

*To the Editor:*

Stoneking<sup>1</sup> writes that "Conroy<sup>2</sup> may have misled some readers into thinking that there exists controversy over some basic aspects of mtDNA genetics, such as the meaning of the human mtDNA coalescent." Conroy, of course, notes that the controversies lie in the *interpretations* of mtDNA genetics, not in its basic aspects. What has confused the interpretation of mtDNA from the very start is the assertion that the meaning of the mtDNA coalescent is straightforward and very simple, solely reflecting time.<sup>3,4</sup> But multiple factors affect the mtDNA coalescent,<sup>5</sup> and comparisons with seemingly neutral nuclear DNA show that its meaning is far from straightforward.<sup>6</sup> mtDNA is not a neutral system,<sup>7</sup> which means that its variation cannot reflect time. While mtDNA most likely has been under selection,<sup>8</sup> the absence of similarly restricted variation in neutral autosomal genes<sup>6,8,9</sup> shows that the

selection acted only on this nonrecombining portion of the genome.<sup>10</sup> This is the most significant violation of the assumptions underlying the original interpretation of restricted human mtDNA variation. Thus, it is the complexity reflected by the controversies created by alternative interpretations of the mtDNA coalescent that may be important for paleoanthropology, potentially shedding light on prehistoric population structure and other aspects of paleodemography.<sup>10,11</sup>

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