



## Jane Doe DNA Fingerprint Report

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Distinct genome-wide genetic systems known as **autosomal markers** were analyzed at **Chromosomal Laboratories** to generate a uniquely identifying **DNA fingerprint or profile** for the subject. The table shown below depicts the alleles, or scores, at each marker location, or locus. **Alleles** are values in our genes that make us different from others. The resulting DNA Fingerprint reflects inherited changes from all previous generations and can suggest probable ethnic matches for the individual (Balding et al., 2001). Since the 1990s, this test has provided **forensic** evidence in criminal cases to prove, for example, that blood found on a crime victim belongs to a certain suspect (Butler). More recently, it has been adapted to explore an individual's ancestral origins.

Locus	Alleles		Range
D8S1179	13	13	<9 - >17
D21S11	29	29	<24.2 - >36
D7S820	7	10	6 - >14
CSFIPO	10	11	<6 - 15
D3S1358	16	16	<12 - >19
THO1	6	7	<5 - >10
D13S317	11	12	<8 - >15
D16S539	9	10	<8 - 15
D2S1338	17	20	15 - 28
D19S433	13	13	9 - 18.2
VWA	14	18	11 - >22
TPOX	11	11	<6 - >13
D18S51	17	18	<11 - >22
D5S818	11	11	<7 - >15
FGA	21	24	<18 - >30

The scores shown in green and yellow above known as **CODIS** markers were compared with profile frequencies for over 380 populations from around the world stored in a databank known as **OmniPop** (Burritt). The following populations proved to be the leading matches for the subject on a 14-marker basis (numbers in parentheses are keyed to the original published studies):

Rank	World Population Matches	RMP
1	Athabaskan (Alaska) (60)	1.82E+15
2	Berber (Bouhria, Morocco) (272)	2.62E+15
3	Argentinian (113)	5.83E+15
4	Native American (Choles) (221)	6.04E+15
5	Copts (Egypt) (286)	6.36E+15
6	Paraguayan (95)	6.57E+15
7	Japanese1 (2)	6.6E+15
8	Mozambique (159)	7.33E+15
9	RCMP Saskatchewan Aboriginal (56)	7.63E+15
10	United Arab Emirates (97)	7.78E+15
11	Tamil (India) (13)	8.32E+15
12	Dubai (37)	8.33E+15
13	Japanese2 (2)	8.34E+15
14	Michigan Caucasian (2)	8.48E+15
15	Colombian (North Pacific coast) (125)	8.59E+15
16	PC/BT Hispanic (4)	8.62E+15
17	Colombian (Boyaca) (121)	8.62E+15
18	Muslims (Egypt) (286)	8.78E+15
19	Virginia Caucasian (2)	8.84E+15
20	Colombian (Andean, Amazonia, & Orinoquian) (125)	9.29E+15

A **Random Match Probability (RMP)** expresses commonness or rarity of the subject's profile in a given population. For a figure such as 2.38+E13, add 13 digits or zeros to the right of the decimal point, making 1 in 23,800,000,000,000 chances for its occurrence. *The lower the number the stronger the match.* Results are shown on the attached ancestry map, where green indicates locations of strongest probable genetic origins, red likely absence of ancestry, and brown weak or ambiguous contributions of ancestry. Clusters of bright green confirm major prehistoric ancestral homelands.

According to the most recent research in population genetics, genes mirror the geography of Europe. Modern-day European subpopulations correspond roughly to national and linguistic boundaries (Lao et al. 2008). An additional search was made for high Random Match Probabilities in the **ENFSI** database, which specifically covers European populations, mostly those countries in the **European Union**. The leading matches were:

Rank in Europe	Population
I	Netherlands
II	Italy
III	Germany
IV	Austria
V	Czech Republic
VI	Sweden
VII	Poland
VIII	France/Toulouse
IX	England/Wales
X	Slovenia

## Analysis and Conclusion

Profile frequencies suggest the subject's principal ancestries are Dutch, Italian, German, Austrian, Czech, Swedish, Polish, southern French, English/Welsh and Slovenian (I-X, 8, 18) with [American Indian](#) (1, 4, 9, map) and [Sub-Saharan African](#) (8, map) admixture. There may also be Spanish/Portuguese (3, 6, 15-17, 20) and Middle Eastern, including Arab, Berber and Egyptian (2, 10, 12, 18, map). The subject matched Hungarian Ashkenazi (map) and Sephardic Jews (green diamond in Israel).

Because of shared deep ancestry, Native American and East Asian DNA cannot be distinguished. Tribal affiliations cannot usually be determined from the Native American matches, as types of Native American DNA are distributed all across the Americas. A high match in Eastern (Western, etc.) America, however, may be taken as a sign of the primary region. Hispanic matches (including Mexican and Brazilian, map) do not necessarily indicate Latin American ancestry but signal the subject's mixture of Iberian or Western European and Native American ancestry. Some of the British, Irish or Scottish matches (or alternatively, some of the Iberian matches) can probably be attributed to deep ancestry, as it is believed that Iberians on the Atlantic Coast such as the Basques and Portuguese were the leading colonizers of the British Isles following the last Ice Age (Oppenheimer).

There appears to be no [Sub-Continental Indian](#), [East Asian](#), or [Australoid](#), any apparent matches being due to accidental convergence.

Results do not equate to percentages. They show only that the subject's profile, on the face of it, is most common in present-day Native American, Dutch, Italian, German and certain other populations. These unique genetic [polymorphisms](#) may or may not be reflected in the subject's individual physical appearance but can be expected to be associated with certain recognizable family traits.

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Principal Investigator

[DNA Consultants](#)

June 4, 2010

## References and Suggestions for Further Reading

1. Burritt, Brian A. (2007) OmniPop 350 macro-enabled spreadsheet. Compares your CODIS profile to frequency in over 350 populations worldwide. Penultimate versions downloadable at <http://www.cstl.nist.gov/div831/strbase/populationdata.htm>
2. Butler, John M. (2006). "Genetics and Genomics of Core Short Tandem Repeat Loci Used in Human Identity Testing." *Journal of Forensic Science* 51/2:253-65.
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4. DNA-Interactive (web site) <http://www.dnai.org/index.html>. Easy to explore video modules on the many applications of DNA in the words of the founders and practitioners of genetics today.
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6. ENFSI: European Network of Forensic Science Institutes. ENFSI DNA WG STR Population Database, available <http://www.str-base.org/index.php>. Population frequencies for 22 European countries, containing 5,700 profiles.
7. Iovita, Radee P. and Theodore G. Schurr, (2004), "Reconstructing the Origins and Migrations of Diasporic Populations: the Case of European Gypsies", *American Anthropologist* 106/2:267-281.
8. Lao, Oscar et al. (2008), "Correlation between Genetic and Geographic Structure in Europe." *Current Biology* 18/16: 1241-48.
9. Oppenheimer, Stephen (2006). *The Origins of the British. A Genetic Detective Story*. New York: Carroll & Graf.
10. Wells, Spencer (2006). *Deep Ancestry: Inside the Genographic Project*. Washington: National Geographic.
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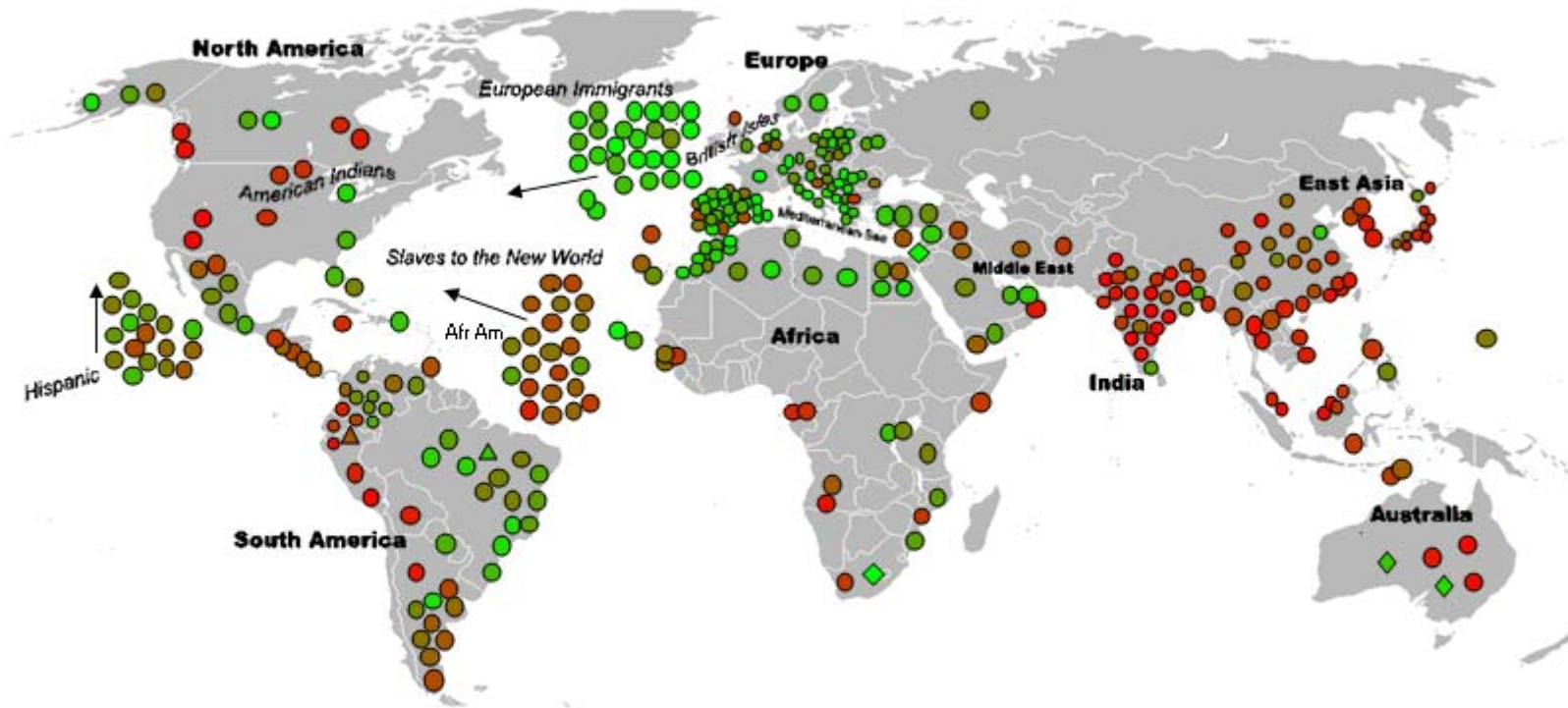
## Statement on Ethnicity

Allelic population analysis is a science still in its infancy. As our understanding of human migration and deep history improves and more specific markers are discovered for distinct populations we can expect the accuracy of prediction of the ethnic constituents in our ancestry to increase.

**Terminology.** Since racial terms are unclear and often emotionally charged, we have avoided them wherever possible. Such designations as "Caucasian" and "Hispanic" occur in the original studies. The language used to refer to different populations comes from the same sources. We do not endorse one name over another.

**Reliability.** While the laboratory methods used to determine your DNA markers are virtually error-free and their statistical analysis is reliable, interpretation of the numerical results is subjective. Conclusions will vary. To form more confident opinions, we suggest that you combine the findings in this report with other testimony, such as that of DNA haplotypes, genealogical records and family history.

# World Ancestry of Jane Doe



- △ - African origin
- ◇ - European origin

- Legend**
- Green strong match
  - Brown weak match
  - Red no match



THIS DOCUMENT CERTIFIES THAT

Jane Doe

Ordered a DNA Fingerprint Ancestry Test from Our Laboratories  
Yielding the Following Matches:

	<b>World</b>	<b>Europe</b>
Athabaskan (Alaska) (60)	<b>1</b>	<b>I</b> Netherlands
Madeira Archipelago (53)	<b>2</b>	<b>II</b> Italy
South African (European) (262)	<b>3</b>	<b>III</b> Germany
Michigan Nat.Am. (2)	<b>4</b>	<b>IV</b> Austria
PBSO Caucasian (4)	<b>5</b>	<b>V</b> Czech Republic
Colombian (North Pacific coast) (125)	<b>6</b>	<b>VI</b> Sweden
Brahmin (India) (72)	<b>7</b>	<b>VII</b> Poland
French (297)	<b>8</b>	<b>VIII</b> France/Toulouse
Trinidad African American (1)	<b>9</b>	<b>IX</b> England/Wales
Rwandan (Hutu) (133)	<b>10</b>	<b>X</b> Slovenia

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