RNA-DNA Complex Structures Modeled with Wang-like Tiles

Van Pham*, University of South Florida
Joint work with Margherita Ferrari, Natasha Jonoska, Allison Moore, Chris Soteros, Mariel Vázquez

We use Wang-like tiling system with square tiles to model structures of RNA-DNA hybrids, which occur during transcription when an RNA invades a double stranded DNA and displaces a DNA strand. We associate a master directed graph using the tiles as vertices and side compatibility as edges. We add probability to the edges of the master graph, used to generate subgraphs corresponding to probable RNA-DNA hybrid structures. Using experimental data, we identify the most probable structures of these hybrids.

Keywords: tiling, directed graphs, RNA-DNA hybrid