



Association of languages with maternal genetic lineages persists from the late Pleistocene

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For more than a century, linguists have used a comparative method to infer both phylogenetic relationships within language families, and the histories of words. This method makes it possible to trace cultural traits and concepts as they travel through time, but it is not informative about the social context in which languages and cultures evolved. We used a co-phylogenetic approach to trace the association of languages with uniparental ancestry, inferred from non-coding genetic markers. To discover which evolutionary scenario is consistent with the co-phylogenies of languages and genes, we obtained genetic samples from 530 men who inhabit seven tribal villages on the Indonesian island of Timor. Each man speaks one or more of five local languages, which belong to two language families. We tested their knowledge of these languages and recorded their pronunciation of relevant word lists. We calculated phylogenies for the maternal and paternal ancestry of each man, and a linguistic phylogeny for the five languages. We also calculated approximate dates for branching events in both the genetic and language phylogenies. Global tests for a co-phylogenetic relationship between ancestry (haplotypes) and language were not significant for patriline (NRY haplotypes) (ParaFitGlobal = 1053737, p-value=0.038), but very significant for matriline (mtDNA haplogroups) (ParaFitGlobal = 6.105437, p-value=0.005).

In each generation there is an opportunity to weaken or scramble the correlation between languages and uniparental lineages through “host switching”, which occurs when children learn a different language than one of their parents. The lack of correlation between patriline and languages indicates that widespread host switching occurred at least once in the past, but does not tell us when or how often. In contrast, host switching was very rare among close matrilineal kin, over many generations. The prolonged continuity of matrilineal speech communities would provide a social context enabling languages and cultures to evolve in situ. Occasional host switching of languages between uniparental descent groups provides evidence for social and cultural contact between these communities.