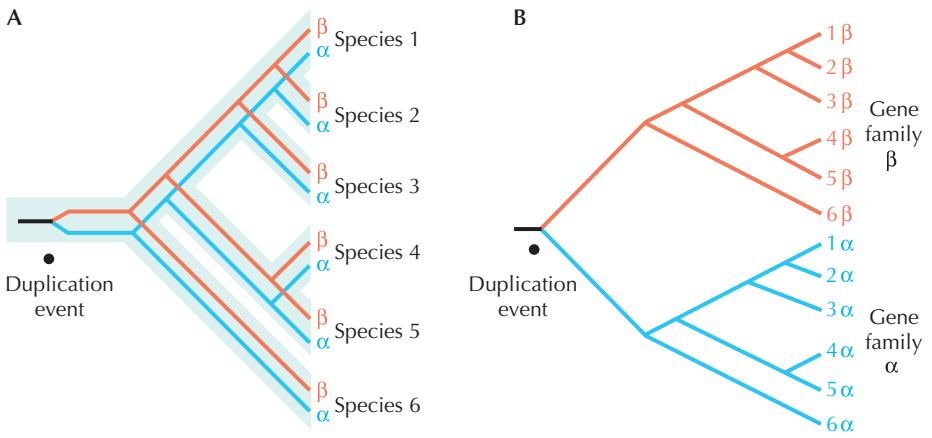

FIGURE 27.28. Gene versus species tree. Overlay of gene and species trees. (*A*) Phylogenetic tree of six species is shown (*thick light blue lines*). A common ancestor of all six species encoded a single gene in this gene family (the single *black line* near the root of the tree). An early gene duplication event resulted in two copies of that gene (α and β, indicated by the *blue* and *red* lines). Subsequently, the six species diverged as shown in the tree, all species inheriting both the α and β genes. Thus, all of the α genes in all six species are orthologs of each other, as are all of the β genes in all the species. The α and β genes are paralogs of each other. (*B*) Gene phylogeny (inferred by untangling the gene tree from within the species tree). It is by comparing the gene phylogeny to the species phylogeny that one can infer the occurrence of the early gene duplication event.