	7	8	
					a	b			i		ii		a	b							
person A	13	26	13	12	12	14	12	12	11	13	13	29									
person B	13	26	13	12	12	14	12	12	11	13	13	29									
person C	13	26	14	12	12	14	12	12	11	13	13	29									
person D	12	24	14	11	11	15	12	12	12	13	13	29	15	10	10	11	11	26	15	19	
person E	12	24	14	11	11	15	12	12	12	13	13	29	15	10	10	11	11	26	15	19	
person F	12	24	14	11	11	14	12	12	12	13	13	29	15	10	10	11	11	26	15	19	
person G	12	24	14	11	11	13	12	12	12	13	13	29	15	10	10	11	11	26	15	19	
person H	12	24	14	11	11	13	13	12	12	13	13	29	15	9	10	11	11	25	15	19	

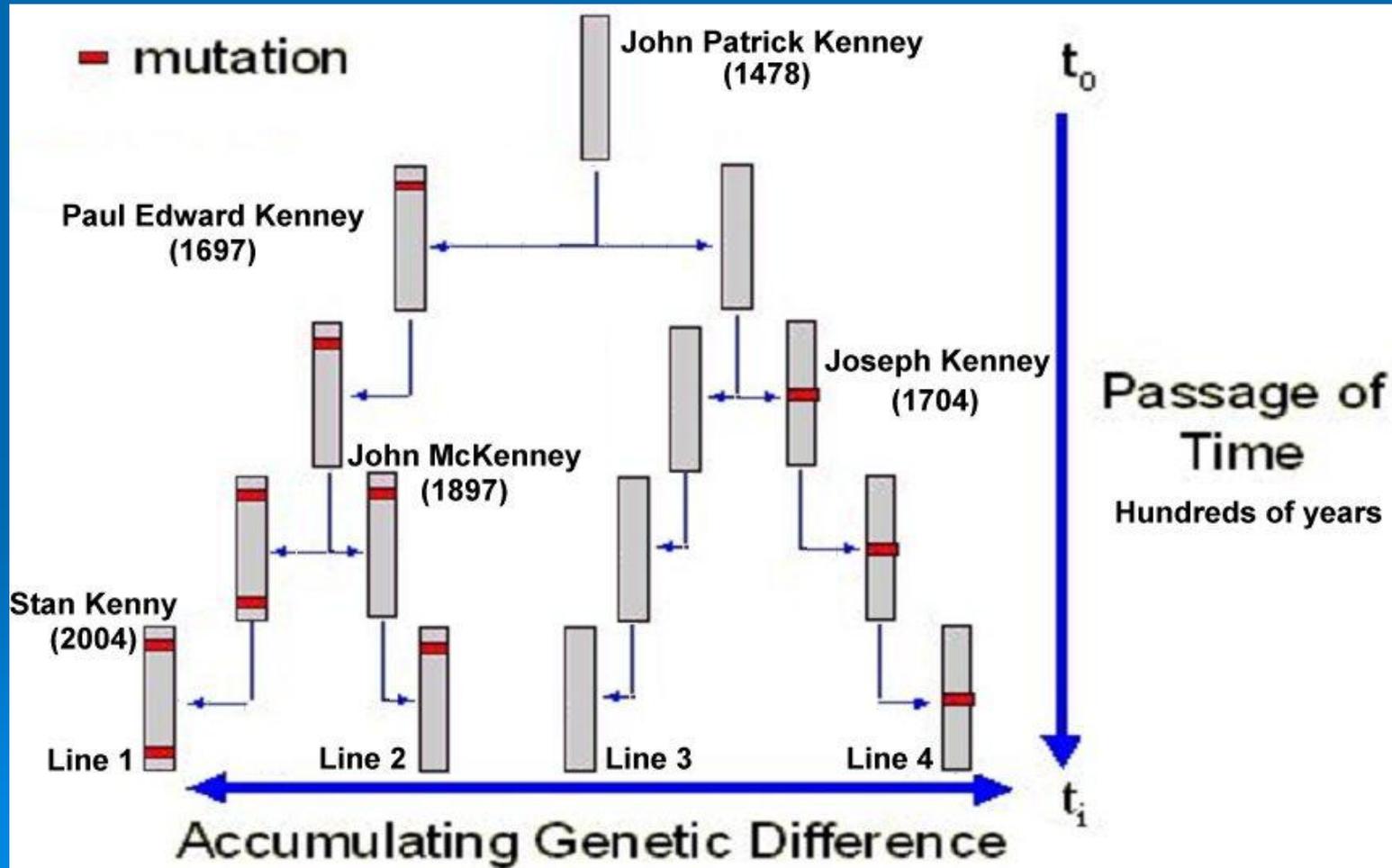
Person C's 3rd allele (count) is 14, which is different from person A & B, but same as D-H

The differences are called **Mutations!**

Mutation!

Sometimes a child can be born with a locus having 1 extra (or less) pair

While mutations occur with time, individuals that share a common ancestor, should show the same markers, or markers with very few mutations.



The Middlebrook(s) DNA Tests

- 12 tests completed so far
- Main group has been identified (8 of 12)
 - Includes original immigrant Joseph 1610 UK
 - The Fairfield CT and South US are kin!
- 3 other groups also identified
 - common ancestor likely before 1500 AD
 - Robert 1766NC, Garland 1777VA
 - No common ancestor (adoption, etc) **to person tested**
 - Joseph 1773 (ie James Bird Middlebrook 1815GA)
 - More DNA tests needed, ideally from lines of other sons

The Middlebrook(s) DNA Tests

Earliest Known Ancestor	3 9 3	3 9 0	1 9 9	3 9 1	8 5 a	3 8 b	4 2 6	3 8 8	4 3 9	3 8 9	3 9 2	8 9 1	3 9 2	4 5 8	4 9 a	4 9 b	4 5 5	4 5 4	4 4 7	4 4 7	4 4 8	4 4 9	4 6 a	4 6 b	4 6 c	4 6 d	4 6 0
Lineage I	13	23	14	11	11	14	12	12	12	13	13	29	17	9	10	11	11	24	15	19	29	15	16	17	19	11	
Isaac 1753NC	13	23	14	11	11	14	12	12	12	13	13	29															
Isaac 1753NC	13	23	14	11	11	14	12	12	12	13	13	29	18	9	10	11	11	24	15	19	29	15	16	17	19		
Joe 1610Eng	13	23	14	11	11	15	12	12	12	13	13	29	18	9	10	11	11	24	15	19	29	15	16	17	19		
Thomas 1763NC	13	23	14	11	11	14	12	12	12	13	13	29	17	9	9	11	11	24	15	19	29	15	16	17	19		
Sims 1762NC	13	23	14	11	11	14	12	12	12	13	13	29	17	9	10	11	11	24	15	19	29	15	16	17	19	11	
Isaac 1753NC	13	23	14	11	11	14	12	12	12	13	13	29	17	9	10	11	11	24	15	19	29	15	16	17	19	11	
John 1754VA	13	23	14	11	11	14	12	12	12	14	13	30	17	9	10	11	11	24	15	19	29	15	16	17	19		
Thomas 1763NC	13	23	14	11	11	14	12	12	12	13	13	29	17	9	10	11	11	24	15	19	29	15	16	17	19	11	
Lineage II	13	24	14	10	10	14	12	12	12	13	13	29	17	9	9	11	11	23	15	19	31	15	15	17	17	11	
Robert 1766NC	13	24	14	10	10	14	12	12	12	13	13	29	17	9	9	11	11	23	15	19	31	15	15	17	17	11	
Robert 1766NC	13	24	14	10	10	14	12	12	12	13	13	29	17	9	9	11	11	23	15	19	31	15	15	17	17	11	
Joseph 1773NC	13	23	15	10	12	15	11	15	13	14	11	30	19	8	9	11	11	26	14	18	29	11	14	14	15		
Garland 1777VA	13	24	13	11	11	14	12	12	12	12	13	28	17	9	10	11	11	25	15	19	29	15	15	17	17		

Summary

- Problems we encounter with genealogy
 - Records quality/quantity drop over time
- How can science help? Y-DNA tests!
- What is DNA & how is it used in genealogy?
 - Trace back lines of ancestors; find unrelated
- The Middlebrook(s) Results
 - Main group identified
 - Connecticut = Southern kin!
 - Questions on other less-related lines

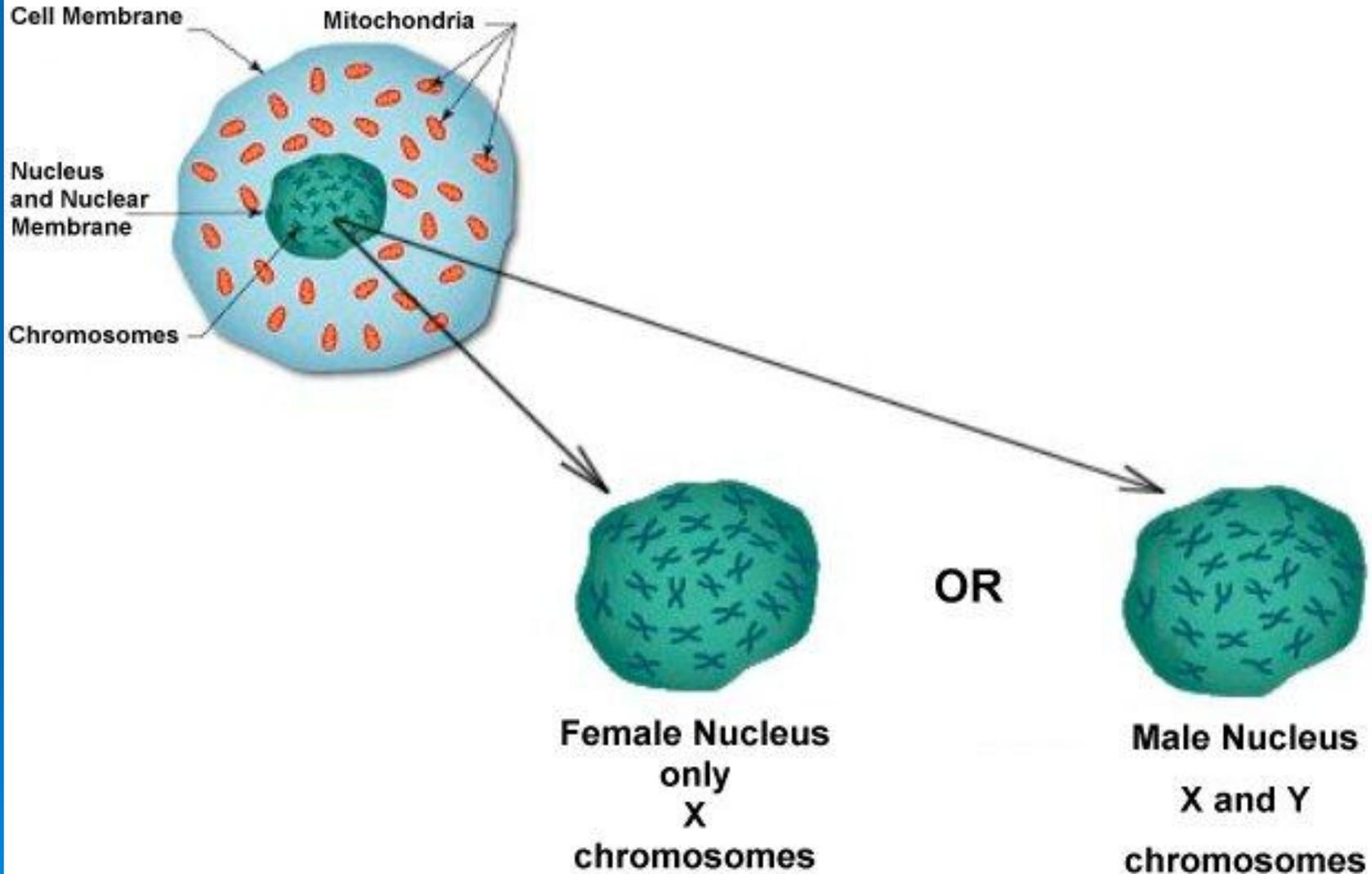


“You don’t look anything like the long haired, skinny kid I married 25 years ago. I need a DNA sample to make sure it’s still you.”

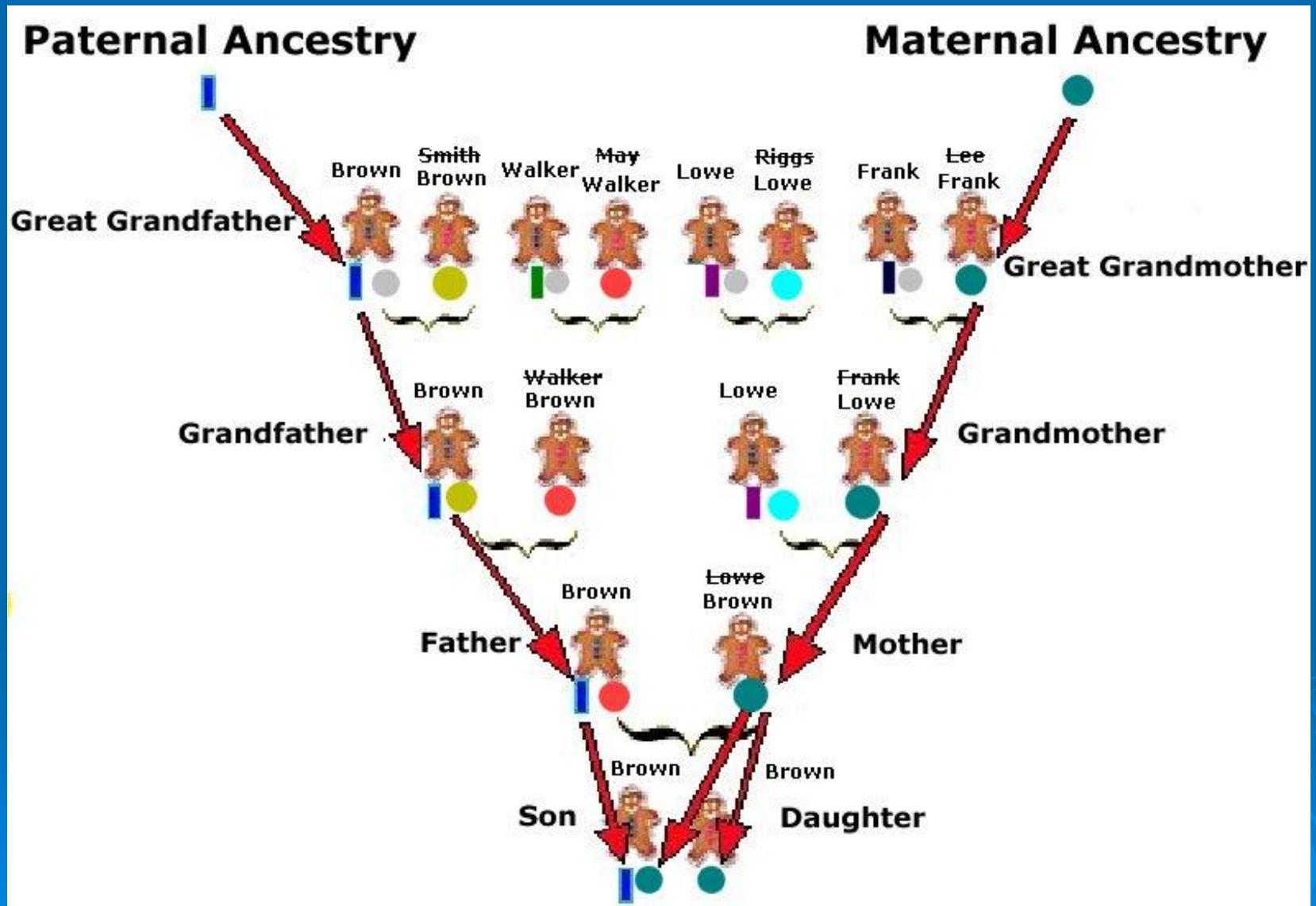
Backup Slides



Male and female X and Y



Why mtDNA works poorly for genealogy:



The mother's last name change upon marriage: How to find other mtDNA matches?

Meaning of matches for same or similar surname



Probability for Most Recent Common Ancestor (MRCA)

Number of matching markers	50% probability that the MRCA was no longer than this number of generations	90% probability that the MRCA was no longer than this number of generations	95% probability that the MRCA was no longer than this number of generations
10 of 10	16.5	56	72
11 of 12	17	39	47
12 of 12	7	23	29
23 of 25	11	23	27
24 of 25	7	16	20
25 of 25	3	10	13
35 of 37	6	12	14
36 of 37	4	8	10
37 of 37	2	5	7