**Genetic Genealogy**

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Genetic genealogy refers to the study of ancestral markers in the genome. There are three genealogical genetic tests to confirm or disprove ancestral linkage which can then be used for various purposes. Genetic ancestry brings together time, physical space and genetic markers. (Nash, 2015) The first of the three tests to determine genetic ancestry is the Autosomal type which looks through chromosome 1-22 as well as the X chromosome. Ancestral blocks or genetic markers with ancestral linkage are tested. This type of test is preferred for ethnicity testing. The second type is Y chromosome testing for ancestral markers which only establishes a direct paternal line as Y chromosome is only passed from father to son. (Perego, 2005) The third type is testing mitochondrial DNA which is used for getting the direct maternal line since it is inherited from mother to child.

Genealogical DNA testing has many advantages. One of the most commercialized and popular advantage to come out of it is a genetic determination of ethnicity. Several companies now work to carry out these tests and establish percentage ethnicity for their customers. Another significant application of these tests is in law enforcement as ancestry estimates in forensics can help solve cold cases by creating previously ignored ethnical connections. However, there are limitations to these tests as well. When specifying ethnicity, diversity in algorithms and reference genomes by different companies can create disparities in their results. The genetic differentiations among the residents of a geographical area being clumped are another limiting factor. A low number of markers also limit the reliability and accuracy of test results. These unreliable results can socially become the basis of race boundaries when race is scientifically known to be arbitrary. (Shriver, 2004)

It is therefore important to understand that while genetic genealogy is a promising field of research and development with exciting possibilities, it is also one with its own scientific and social limitations which need to be taken into account.

# References

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