

**C**omputation and **I**nformatics in **B**iology and **M**edicine  
Training Program

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***From RNA Secondary Structure to Coding Theory:  
A Combinatorial Approach***

We use combinatorial analysis to transform a special case of the computational problem of designing RNA base sequences with a given minimal free energy secondary structure into a coding theory question. The function of RNA molecules is largely determined by their molecular form, which in turn is significantly related to the base pairings of the secondary structure. Hence, this is fundamental initial work in the design of RNA molecules with desired three-dimensional structures and specific functional properties. The biological importance of RNA only continues to grow with the discoveries of many different RNA molecules having vital functions other than mediating the production of proteins from DNA. Furthermore, RNA has the same potential as DNA in terms of nanotechnology and biomolecular computing. (This work was done jointly with Professors Anne Condon and Holger Hoos of the University of British Columbia Department of Computer Science.)

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**Tuesday, October 8<sup>th</sup>**  
**4:00 p.m.**

Room 1111  
Biotechnology Center/Genetics  
425 Henry Mall