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Mathematics of the Tree of Life—From Genomes to Phylogenetic Trees and Beyond.

The reconstruction of the Tree of Life is an old problem in evolutionary biology which has benefited from various branches of mathematics, including probability, combinatorics, algebra, and geometry. Modern DNA sequencing technologies are producing a deluge of new data on a vast array of organisms—transforming how we view the Tree of Life and how it is reconstructed. I will survey recent progress on some mathematical and computational questions that arise in this context. No biology background will be assumed. (Received August 11, 2015)