



**Supplementary Figure S1.** Clustering of trees based on matching distances calculated after collapsing very poorly supported branches. The position of the midpoint is indicated using a dashed arrow. We have omitted the trees from the original Prum et al. [12] study because support was calculated in fundamentally different ways. This “tree-of-trees” figure complements the clustering analysis based on fully resolved trees, which is presented as Figure 3b in the main text.