

# Combinatorial Results Motivated by Computational Biology

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## **Abstract**

Under a suitable abstraction, complex biological problems can reveal surprising mathematical structure. We illustrate this phenomena with results on the combinatorics of plane trees, motivated by our work on RNA secondary structures. As will be explained, the biology inspires a new operation on plane trees, leading to a multipartite graph whose disjoint sets are enumerated by the Narayana numbers. Furthermore, the induced partial ordering gives us a lattice on the set of plane trees with  $n$  edges, which is isomorphic to the lattice of noncrossing partitions.