

SUPPLEMENTARY FIGURE CAPTIONS

SUPPLEMENTARY FIGURE 1. Simulation parameters. The vertical scale shows divergence times in coalescent units. Numbers beside internal branches are factors by which their N_e 's were multiplied in order to produce varying levels of ILS.

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SUPPLEMENTARY FIGURE 2. Gene tree topology counts for ILS among a) ((A,B),C), and b) (((A,B),C),D). Topologies are numbered from most to least frequent.

SUPPLEMENTARY FIGURE 3. Median total tree length increase (calculated as the difference in length of “Fixed” topologies and “Unfixed” topologies) by ILS treatment, for ILS among ((A,B),C) and (((A,B),C),D). Based on 10,000 simulated topologies for each treatment.

SUPPLEMENTARY FIGURE 4. Substitution placement on branches of species tree (left) for each of the 14 possible discordant tree topologies in the presence of ILS (right). Filled symbols correspond to $0 \rightarrow 1$ substitutions that occurred on the discordant genealogy of a locus, hollow symbols represent substitutions incorrectly mapped to the species tree. For each tree we show the two most common mappings observed in our simulated data.

SUPPLEMENTARY FIGURE 5. Increase or decrease in branch lengths by topology when ILS is present for species tree (((A,B),C),D),E). Branch length differences ($F - U$) come from 10,000 simulated loci.

SUPPLEMENTARY FIGURE 6. Total tree length increase or decrease ($F - U$) by tree topology (left axis). Sum of internal branches on each tree topology not present in species tree

25 (((A,B),C),D),E).