



Native DNA Results Guide

Hello and thank you for choosing Native DNA! We are pleased to present you with your Native DNA Ancestry Analysis[®] and hope that you enjoy discovering your ancestry as much as we've enjoyed performing the analysis. This tutorial was specially designed to help you get the most out of your results. As you read, we hope that your questions will be answered and that you'll be able to explain the results to family and friends. The sections provided within this document give details concerning your certificate of ancestry, world map, and unfiltered extended match result portions of your DNA analysis. Without further ado, let's proceed...

**You can download the latest copy of this document at anytime on our website at the following link: <https://www.native-dna.com/faq.html> Also, you may find the FAQ (Frequently Asked Questions) page at this link very useful. Other information concerning our research and development, and company in general is available on our website, Facebook, and YouTube. Please feel free to contact us anytime!*

I. Certificate of Ancestry

Your certificate is the most concise piece of information within your results package. It contains all the crucial information we were able to gather from the DNA sample you provided. This information was filtered for an extended period by our owner until confidence was reached that the best information could be provided to you. For instance, the percentage of ancestry estimates found on the lower left side of your Certificate of Ancestry are determined not only by what Pinnacle (our ancestry determining computer program) suggests your ancestry to be, but also by detailed inspection by the owner/operator to ensure you receive the most accurate results. Are these results perfect? Typically, they are the best on the DNA testing market, and this is something we're proud of. However, it is possible that the percentage estimates could be a bit off due to random assortment of genetic material within your DNA occasionally making it difficult for us to obtain perfect results.

Errors, if they occur, are typically twice the actual admixture present in a person. In other words, a tested individual could be only 10% Native American instead of 20% as indicated by the analysis, or 6% instead of 12% etc. etc. Unfortunately, there is simply no way to completely avoid errors such as these within DNA estimates of ancestry. According to our scientific research and feedback from customers, such errors are rare. Additionally, please consider that a greater number of STR markers used in your analysis provides results of increasing precision. Through years of experience, we've noticed that 15 STR markers (two values per locus for a total of 30 unique numbers within your genetic profile) is often the minimum amount of STR data from which you

can expect reasonable results. Native DNA offers STR tests of up to 28 STR markers (two values per locus for a total of 56 unique numbers within your genetic profile). Tests can be purchased at <https://www.native-dna.com/order.html>

You will find your final world population list on the right side of your certificate of ancestry. Much like your percentages of ancestry, this list of populations was filtered by someone who has thousands of hours of experience reading ancestry results, and not simply a computer doing all the work. These populations are the ones your DNA most closely matches within our population database, which currently contains over 1200 populations from around the world.

Simulated 1 (Sim 1) - Population derived from the averaging of population statistics and is the most accurate of the three simulated population types.

Simulated 2 (Sim 2) - Population formed as the result of known genetic admixture and is based on genetic information from preexisting studies or empirical observations. These are primarily composite populations (e.g., populations consisting of ancestry from three or more distinct world regions).

Simulated 3A (Sim 3A) - Population formed when a person of known ancestry provides a genetic profile, and a simulated population is then constructed from that data. Antecedent knowledge of both STR statistics and genetic admixture for that population is not available.

Simulated 3B (Sim 3B) - A population which, after obtaining full signed legal permission from the sample provider, is assigned the sample providers name with the intent of improving customer results through the identification of global ancestral connections.

II. World Map

This map simply illustrates where the world populations listed on the right side of your certificate of ancestry are located on Earth. Being able to visualize where these populations are located is advantageous by providing clues concerning relationships to nearby populations and migration routes. Filled yellow circles indicate where your strongest matches are located. Moreover, filled red circles indicate the location of your medium strength matches, and blue represents your lowest scores. This is an excellent visual guide to understanding your results...

All filled yellow markers combined make up 50-100% of your ancestry

All filled red markers combined make up 25-50% of your ancestry

All filled blue markers combined make up 25% or less of your ancestry

-Markers which are outlined in orange indicate your strongest match for each continental region appearing in your results. The continental regions consist of America (both north and south are

combined), Africa, Asia, Europe, and Australia. Markers outlined in purple indicate your second strongest match from each region.

*Triangles indicate diaspora populations which contain a significant Native American admixture

*Stars indicate diaspora populations which contain a significant Sub-Saharan admixture

*Squares indicate diaspora populations from Europe

*Non-filled circles indicate populations of strongly mixed ancestry (such as Roma, Polynesian, certain Caribbean peoples etc.)

-The same convention applies for diaspora outlined colors as mentioned in the previous indented and italicized discussion concerning this topic above.

III. World Regional Map

This map includes the most important regional contributions to your genome. As with your world population map, yellow represents the region where your strongest matches originated, along with red and blue in descending order. Note that it is possible that the population you would match the strongest is not yet in our database, and thus the regional map can help provide information on where the population you're most similar to is located. Lastly, highlighted regions outlined by colored dashes represent inferred regions where your ancestry may have been in more recent times and may represent the location of your more recent and known tribal/population affiliations. These dashed regions are often inferences made from associated populations within your results.

IV. Unfiltered Match Results

Included with your results are files named "16/17 STR Unfiltered Results" and or "28 STR Unfiltered Results". However, if we performed your analysis using you previously obtained STR profile, the number of STR's used may vary. These valuable files contain your world population list as it appeared straight from our computer program, Pinnacle, of which we have two versions. Since we have developed two separate versions of Pinnacle, one of which operates on up to 17 markers, and another uses up to 28. We find it important to provide you with the unfiltered results of both versions to help support your personal research. The numerical values to the right of the world population listing is called power of exclusion (or POE for short). POE basically tells us how likely your match is to be false. This means that the lower numbers are your strongest matches. For example, $3.13E+32$ is a much stronger match than $2.18E+33$. This information, although unfiltered by the owner/operator, can provide interesting background information to our customers, therefore we have continued to provide this data with every order.

IV b. Difference Between Unfiltered Mixed Mode and Unfiltered Singular Mode Population Lists

At the request of our customers, we have decided to develop a way of easily releasing both mixed and singular mode population lists with every STR DNA analysis we deliver. Both list types have pros and cons, and it is important to realize that extensive knowledge is often necessary to properly interpret them. The unfiltered mixed population list includes hundreds of combinations of world populations such as “Yoruba (Nigeria) & Cherokee (North Carolina)” which are created for the purpose of identifying specific genetic admixture in your data that singular mode may be unable to capture. Unpublished independent studies conducted by Native DNA have revealed that the mixed mode technique identifies ancestry with greater precision than singular mode population data. However, singular mode offers the advantage of being more inclusive of all populations in a shorter space with less clutter, which can reveal ancestry that mixed mode analysis may miss due to a lack of certain mixtures not existing in our database.

Please note that it is not uncommon for unfiltered singular mode results to indicate populations which may not seem to line up with those in your unfiltered mixed mode population list, or those found on your Certificate of Ancestry. This is because much interpretation is often required to produce the interpreted finished product, your Certificate of Ancestry. We now include your match scores for all populations in our STR database within your unfiltered singular mode population list. Please note that you don't have matches to all the populations in this list, and that we provide this information simply because many customers request it. Singular mode population matches are forced to express all your ancestry within one population at a time and all the information within each population must be unpacked through interpretation. Mixed mode populations can express a much wider range of world population data per population match listing, as the data within them comes already unpacked.

In summary: Singular population matches must express all your ancestry as one chunk, while mixed mode population matches allow your ancestry admixture to be expressed more precisely and with a more understandable consistency/smooth texture. Singular is kind of like trying to drink out of a high velocity firehose when you've been in the summer heat all day without water and it's your only hydration option. You've got to have it, but it's all coming at you at once whether you like it or not. Mixed mode is kinder and more piecemeal, with five different flavored waters to choose from. Moral: both have value in that singular pop sharing can satisfy your thirst if you are careful and know how it's done (how to interpret the data), but mixed mode is often more palatable.

V. Other Helpful Information

DNA testing for ancestry often produces results which take time, resources, and determination to understand. A few thought exercises which you may find helpful in shifting your mindset and bringing you closer to understanding your results are **1)**. Were you present when your relatives in question were walking the Earth? Do you truly feel that you have a deep understanding of who

they were? **2**). If you'd rather not take time to understand the depth of your results, why bother with DNA testing for ancestry? This is strongly related to question **1**.

VI. Ongoing Projects at Native DNA

4-19-2023 – Am contemplating removing admixture percentage estimates as a part of the results package for STR customers. I'm seeking feedback on this matter and will likely hold off on a final decision until we've searched for STR lab equipment of our own late this spring and throughout the summer.

11-1-2022 – Gaining steam on completing the Native DNA SNP analysis. This will allow customers to submit their SNP raw data file to us to analyze for a fee of approximately \$70. The plan is to have this test available for purchase on our website within the first month of 2023.

2-8-2022 – Continuing to add frequency data from peer reviewed world population studies to the Native DNA population database. We have dozens of populations ready to add, and I've provided an updated list of our latest population additions to the Native DNA Facebook page. I plan to restart work toward finishing the Native DNA Book of World Populations - expected finish date August 24, 2024.

10-8-2019 – Began working to improve the Native DNA Ancestry Analysis with the use of additional classes of simulated populations (see description on top of page 2). This work will be long term, with no expected end date as of now. Also, continuing to add new populations from global peer reviewed frequency studies, and perfecting the synergistic analysis technique developed during summer 2019.

3-17-2023 – On the move searching for populations to add to our STR population database.

6-21-2023 – Began delivering unfiltered singular mode population lists to all Native DNA STR customers. This product is now standard deliverable with every STR order we fill.

Sincerely,

Chris Lisauckis (M.S.) – Owner/Operator

<https://www.facebook.com/NativeDna>

<http://www.native-dna.com>

<https://www.youtube.com/natedna>

Do you have questions or comments? Let us know! Natednatesting@gmail.com