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Lattice Path and RNA Secondary Structure Predictions

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In this presentation we present preliminary research on a lattice path approach to predict (i.e., model or design) certain secondary RNA sequences. In particular we are interested in modeling secondary RNA sequences that are essential for the expression of the SL2 and SL3 domains of the HIV-1 5' RNA molecule. These domains are both hairpin structures that are important for genomic packaging. The overall goal of the presentation is to establish a direct link between certain subsets of lattice paths and secondary RNA sequences of the SL2 and SL3 domains, and to create a mathematical model that predicts more stable HIV-1 RNA sequences.