Joan Doe

Premium Female DNA Ancestry Report

Dxxxx- 8xxxxxx

A mitochondrial specimen was extracted, amplified by the PCR process and sequenced by DNA Diagnostics Center for markers or mutations in the control sections of the D loop known as Hypervariable Regions I and II, containing several hundred base pairs of DNA. The differences from the reference series mutations are reported from the lab in the page at the end of this report (rCRS; Andrews; Anderson). A mutation is any inheritable change in a nucleotide in the DNA sequence of genes. Although mutations in the D loop of mitochondrial DNA do not change the individual or have any effect, they have been found useful in tracing female, or mitochondrial, lineages (Richards and Macaulay).

According to Richards et al. (2000), the subject's mutations belong to haplogroup T with the following exact matches.

Northeast Europe 11	Scandinavia 7	Northwest Europe 3
West Mediterranean 4	North Central Europe 2	Southeast Europe 1
Alpine 2	Central Mediterranean 1	Basque 1
East Mediterranean 1	North Caucasus 3	Azeri 1
Palestinian 1	Syrian 1	Egyptian 1

The haplotype was further defined in Phylotree.org as T2b.

In the Mitochondrial DNA Concordance there were the following matches on one sector or another (where red indicates a matching, blue an added, and **black** a missing mutation):

16126[C] 16294[T] 16296[T] 16304[C]	•Twgdam; 61(204); Afro-Carib.(1) •Twgdam; 89(271); Afro-Carib.(1) •Twgdam; 22; Cauc. Amer.(1) •Twgdam; 60; Cauc. Amer.(1) •Twgdam; 65; Cauc. Amer.(1) •Twgdam; 143(91H-17); Cauc. Amer.(1) •Twgdam; 159(95F-83); Cauc. Amer.(1) •Twgdam; 162(95F-)355); Cauc. Amer.(1 •Twgdam; 195(95F-84); Cauc. Amer.(1) •Miller,96; DPH.0171; Danish(1) •Piercy,93; RC1:5; Cauc. UK(1) •Sajantila,95; F98; Finnish (1)

	•Sajantila,95; F110; Finnish (1) •Sajantila,95; FI84; Finnish (1) •Sajantila,95; 16; Icelandic (1) •Sajantila,95; 268; Karelian (1) •Côrte-Real,96; 70; [2B]; Portuguese(1) •Côrte-Real,96; 70; [2B]; Spanish (N.)(1) •Pult,94; SW34; Swiss(1) •Sajantila,95; 3; Volga-Finnic (1) •Sajantila,95; 12; Volga-Finnic (1) •Sajantila,95; 20; Volga-Finnic (1) •Vigilant,89; EUF121; European(1)
73[G] 263[G] 315.1[C]	•Twgdam; 34(B055); African(1) •Twgdam; 36(B173); African(1) •Twgdam; 71(B013); African(1) •Twgdam; 5; African Amer.(1) •Twgdam; 48(A-BF7012); African Amer.(1) •Twgdam; 60(A-BF7030); African Amer.(1) •Twgdam; 91(A-BF7100); African Amer.(1) •Twgdam; 11(70); Afro-Carib.(1) •Twgdam; 31(99/62); Afro-Carib.(1) •Twgdam; 46(183); Afro-Carib.(1) •Twgdam; 80(242); Afro-Carib.(1) •Twgdam; 89(271); Afro-Carib.(1) •Twgdam; 2; Cauc. Amer.(1) •Twgdam; 6; Cauc. Amer.(1) •Twgdam; 14; Cauc. Amer.(1) •Twgdam; 22; Cauc. Amer.(1) •Twgdam; 53; Cauc. Amer.(1) •Twgdam; 102(DLF); Cauc. Amer.(1) •Twgdam; 104(JSL); Cauc. Amer.(1) •Twgdam; 111(PGF); Cauc. Amer.(1) •Twgdam; 117(CAD); Cauc. Amer.(1) •Twgdam; 124(95F-379); Cauc. Amer.(1) •Twgdam; 131(95F-385); Cauc. Amer.(1) •Twgdam; 132(95F-387); Cauc. Amer.(1) •Twgdam; 135(94H-39); Cauc. Amer.(1) •Twgdam; 139(95F-97); Cauc. Amer.(1) •Twgdam; 159(95F-83); Cauc. Amer.(1) •Twgdam; 162(95F-355); Cauc. Amer.(1) •Twgdam; 211(95F-70); Cauc. Amer.(1) •Twgdam; 212(95F-71); Cauc. Amer.(1) •Twgdam; 218(95F-164); Cauc. Amer.(1) •Twgdam; 223(95F-219); Cauc. Amer.(1) •Twgdam; 61(CM400); Hisp. Amer.(1) •Twgdam; 83(PNY232); Hisp. Amer.(1) •Twgdam; 85(CM230); Hisp. Amer.(1) •Calafell,96; 8; Bulgar(1) •Calafell,96; 29; Bulgar(1) •Piercy,93; RC1:50; Cauc. UK(1) •Piercy,93; RC1:80; Cauc. UK(1) •Piercy,93; RC1:98; Cauc. UK(1) •Mountain,95; c1; control(1) •Miller,96; BCH.0179; Cornish(1) •Mountain,95; H2; Havik(1) •Mountain,95; H13; Havik(1)

	•Mountain,95; H24; Havik(1) •Mountain,95; H28; Havik(1) •Mountain,95; H37; Havik(1) •Mountain,95; H48; Havik(1) •Miller,96; ICEb295; Icelandic(1) •Mountain,95; M2; Mukri (1) •Mountain,95; M3; Mukri (1) •Mountain,95; M4; Mukri (1) •Mountain,95; M7; Mukri (1) •Mountain,95; M9; Mukri (1) •Mountain,95; M10; Mukri (1) •Mountain,95; M12; Mukri (1) •Mountain,95; M15; Mukri (1) •Mountain,95; M18; Mukri (1) •Mountain,95; M20; Mukri (1) •Mountain,95; M21; Mukri (1) •Mountain,95; M24; Mukri (1) •Mountain,95; M29; Mukri (1) •Mountain,95; M36; Mukri (1) •Mountain,95; M38; Mukri (1) •Mountain,95; M40; Mukri (1) •Mountain,95; M43; Mukri (1) •Mountain,95; M45; Mukri (1) •Mountain,95; M46; Mukri (1) •Kolman,95; NG14; [B]; Ngöbé(1) •Miller,96; OSR.0073; Orcadian(1) •Gill,94; g-g-g-granddaughter; Romanov(1) •Gill,94; g-g-grandson; Romanov(1) •Gill,94; Tsar Nicholas II?; Romanov(1)

Mukri refers to Estonia and Havic refers to Finland. This subject also matches one of the participant's in Dr. Yates' latest study, Phase 3 of his mitochondrial study of Native American ancestry.

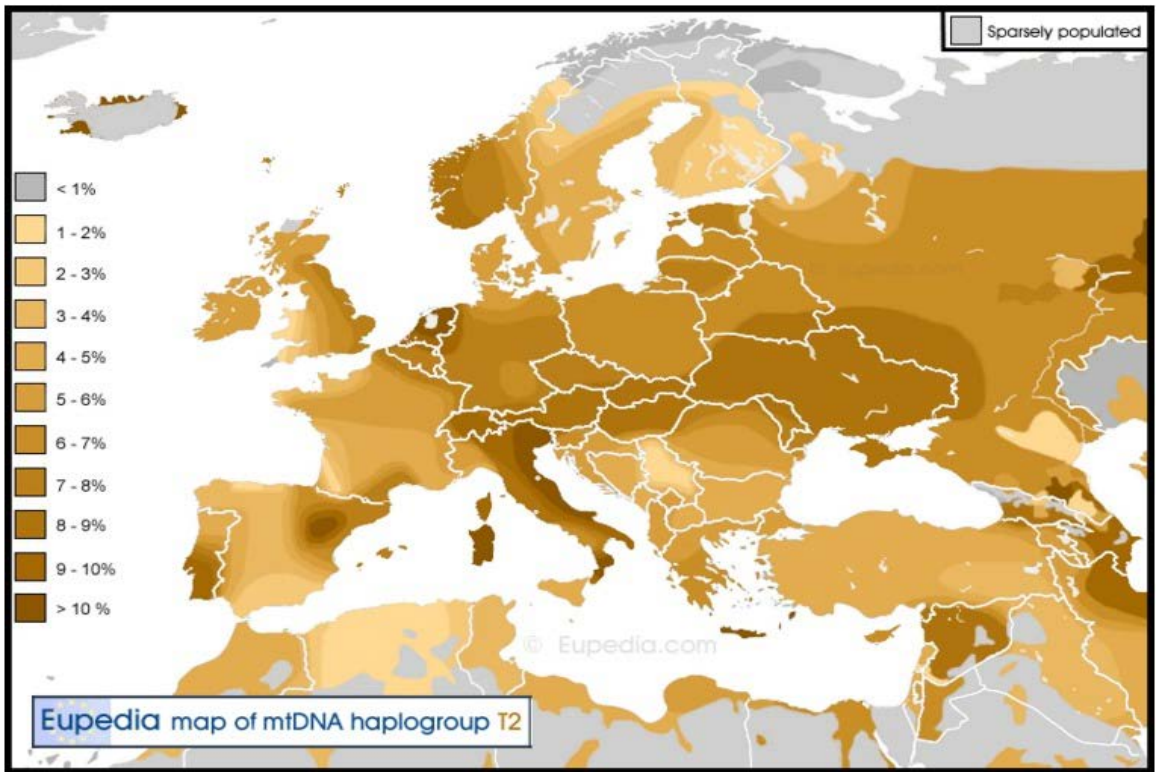
Analysis and Conclusion

On her mother's side, the subject descends from a female of the Eurasian haplogroup T, known as Tara in the scheme of Oxford Ancestors. The subject's particular haplotype probably originated in Eastern Europe to judge from the mutations. T is believed to have originated in Mesopotamia or Anatolia approximately 33,000 to 40,000 years ago and to have moved northwards. She is found with particularly high concentrations around the eastern Baltic Sea and the Urals. The same haplogroup as Sykes's, she was named by him after Tara, the ancient center and capital of Ireland. The matches with the Russian Tsar Nicholas in a famous case are interesting (Gill), proving that T was the matrilineal line of much royalty (along with H). Professor Sykes at Oxford Ancestors wrote: "The clan of Tara (Gaelic for rocky hill) includes slightly fewer than 10% of modern Europeans. Its many branches are widely distributed throughout southern and western Europe with particularly high concentrations in Ireland and the west of Britain. Tara herself lived

17,000 years ago in the northwest of Italy among the hills of Tuscany and along the estuary of the river Arno."

Haplogroup T is composed of two main branches T1 and T2. The two of them have very different distributions, which are diametrically opposed in most regions. Haplogroup T1 is not found among the Saami, the Jews, or the Avars of the Caucasus, and is extremely rare in Jordan, Morocco, northern Spain, Bosnia and Croatia. The highest frequencies of mtDNA T1 are observed among the Udmurts (15%) of the Volga-Ural region of Russia, followed by Romania (6%) and the southern Balkans (Bulgaria, Macedonia, Albania, all 4.5%), the northern Fertile Crescent (Lebanon, Iraq, eastern Turkey, all around 5.5%), the South Caucasus (Armenia, Georgia, Azerbaijan, 4.5% to 5.5%), then Austria and the Czech Republic (3.5%).

Haplogroup T2 peaks among the Udmurts (24%) and the Chechen-Ingush of Daghestan (12.5%). After that T2 is most frequently encountered in the Netherlands (12%), Sardinia (10%), Iceland (10%), Switzerland (9.5%), Hungary (8.5%) and Ukraine (8.5%), as well as among many ethnic groups around the Caucasus such as the Kumyks (10%), Azeri (9.5%) and Georgians (9%).



On her mother's side, the subject descends from a female of the Eurasian haplogroup T2. Modal matches, including the subject's Native American Fingerprint Plus report, indicate that the subject is descended from a woman who most likely lived in Scandinavia.

Famous Individuals of Haplogroup T2

Ivanov et al. (1996) sequenced the mitochondrial DNA of Grand Duke of Russia Georgij Romanov in order to establish the authenticity of the remains of Tsar Nicholas II of Russia. The mtDNA matched and belonged to haplogroup T2. Knight et al. (2004) confirmed the results by testing the remains of other Romanov members buried in Ekaterinburg. Retracing the matrilineal genealogy of Nicholas II leads to Barbara of Cilli (1392-1451), wife of Holy Roman Emperor Sigismund. Her female-line descendants include a great number of European nobles, such as Charles I of England, George I, George III and George V of Great Britain, Frederick William I of Prussia, Charles X Gustav of Sweden, Gustavus Adolphus of Sweden, Maurice of Nassau, Prince of Orange, Olav V of Norway, and George I of Greece.

Stone et al. (2001) analyzed the presumptive remains of Jesse James (1847-1882), the famous American outlaw, gang leader, bank robber, train robber from the US state of Missouri. He was the most famous member of the James-Younger Gang. Already a celebrity when he was alive, he became a legendary figure of the Wild West after his death. Jesse James's remains were compared against two maternal relatives and all were found to belong to mt-haplogroup T.

Associated Medical Conditions

According to Chinnery et al. (2007) and González et al. (2012), haplogroup T appears to be protective against type 2 diabetes.

Studies by Stanger et al. (2007) and Kofler et al. (2009) both found that coronary artery disease was significantly more prevalent among patients belonging to haplogroup T.

Susan Levin
Associate Investigator
DNA Consultants
August 15, 2018

References and Suggestions for Further Reading

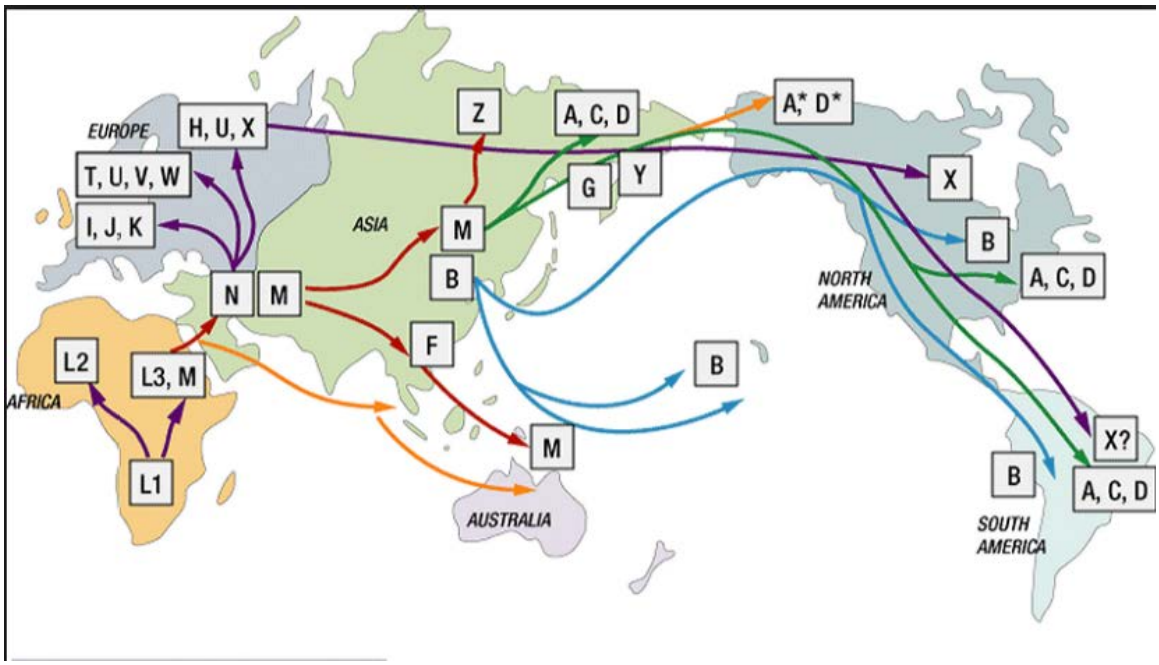
1. Achilli, A. et al. (2004) The Molecular Dissection of mtDNA Haplogroup H Confirms That the Franco-Cantabrian Glacial Refuge Was a Major Source for the European Gene Pool. *Am J Hum Genet.* 2004 Nov;75(5):910-8. Divides haplogroup H into 15 subgroups, called H1-H15. H1 and H3 are most common.
2. Anderson, S., Bankier, A. T., Barrell, B. G., de Bruijin, M. H. L., Coulson, A. R., Drouin, J., Eperson, I. C., Nierlich, D. P., Roe, B. A., Sanger, F., Schreier, P. H., Smith, A. J. H., Staden, R., and Young, I. G. "Sequence and organization of the human mitochondrial genomes." *Nature* (1981) 290:457-465.
3. Andrews R.M. *et al* (1999). "Reanalysis and revision of the Cambridge reference sequence for human mitochondrial DNA [letter]." *Nat Genet* 1999; 23:147. The Revised Cambridge Reference Series, cited as rCRS.
4. "Clan Helena: Famous Helenas" Web page http://www.olypen.com/amelia/helena/famous.html
5. Richards, M. et al. (2000). "Tracing European founder lineages in the Near Eastern mtDNA pool." *Am. J. Hum. Genet*. 67: 1251-1276. Supplementary Data (by Vincent Macaulay): http://www.stats.gla.ac.uk/~vincent/founder2000/index.html.
6. Richards, M. and Macaulay, V. (2000) "The mitochondrial gene tree comes of age." *Am. J. Hum. Genet.* 68: 1315-20.
7. Sykes, Bryan (2001). *The Seven Daughters of Eve. The Science that Reveals Our Genetic Ancestry.* New York, Norton. Names the founders of Europe's major female haplogroups Helena, Jasmine, Katrine, Tara, Velda, Xenia, and Ursula.
8. Wells, Spencer (2006). *Deep Ancestry: Inside the Genographic Project.* Washington: National Geographic.

Understanding Your Female Lineage

Your haplogroup (H, J, K, L etc.) describes what broad family of female lineages you belong to—the "daughters of Eve." These lines are conventionally called Helena (H), Tara (T), Jasmine (J) and the like and have all been traced back about 20,000-50,000 years to different regions of the world like Western Europe, Northern Europe, the Middle East, Africa or the Americas. Geneticists believe all people alive today are descended from a woman who lived in East Africa about half a million years ago (mitochondrial Eve). A map of female haplogroup migrations clearly shows the human family expanded out of Africa.

A haplotype, as defined in your mitochondrial DNA lab report, is a specific lineage within that haplogroup. Your unique genetic profile reflects your direct line of maternal descent from a common female founder. This is defined by a set of mutations on the control section of your mitochondrial genome passed down only by females. All female-linked relatives of the mother have the same lineage (children, daughter's children, brothers and sisters, mother, maternal grandmother, maternal grandmother's mother etc.).

It is a mistake to say that mitochondrial DNA is the same as the X chromosome. While it is true that females have two X chromosomes and males an X and a Y, mitochondrial DNA is not located on any chromosome but is extra-nuclear material with its own genome.



To categorize your lineage, and identify others who belong to it, your mitochondrial mutations are compared to the Cambridge Reference Sequence. Mutations consist of changes to the expected base in the sequence of your DNA at a nucleotide position—the insertion, duplication or omission of A, C, T or G, the chemical building blocks of a genome. A usually mutates to C, T to G, and vice versa. Mutations are reported from around the world in the Cambridge Mitochondrial DNA Concordance and its successor databases.

How do mutations occur? Are they harmful?

Mutations are changes in the copies of DNA passed from a parent to offspring. They crop up in the DNA record in a random way according to their "molecular clock." In other words, they are not caused by anything. Sometimes the DNA just changes, and this affects a certain position on the long strands of it that are in every cell of your body. In almost all cases, these changes do not do anything. Only in the case of genetic disease do the mutations have any effect on us. Even though they do not do anything, though, they continue to be passed down in exact copies from parent to offspring. So they are useful in identifying individuals who come from the same ancestor. All these descendants are in the same lineage. Once a mutation occurs it stamps that line as unique and distinctive forever. Descendants are said to be "downstream" from that change.

Remember the “distaff side” is not remembered or recorded as scrupulously as the male. The names of female ancestors in family trees are often forgotten or even purposely buried, especially if they were of diverse background, say American Indian, Jewish or a person of color.

The female stories in our past are often at odds with the received, standard version you read about in the history books! The exploration of your mitochondrial lineage can be a

deeply rewarding experience even if you do not turn up a connection with royalty, famous personages or a prestigious surname.

Discussion boards and projects exist for nearly all mitochondrial haplotypes and their subdivisions (H1, H2 etc.). To join one, see the list at the International Society of Genetic Genealogy (http://isogg.org/wiki/MtDNA_haplogroup_projects).

Suggested Reading

1. Eupedia, "Distribution of European Mitochondrial DNA Haplogroups" (major guide to European types), Europe Forum (and other free forums).
2. Cavalli-Sforza, Luigi Luca and Francesco Cavalli-Sforza (1995). *The Great Human Diasporas* (New York: Basic). Wonderful, readable classic on human genetics and prehistory by father and son.
3. Hirschman, Elizabeth C. and Donald N. Yates (2004). "DNA Haplotyping and Diversity: An Anthropogenealogical Method for Researching Lineages and Family Ethnicity." Paper published in the Proceedings of the Fourth International Conference on Diversity in Organisations, Communities and Nations, Los Angeles, Calif., July 6-9, 2004. *International Journal of the Humanities* 2:2043-55.
4. Manco, Jean (2014). *Ancestral Journeys. The Peopling of Europe from the First Venturers to the Vikings.* London: Thames & Hudson.
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9. Thomas, M.G. et al (2002). "Founding Mothers of Jewish Communities: Geographically Separated Jewish Groups Were Independently Founded by Very Few Female Ancestors." *Am J. Hum. Genet*. 70:1411-1420.
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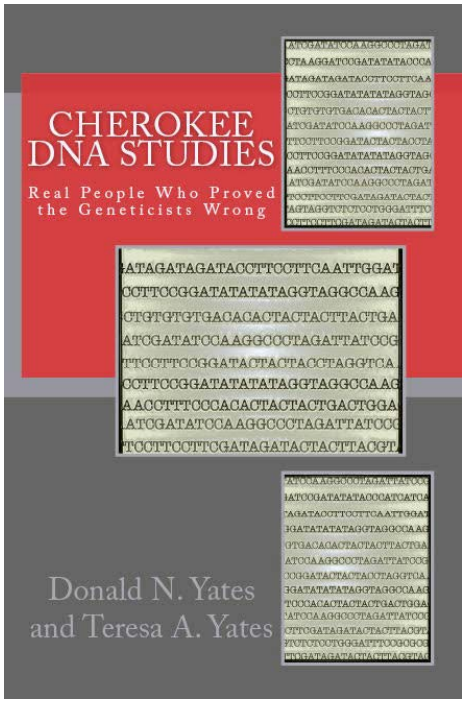
11. Wells, Spencer (2006). *Deep Ancestry: Inside the Genographic Project.* Washington: National Geographic.
12. Yates, Donald N. and Teresa A. (2014). *Cherokee DNA Studies: Real People Who Proved the Geneticists Wrong.* Phoenix: Panther's Lodge.

For help in evaluating your matches, contact us at dpy@dnaconsultants.com or call DNA Consultants at 888-806-2588 Monday through Friday 10 a.m. to 6 p.m. Mountain Time. We pride ourselves on customized service and will be glad to walk you through your report and answer all your questions personally.

About Your Bonus Book



Cherokee DNA Studies: Real People Who Proved the Geneticists Wrong

Most claims of Native American ancestry rest on the mother's ethnicity. This can be verified by a DNA test determining what type of mitochondrial DNA she passed to you. A hundred participants in DNA Consultants multi-phase Cherokee DNA Study did just that. What they had in common is they were rejected—by commercial firms, genealogy groups, government agencies and tribes. Their mitochondrial DNA was not classified as Native American . . . until now. These are the "anomalous" Cherokee. Share the journeys of discovery and self-awareness of these passionate volunteers who defied the experts and are helping write a new chapter in the Peopling of the Americas that will secure the true place of the Cherokee in American history.

DNA Consultants Series on Consumer Genetics, 1

DNA Diagnostics Center

DNA Test Report

For Personal Knowledge Only

G8285

Case	Joan Doe
Sample Number	8581299-50
Date Collected	
Collected by	

Reference	Nucleotide	Sample Nucleotide	Reference	Nucleotide	Sample Nucleotide
16,126	T	C	73	A	G
16,294	C	T	263	A	G
16,296	C	T	315	C	CC
16,304	T	C			

RN: 2632819

Note: Since the samples were not collected under a strict chain of custody by a third neutral party and the Laboratory cannot verify the origin of the samples, this test result may not be defensible in a court of law for the establishment of paternity and other legally related issues. The tested parties' names that may appear on this report have been provided by the client and cannot be verified. The laboratory assumes no responsibility for incorrect or misspelled patient information.

Based on the samples received from the tested parties whose identities cannot be independently verified, I, the undersigned Laboratory Director, declare the genetic data is correct as reported on 7/24/2018.

Debra L. Davis, Ph.D.

End of Report

DNA

DNA Consultants
Home of the DNA Fingerprint Test

THIS DOCUMENT CERTIFIES THAT

Joan Doe

ORDERED A PREMIUM FEMALE ANCESTRY REPORT INDICATING

THE FOLLOWING ANCESTRAL LINE

EURASIAN MITOCHONDRIAL HAPLOGROUP T2b

Donald N. Yates

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100% DNA Consultants QUALITY SEAL

August 15, 2018