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*Valid Plane Trees: Combinatorial Models for RNA Structures with Watson-Crick Pairs.*

A valid plane tree is a word  $P$  of length  $2n$  paired with a plane tree  $S$  with  $n$  edges such that  $S$  describes a perfect non-crossing matching of the letters of  $P$ . This object is inspired by molecular biology: RNA is a word in the letters  $A, U, G, C$  that folds onto itself. The basic plane tree model of this folding introduced by Heitsch presents the plane tree  $S$ , we consider whether the word  $P$  can fold into that shape. We show that the two types of valid local moves on valid plane trees results in a connected graph, and prove that the graph has a unique sink (source) under type 1 (2) valid local moves. This unique sink (source) is the valid plane tree formed by the greedy algorithm. (Received September 16, 2014)