Marker: A specific place on a chromosome with two or more forms, called alleles, the inheritance of which can be followed from one generation to the next. In Y-chromosome DNA testing, this refers to non-coding Y-chromosome DNA. Numbers designate the individual DNA segments. Example: 393=13. This means at marker #393, your allele value is 13.

Massively parallel sequencing: See: Next generation sequencing.

Meiosis The stage in which sperm and egg cells are formed. It is during this process that the autosomal chromosomes recombine and mutations occur.

Mitochondrial DNA: Energy-releasing organelles located in the cytoplasm of cells, which contain their own DNA. Mitochondrial DNA is passed from mother to child, but only females continue to pass on their maternal mitochondria to their children.

Mitochondrial Eve: The common matrilineal ancestor of all living humans.

Mitosearch: Mitosearch is a free public database sponsored by Family Tree DNA where mitochondrial DNA results from any testing facility may be uploaded and compared.

Most recent common ancestor (MRCA): The most recent ancestor from whom a group of individuals share descent.

Mutation: A change in the DNA that occurs spontaneously. Mutation is a scientific term that often connotes a negative connotation as a result of 1950s 'B' movies, but in genetic genealogy, mutations are utilized for distinguishing different ancestral lines. Mutations can also occur due to environmental factors, such as exposure to radiation.

Mutation rate: The frequency with which random mutations occur.

Next generation sequencing (NGS)

Non-paternity event (NPE): An event which has caused a break in the link between the surname and the Y-chromosome resulting in a son using a different surname from that of his biological father (eg, illegitmacy, adoption, maternal infidelity).

Non-recombining Y (NRY): The section of the Y-chromosome that is passed from father to son down the patriline. While it does not recombine, it does have mutations over time.

Null value: A null is a value of zero on a marker. Nulls can occur due to missing genetic material on a marker, or a SNP can sometimes cause a null result. Several Y-STRmarkers have been identified in certain families to have null results (for example, DYS439, and DYS448)

One-name study: The study of a single surname.

Phasing: The task or process of determining the parental source of a SNP's alleles (i.e., determining which parent contributed each specific allele)

Phylotree: A shortened term for phylogenetic tree. It is most often used in reference to the available online diagrams showing the Y-chromosome and **mitochondrial DNAhaplotrees**. This term is also applied to DNA project diagrams created by Project Administrators utilizing specialized software. Phylotree is also a website which hosts the mtDNA evolutionary tree and a minimal reference version of the Y-SNP haplotree.

Recombination: An event occurring during meiosis - the formation of sperm and egg cells. One chromosome from the mother and the other from the father break and trade segments with one another.

Revised Cambridge Reference Sequence: A revised version of the Cambridge Reference Sequence. Mitochondrial DNA results are compared against the rCRS..

Sex chromosome: The X-chromosome or Y-chromosome. Normally males have one X and one Y and females have two Xs.

Short tandem repeat: Patterns in the DNA sequence which repeat over and over again in tandem, i.e., right after each other. Typically the repeat motif is less than six base pairs long. By counting the repeats, one gets an allele value which is given in an individual's haplotype. STRs are also known as microsatellites and simple sequence repeats (SSRs).