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Christine Heitsch* (heitsch@math.gatech.edu). *Strings, trees, and RNA folding.*

Under a suitable abstraction, complex biological problems can reveal surprising mathematical structure. We will illustrate this phenomenon — without assuming any biological knowledge beyond high school. As will be explained, a challenging open problem in molecular biology (i.e. RNA folding) is nicely abstracted to discrete models (e.g. strings and trees). In this way, we prove theorems which yield insight into the structure, and therefore function, of RNA molecules. We also obtain some new results in combinatorics which are of interest independent of their original biological motivation. Thus, the interaction of discrete mathematics and molecular biology is both fruitful for the former while also beneficial for the latter. (Received August 01, 2017)