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FIGURE 5.23. Lateral gene transfer and the tree of life. (A) Gene transfer diagrammed on a hypothetical tree of four species. The *horizontal red line* shows the transfer of genes from the lineage of species 4 to that of species 3. The transferred genes then merge with the endogenous genes in the lineage of species 3, creating a chimera, where some genes have the “blue” ancestry and others have the “red” ancestry. (B) Gene transfer in the Tree of Life. The figure shows a reticulated network following the same general scheme as the rooted Tree of Life in Fig 5.21 with the bacteria as the deepest branching domain. However, many branch-crossing events (e.g., gene transfer from organelles to the nuclear genomes of eukaryotes) create a network, not a tree. Note that there is no single LUCA shown, i.e., no single common ancestor of all modern organisms, because gene transfer prevents the species tree from tracing back to a single organism. However, individual gene trees may still have a single LUCA.

5.23A, adapted from Penny D. et al., *Curr. Opin. Genet. Dev.* **9**:672–677, © 1999 Elsevier