

## Mutation Rate Constants in DNA Genealogy (Y Chromosome)

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### ABSTRACT

The basic principles of DNA genealogy and the mutation rate constants for haplotypes of Y chromosome are considered. They are exemplified with 3160 haplotypes, 2489 of those in the 67 marker format, with 55 DNA lineages, 11 of them having documented confirmed common ancestors. In total, they cover 8 haplogroups and the time range from 225 to ca. 8000 years before present. A series (including 67 marker, 37 marker, 25 marker, 16 marker mostly of the Yfiler haplotype panel, 12 marker, as well as the "slowest" 22 marker and its subset of 6 marker haplotypes) were calibrated using documented genealogies (with a number of lineages which allegedly descended from some legendary and/or mythical historical figures that were examined and verified employing the calibration plots). The study principally confirms a number of previously made or assumed theoretical foundations of DNA genealogy, such as a postulated stochastic character of mutations in non-recombining parts of DNA, the first-order kinetics of mutations in the DNA, the same values of the mutation rate constants for different haplogroups and lineages, and the principles of calculating timespans to the most recent common ancestors taking into account corrections for back (reverse) mutations.

### KEYWORDS

Y Chromosome, Mutations, Haplotypes, Haplogroups, TMRCA, STR, SNP

### Cite this paper

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