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DNA and Recent Human Evolution

Analyses of molecular genetic variation in human populations are providing new insights into the evolutionary history of our species. Mitochondrial DNA (mtDNA) is particularly well-suited for such studies, as the strict maternal inheritance and absence of recombination means that mtDNA variation reflects the maternal history of our species. Analyses of mtDNA variation in contemporary human populations suggest that modern humans arose in Africa approximately 150,000 years ago. According to this view, as modern humans spread out of Africa, they replaced the non-African archaic humans, such as the Neandertals in Europe, with little or no interbreeding. This "Recent African Origin" hypothesis received important confirmation with the recovery and analysis of DNA from a Neandertal fossil, which showed that the Neandertal mtDNA falls outside the range of modern human variation. Current efforts focus on the analyses of other genes, in particular the Y-chromosome, which reflects the paternal history of our species; analyses of Y-chromosome (and other genetic) variation largely support the Recent African Origin hypothesis.