





















Y chromosome

- Passed from father to son without change (unless a mutation occurs)
- Two types of genetic markers are typically examined:
 - · Y-STRs (short tandem repeats) provides finer detail
 - Y-SNPs (single nucleotide polymorphisms) big picture view

mtDNA

- Passed from mother to offspring without change (unless a mutation occurs)
- Typically a section of the 16,569 bp mtDNA is sequenced a haplogroup is assigned by presence of specific DNA mutations

















Methods for Studying Deep Ancestry (Human Migrations Throughout Time) Examination of living individuals Sampling from aboriginal (native) peoples, where possible Making assumptions regarding the past associations of population groups Analysis of ancient DNA Recovering DNA from fossil remains, which unfortunately are few and far between Provides a peek into the past (for a single individual)



















David Goldstein – A Leading Population Geneticist (University College London, now at Duke Genome Institute) "Given that it is necessary to incorporate information from other disciplines, and that it is not currently possible to develop fully realistic and general inferential models, there remains an important place for storytelling in the study of human genetic history. By storytelling we mean, essentially, the construction of a reasonable historical scenario that might explain currently observed patterns of variation. But it is very clear that some stories are considerably more fanciful than others."

Goldstein, D.B. and Chikhi, L. "Human migrations and population structure: what we know and why it matters" *Annual Review of Genomics and Human Genetics* 3:129-152 (2002); quotation from p. 143

Value and Challenge of Ancient DNA Samples

- Can sometimes yield useful results and help answer questions about the past since the sample is from the past
- Unfortunately, ancient samples can easily be contaminated by modern DNA (through the excavating team, museum curators, and the DNA scientists themselves)



A Question You May Be Asking Yourself... We share how much DNA with those guys in the Geico commercials?













John Relethford



"We must be careful not to make too many inferences about earlier populations based on the genetic composition of living populations. Populations change over time, and the more time that elapses, the greater the difficulty of using living samples as proxies for earlier ones."

Reflections on Our Past (2003), p. 143























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