

**Table S3** Potential scale reduction factor (PSRF) mean, variance and range for each of 200 coalescence times in Relate, the multi-variate PSRF (Plummer *et al.* 2006) and the number of coalescence times for each the effective sample size ( $N_{eff}$ ) is smaller than 100. Unless otherwise noted, mutation rate ( $\mu$ ) and recombination rate ( $\rho$ ) are  $2 \times 10^{-8}$  and sample sizes (n) are 8 haplotypes.

PSRF	$\mu = \rho$	$\rho = 2 \times 10^{-9}$	$\mu = 2 \times 10^{-7}$	n=4	n=16	n=32
Mean	1.007	1.007	1.008	1.008	1.009	1.008
Variance	$10^{-4}$	$8.7 \times 10^{-5}$	$10^{-4}$	$10^{-4}$	$10^{-4}$	$10^{-4}$
Range	0.991 - 1.076	0.993 - 1.051	0.992 - 1.051	0.991 - 1.102	0.992 - 1.061	0.993 - 1.049
Multivariate	2.24	2.12	2.57	2.24	3.31	2.49
Number of $N_{eff} < 100$ (out of 200)	0	0	0	0	0	0