

## General Introduction to Results

Thank you for choosing DNA Tribes® Genetic Ancestry Analysis. The results reported below indicate the places your DNA profile is most common in living populations around the world. Your results come in four parts: Genetic Profile, Native Population Match, Global Population Match, and World Region Match.

**Part A: Genetic Profile:** Your unique genetic profile includes your allele values for 21 genetic markers distributed throughout your autosomal chromosomes. At each locus, you have two values: one allele inherited from your father and one allele inherited from your mother, for a total of 42 dimensions used to compute your geographic ancestry. Values from all 21 marker systems are used to compute high resolution population and world region matches.

**Part B: Native Population Match:** These results are your Top 20 matches in a database of 773 native populations that have experienced minimal movement and admixture in modern history (approximately, the last 500 years). Individual matches do not necessarily indicate recent social or cultural affiliation with a particular ethnicity. Instead, your Native Population Match results identify populations where your DNA is most common, reflecting your deep ancestral origins. For people of multiple family origins, these matches can also identify populations where similar combinations of genetic material have taken place.

**Part C: Global Population Match:** These results are your Top 20 matches in a database of 1,044 global populations, including native peoples as well as Diaspora groups that expanded from their homelands and sometimes admixed with other populations in recent history. The geographical distribution of your Global Population Match results indicates your closest genetic relatives today and peoples whose blend of geographical ancestry is most similar to your own.

**Part D: World Region Match:** World Region Match represents the most comprehensive portion of your genetic ancestry analysis. These regions are the product of long term patterns of interactions between peoples within major geographic and cultural zones over hundreds and often thousands of years. World region results provide a broader, more general view of where your genetic ancestry is found among major regions of the world.

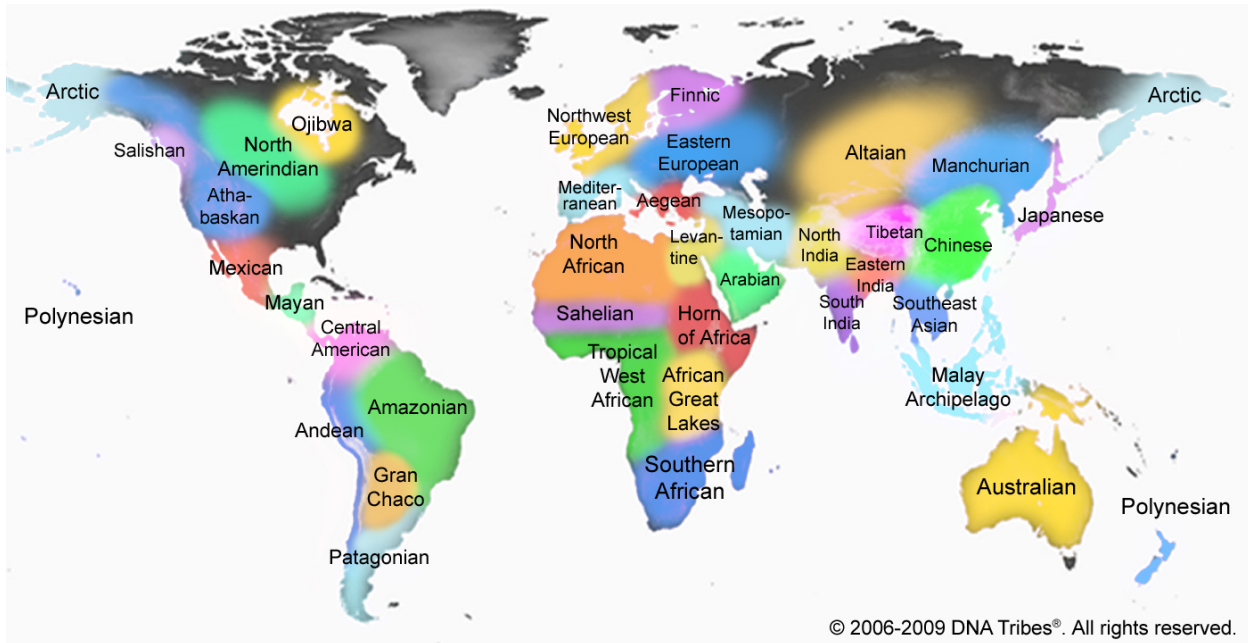
The highest score indicates your primary geographical affiliation, and subsequent scores indicate secondary regions where your blend of ancestry is present and/or possible sources of admixture. The regions where your DNA profile is most frequent are mapped as large circles, and other regions are plotted as circles visually scaled according to match scores.

The map on the next page illustrates the world regions distinguished by DNA Tribes® genetic ancestry analysis. Populations of most regions also include secondary influences from other regions, and some individuals from each region have their strongest affiliation with another nearby region.

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## About DNA Tribes® World Regions

*The following pages describe the genetic regions identified in Part D of your report. Each of these regions is identified on an objective mathematical basis and reflects a genetically unique territory shaped by historic and prehistoric human interactions.*



**European and Near Eastern Regions:** *This family of related regions, sometimes described as the “Caucasian” family of peoples, includes populations encompassing Europe and the Near East.*

- **Aegean:** The eastern Mediterranean and Anatolia region, including modern territories of Southern Italy and Sicily, Greece, and Turkey.
- **Arabian:** The Arabian Peninsula.
- **Eastern European:** The Slavic speaking region of Eastern Europe.
- **Finno-Ugrian:** The Uralic speaking region of Northeastern Europe.
- **Levantine:** Populations along the coast of the eastern Mediterranean Sea.
- **Mediterranean:** The Romance speaking region of Southwestern Europe.
- **Mesopotamian:** The historical “Cradle of Western Civilization” including modern Iran, Iraq and nearby territories.
- **North African:** Populations of the Atlas Mountains and Sahara Desert.
- **Northwest European:** The Celtic and Germanic speaking region of Northwestern Europe.

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**Native North American Regions:**

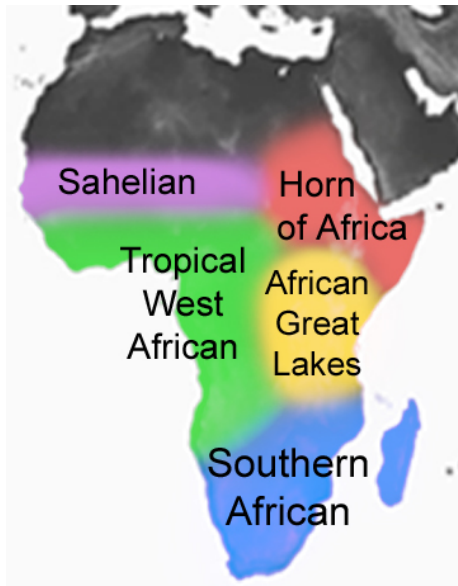
- **Arctic:** Inuit (Eskimo) peoples of Alaska and related peoples of far eastern Siberia.
- **Athabaskan:** Athabaskan speaking Dine peoples of western North America, including the Desert Southwest and parts of the Pacific Northwest and Alaska.
- **Mexican:** Native peoples of Mexico, including the historical territories of the Aztec Empire.
- **North Amerindian:** Native peoples of the region of North America including the Great Plains and western Great Lakes.
- **Ojibwa (East Algonquian):** Eastern Algonquian speaking peoples of northeastern North America.
- **Salishan:** Salish peoples of the Pacific Northwest.



**Native Central and South American Regions:**

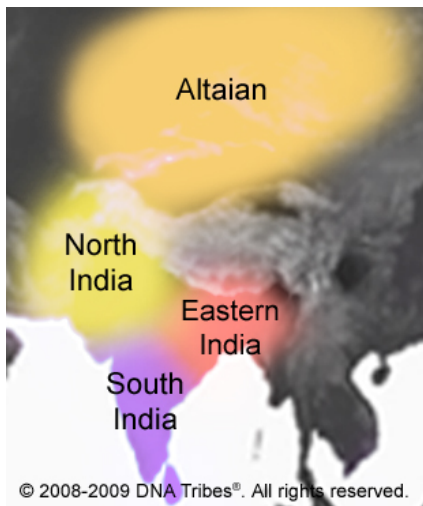
- **Amazonian:** Peoples of the Amazon River Basin.
- **Andean:** Peoples of the Andean Mountains of western South America, including the territories of the historical Inca Empire.
- **Central American:** Peoples of the Central American Isthmus and northern South America.
- **Gran Chaco:** Peoples of the Gran Chaco (“Great Hunting Land”) of South America.
- **Mayan:** The Mayan speaking region of Mesoamerica.
- **Patagonian:** The plains region of southern South America.
- **Mestizo (“mixed”)** (*not shown*): Native Americans who have blended with Europeans and (to a lesser degree) Africans in recent history. This blending is most typical of Latin American Mestizo peoples, but can also be found in English and French speaking populations of North America (Metis).

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**Sub-Saharan African Regions:** *This family of related regions includes Africans south of the Sahara Desert.*

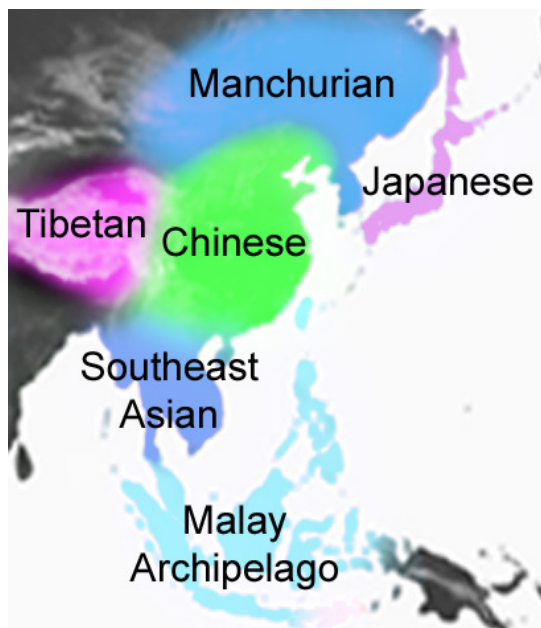
- **African Great Lakes:** The Great Lakes region surrounding the Great Rift Valley in eastern Africa.
- **Horn of Africa:** The eastern African lands along the Red Sea and Gulf of Aden that face the Arabian Peninsula.
- **Sahelian:** The horizontal strip of grasslands between the dry Sahara Desert to the north and moist forests to the south, home to the historically influential Sahelian states.
- **Southern African:** This southeastern region of Africa is home to Khoisan speakers as well as Bantu speaking cultures thought to have expanded from West Africa.
- **Tropical West African:** The humid forested zone of West Africa facing the Gulf of Guinea and Atlantic Ocean.



**Central and South Asian Regions:**

- **Altaian:** Altaic-speaking peoples of Central Asia, including the homelands of the historically nomadic Turkic peoples who have invaded Europe, the Near East, India, China, and other neighboring lands.
- **Eastern India:** The eastern Indian Subcontinent.
- **North India:** Northern India, Pakistan and neighboring territories, including the homeland of the ancient Vedic civilization.
- **South India:** The southern Indian Subcontinent, including the Dravidian speaking peoples of Tamil Nadu and many other cultures.

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### East Asian Regions:

- **Chinese:** This region is most characteristic of the predominant Han ethnic group of present day China.
- **Japanese:** The Japanese Archipelago.
- **Malay Archipelago:** Island Southeast Asia.
- **Manchurian:** This region to the north of the longstanding Chinese civilization is home to Korean, Mongolic, and Tungusic peoples.
- **Southeast Asian:** Peoples of Southeast Asia, including peoples of Thailand, Vietnam, and neighboring countries, as well as some ethnic groups of southern China.
- **Tibetan:** The region including the Himalayan Mountains and the Tibetan Plateau and extends to the western provinces of modern China.

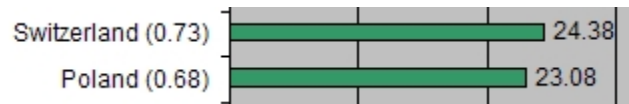


**Pacific Regions:** *This vast oceanic region includes two genetic regions only distantly related to continental populations.*

- **Australian:** Aboriginal peoples of Australia and Papua New Guinea.
- **Polynesian:** Literally meaning “many islands,” the Polynesian region includes related peoples living between Samoa and New Zealand in the west to Hawaii in the east.

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**Interpretation of Match Scores:** As the example below illustrates, your analysis includes two scores for each ethnic group and world region: (1) your MLI score and (2) your TribeScore.



Above: *Example of score presentation*

**MLI (Match Likelihood Index) Scores:** listed next to the bar graph for each population, measure how common frequent your DNA profile is in that population as compared to the world overall. **MLI scores locate the ethnic groups and regions where your DNA profile is most common.** For instance, a score of 24.38 for Switzerland (*see example above*) would indicate your total combination of alleles is 24.38 times as common in Switzerland as in the world. All MLI scores can be compared against each other as **odds ratios**. For instance, if you obtain a score of 24.38 for Switzerland and 23.08 for Poland, this means your genetic profile is  $24.38 / 23.08 = 1.05$  times as likely to be Swiss as it is to be Polish.

**TribeScore:** Each match also includes a TribeScore in parentheses, listing your MLI score's percentile in that population. **TribeScores compares your MLI scores to members of each ethnic group and world region.** For instance, results listing "Switzerland (0.73)" (*see example above*) would indicate that your MLI score is higher than 73% of scores from this Swiss reference population, and lower than 27% of these Swiss individuals. TribeScores between the (0.25) and (0.75) are ordinary for a population.

**Conclusion:** The genetic ancestry analysis below documents genetic ancestry that dates back thousands of years. The information in your report below can complement what you already know about yourself, your family, and your genealogy by putting your ancestry in a global perspective using molecular genetics.

**Further Reading:** Sample results with commentary on how results can be interpreted are available for several ethnic groups online at: <http://dnatribes.com/sampleresults.html>

Additional information about the autosomal STR markers listed in Part A of your report can be found online at: <http://www.cstl.nist.gov/biotech/strbase/>

A global survey using the DNA Tribes® World Region algorithm can be found at: <http://dnatribes.com/sample-results/dnatribes-global-survey-regional-affinities.pdf>

Our monthly DNA Tribes® Digest articles provide more detailed analysis of world genetic relationships and are archived online at: <http://www.dnatribes.com/library.html>

## Part A: Your Genetic Profile

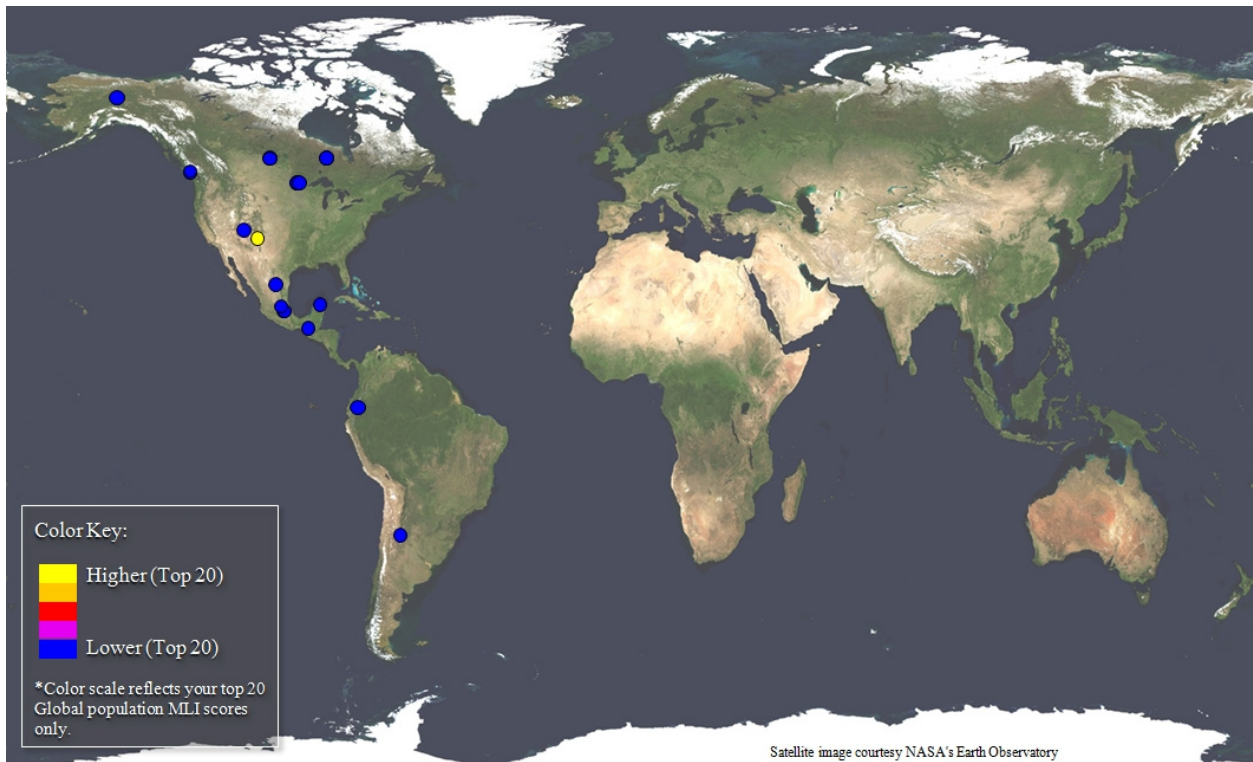
**CONFIDENTIAL INFORMATION:** Below is your unique genetic profile used to identify your geographical ancestry. Because this profile identifies you personally, DNA Tribes® recommends that you treat the genetic profile on this page as strictly confidential information.

*A reference to further information about these genetic markers is listed under Further Reading on Page 6 of this report.*

### Autosomal STR Profile Example Apache (Dine) Person

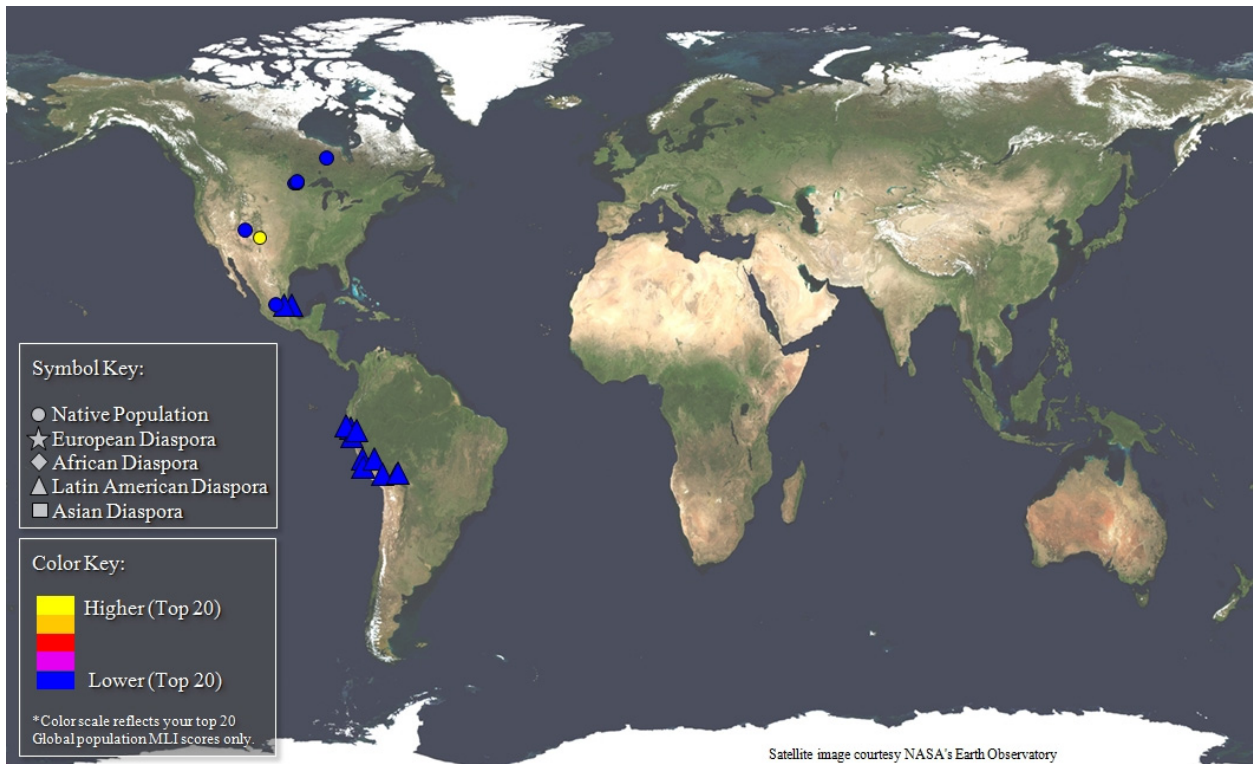
<i>Locus</i>	<i>Allele 1</i>	<i>Allele 2</i>
<i>Amel</i>	X	Y
<i>D3S1358</i>	15	16
<i>TH01</i>	7	9.3
<i>D21S11</i>	30	31.2
<i>D18S51</i>	13	16
<i>Penta E</i>	14	16
<i>D5S818</i>	7	11
<i>D13S317</i>	9	12
<i>D7S820</i>	11	12
<i>D16S539</i>	10	12
<i>CSF1PO</i>	11	12
<i>Penta D</i>	10	13
<i>vWA</i>	16	17
<i>D8S1179</i>	13	14
<i>TPOX</i>	11	12
<i>FGA</i>	19	25
<i>D2S1338</i>	19	23
<i>D19S433</i>	14	15
<i>F13A1</i>	3.2	5
<i>F13B</i>	9	10
<i>FES/FPS</i>	11	12
<i>LPL</i>	10	12

## Part B: Your High Resolution Native Population Match Results



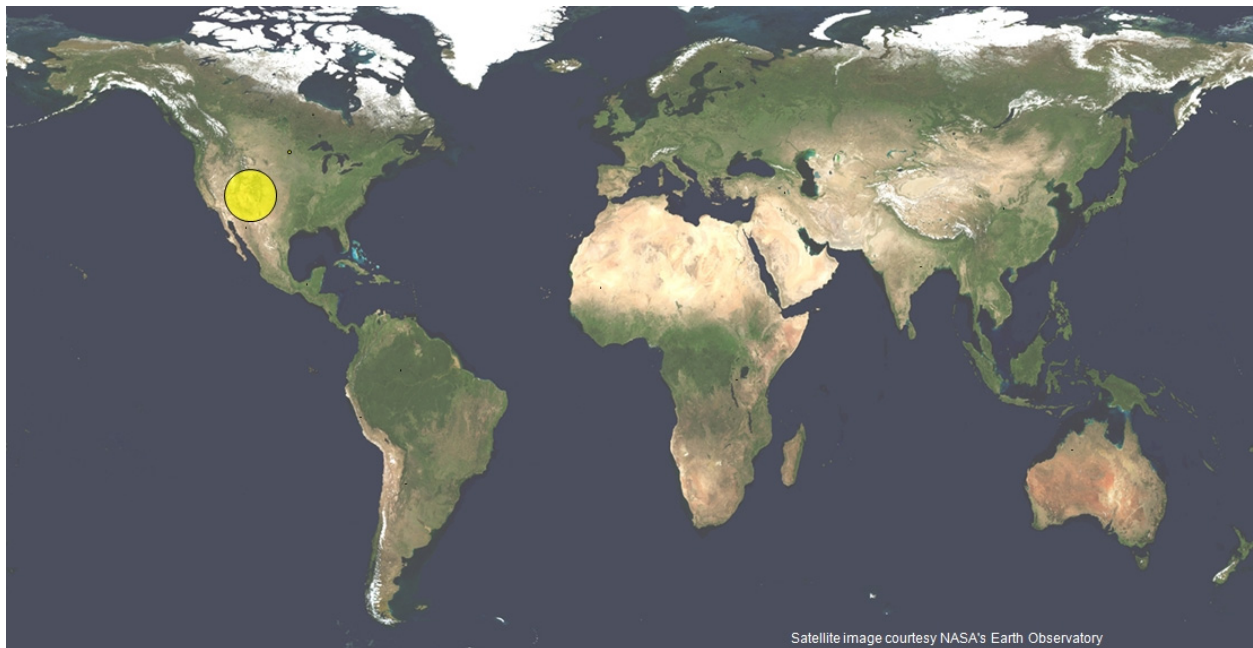
Apache (Dine) (Southwestern U.S.) (0.95)		200,534,106.44
Navajo (Dineh) (Southwestern U.S.) (0.8)	13,501,682.45	
Sioux and Chippewa (Minnesota, U.S.A.) (0.82)	11,688,131.49	
Sioux and Chippewa (Minnesota, U.S.A.) (0.76)	10,656,449.61	
Huastec (Hidalgo, Mexico) (0.73)	267,191.57	
Anishinaabeg (Chippewa/Ojibwe) (Ontario, Canada) (0.33)	177,341.15	
Anishinaabeg (Chippewa/Ojibwe) (Ontario, Canada) (0.27)	132,200.18	
Sioux and Chippewa (Minnesota, U.S.A.) (0.44)	77,362.35	
Yucatan Mayan (Yucatan, Mexico) (0.62)	71,588.83	
Cree (Kenistenoag) (Saskatchewan, Canada) (0.53)	27,260.58	
Quechua (Ecuador) (0.46)	7,605.70	
Chol Maya (Northeast Chiapas, Mexico) (0.71)	5,617.00	
Athabaskan (Alaska) (0.47)	4,883.95	
Huastec (Nahuatl) (La Huasteco, Mexico) (0.44)	4,124.71	
Otomi (Ixmiquilpan Valley, Mexico) (0.54)	3,514.76	
Hna Hnu (Otomi) (Hidalgo, Mexico) (0.58)	3,087.22	
Coast Salish (British Columbia, Canada) (0.31)	2,582.74	
Puna (Andean Region, Northwest Argentina) (0.25)	2,355.41	
Coast Salish (British Columbia, Canada) (0.24)	2,215.52	
Cree (Kenistenoag) (Saskatchewan, Canada) (0.39)	1,782.29	

## Part C: Your High Resolution Global Population Match Results



Apache (Dine) (Southwestern U.S.) (0.95)		200,534,106.44
Navajo (Dineh) (Southwestern U.S.) (0.8)	13,501,682.45	
Sioux and Chippewa (Minnesota, U.S.A.) (0.82)	11,688,131.49	
Sioux and Chippewa (Minnesota, U.S.A.) (0.76)	10,656,449.61	
Aymara and Mestizo (La Paz, Bolivia) (0.81)	1,361,596.89	
Mestizo (Cajamarca, Peru) (0.93)	800,689.99	
Mestizo (Arequipa, Peru) (0.95)	553,521.78	
Mestizo (Huancayo, Peru) (0.87)	417,622.21	
Mestizo (Piura, Peru) (0.95)	371,180.58	
Native American (mixed) (Minnesota, U.S.A.) (0.91)	303,703.35	
Native American (mixed) (Minnesota, U.S.A.) (0.92)	302,494.33	
Huastec (Hidalgo, Mexico) (0.73)	267,191.57	
Lima, Peru (0.86)	262,062.71	
Mestizo (Puebla, Mexico) (0.93)	261,048.20	
Mestizo (Veracruz, Mexico) (0.96)	203,315.68	
Mestizo (Trujillo, Peru) (0.92)	178,057.04	
Anishinaabeg (Chippewa/Ojibwe) (Ontario, Canada) (0.33)	177,341.15	
Mestizo (Chiclayo, Peru) (0.95)	170,479.42	
Mestizo (Lima, Peru) (0.9)	163,944.12	
Mestizo (Bolivia) (0.81)	163,561.95	

### Part D: Your High Resolution World Region Match Results



Athabaskan (0.91)	6,095,889.43	91,029,340.61
North Amerindian (0.8)	2,400,386.47	
Ojibwa (0.39)	1,254,304.59	
Mexican (0.9)	1,240,708.87	
Andean (0.84)	545,606.47	
Gran Chaco (0.66)	486,724.88	
Amazonian (0.64)	466,004.10	
Mayan (0.82)	294,479.86	
Patagonian (0.64)	281,132.03	
Salishan (0.52)	100,670.64	
Central American (0.54)	4,499.15	
Mestizo (0.94)	4,244.75	
Arctic (0.64)	45.39	
Altaian (0.58)	12.47	
Manchurian (0.1)	8.50	
Chinese (0.08)	6.37	
Tibetan (0.14)	4.92	
Southeast Asian (0.06)	2.64	
Malay Archipelago (0.05)	1.76	
Japanese (0.02)	0.44	
Aegean (0)	0.44	
Finnic (0)	0.26	
North India (0)	0.18	
Eastern India (0)	0.17	
Mesopotamian (0)	0.15	
Northwest European (0)	0.15	
South India (0)	0.14	
Eastern European (0)	0.10	
Mediterranean (0)	0.07	
Levantine (0)	0.06	
Australian (0)	0.01	
Horn of Africa (0)	0.01	
Polynesian (0)	0.01	
North African (0)	0.00	
Arabian (0)	0.00	
Sahelian (0)	0.00	
Tropical West African (0)	0.00	
Southern African (0)	0.00	
African Great Lakes (0)	0.00	

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