Genetic Genealogy Glossary

Admixture: Combination of different genetic lineages, usually with different geographic origins.

Autosomal DNA (at-DNA): One of the four kinds of DNA useful to genealogists, found in the nucleus and comprising the twenty-two non-sex-determining chromosomes.

Autosome: One of the twenty-two non-sex-determining chromosomes in the human genome.

Base pairs: A pair of nucleotide bases on complementary DNA strands organized in a double helix.

Cell: The basic unit of life that uses DNA to control the vast majority of its functions.

Centimorgan (cM): A measure of genetic distance, the distance between two points on a chromosome. It is often used to measure a shared DNA segment.

Chromosome: A structure of two double-helical DNA molecules found in the nucleus of most living cells, carrying genetic information in the form of genes.

Chromosome browser: Tool that lets test takers see exactly what segment(s) of their chromosomes are shared with another test taker.

DNA (deoxyribonucleic acid): A double-stranded molecule comprising two entwined strings of nucleotides which stores genetic information.

DNA marker: Commonly tested regions of the chromosome that have different DNA sequences called alleles. Each Y-DNA marker has an allele value that taken collectively form the test taker's haplotype.

Ethnicity estimation: Method of inferring the geographical origins of an individual's DNA by comparing that DNA to one or more reference populations.

Gene: A region of a chromosome encoded for functions such as a trait, characteristic, or biological purpose.

Genealogical family tree: A chart of an individual's known ancestors, regardless of whether or not they contributed DNA to the individual.

Genetic distance (Y-DNA): The number of differences or mutations between two sets of Y-DNA markers. Genetic distance is used to get a rough estimate or how closely two people are related or when their common ancestor lived.

Genetic genealogy: The practice and study of using DNA test results in combination with traditional genealogical research.

Genetics: The field of biology that studies genes and their inheritance.

Haplogroup (Y-DNA): A group of individuals who share several genetic mutations as well as a common ancient ancestor along an all-male line. A Y-DNA test can be used to predict a haplogroup, while a SNP test can be used to confirm a haplogroup.

Haplotree (Y-DNA): A diagram showing the different lineages within a haplogroup. The haplotree shows the main haplogroup branch, and the test taker's haplogroup branch and SNP results.

Haplotype (Y-DNA): The collection of specific marker results that characterize a test taker.

Match: A match is considered to exist when a comparison of the DNA test results of two persons suggests there is a high probability of them sharing a common genetic ancestor within a relevant period of time.

Matriline: The line of .inheritance through which mt-DNA passes from a person to his or her mother, to her mother (the maternal grandmother), to her mother, and so on.

Misattributed parentage (MPE): A scenario in which the biological parent is not the expected or documented parent. Also referred to as a non-paternal event.

Mitochondria: Organelles in every cell that help in producing energy. These organelles contain mitochondrial-DNA, the only DNA found outside of the nucleus.

Mitochondrial DNA (mt-DNA): One of the four kinds of DNA useful to genealogists, found in the mitochondria of a cell. Mitochondrial DNA is only passed down from mother to child.

Mode: The value that appears most frequently in a data set. The mode of Y-DNA marker values of a specific group of people is often used to estimate the haplotype of the most recent common ancestor.

Most recent common ancestor (MRCA): The ancestor, born most recently, who is shared by two or more individuals. This term may pertain to a single ancestor or an ancestral couple.

Mutation: A mutation is a change in a DNA sequence resulting from DNA copying mistakes made during cell division, exposure to ionizing radiation, exposure to chemicals called mutagens, or infection by viruses. Mutations are utilized for distinguishing different ancestral lines.

Non-paternal events: Events or circumstances that lead to an unexpected break in a genetic line, such as adoption, name change, or infidelity.

Nucleotide: The four different building blocks of a DNA molecule: adenine, cytosine, guanine, and thymine.

Nucleus: Control center of cells, where X-DNA, Y-DNA, and autosomal DNA are found

Patriline: The all-male line of inheritance through which Y-DNA passes.

Sex chromosomes: The chromosomes (i.e., the X-chromosome and Y-chromosome) that determine the sex of a person. Males usually carry an X-chromosome and Y-chromosome, whereas females generally carry two X-chromosomes.

Short Tandem Repeat (STR): Short patterns of DNA which repeat, one after another (in tandem), in a Y-DNA sequence. The allele values, determined by counting the number of repeats, can be used to spot Y-DNA mutations and distinguish between different branches of a family.

Single nucleotide polymorphism (SNP): Single nucleotide in the DNA sequence that can differ between individuals in a population. A SNP test confirms your Y-DNA haplogroup by determining if a SNP has mutated from its derived or ancestral state.

Triangulation: There are two primary triangulation methods used in genetic genealogy: 1) Segment triangulation, and 2) Shared match triangulation. Segment triangulation is a method that compares autosomal-DNA segments from three or more people to verify this group inherited this segment from a common ancestor. All of these people must match each other on the same DNA segment of the same chromosome to form a triangulated group. Shared match triangulation, sometimes referred to as shared match clustering, can provide clues as to the ancestor who passed down the shared autosomal DNA to the group of descendants. This method involves reviewing the surnames and family trees of this group of descendants to find potential shared ancestors. Traditional genealogical research is then used to prove the postulated common ancestor.

X-chromosome: One of the two sex chromosomes that determines gender of a person. Females receive one X-chromosome from their father and one X-chromosome from their mother. Males receive an X-chromosome from their mother and a Y-chromosome from their father. X-DNA can be used to narrow down the lines an X-DNA match can be related through.

Y-chromosome: One of the two sex chromosomes that determines gender of a person. Males have a Y-chromosome inherited from their father and a X-chromosome from their mother. Females have two X-chromosomes, one inherited from their father and one inherited from their mother. Y-DNA can be used to better understand a male test taker's patriline.

Sources:

1) Blaine Bettinger, The Family Tree Guide to DNA Testing and Genetic Genealogy (Family Tree Books, Cincinnati, Ohio, 2019), 271 pp.
2) Debbie Parker Wayne, Editor, Advanced Genetic Genealogy (Wayne Research, Cushing, Texas, 2019), 382 pp.
3) International Society of Genetic Genealogy Wiki, Genetics Glossary, (https://isogg.org/wiki/Genetics_Glossary, Accessed on 22 February 2021).