

HOPE COLLEGE CHEMISTRY SEMINAR

"Modified Regions of Bacterial Ribosomes as Drug Target Sites"

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4:00 pm, Schaap 1000**

Abstract

The synthesis of modified nucleosides (nucleic acid/RNA building blocks) and corresponding phosphoramidites allows for the generation of modified RNAs representing various regions of bacterial ribosomes. Availability of the phosphoramidites allows for the synthesis of hairpin or duplex RNA analogues containing the natural modifications at specific locations. RNAs representing three functionally important regions of the ribosome were synthesized with and without the natural modifications. Subsequently, different constructs with singly and fully modified RNAs were examined and compared with the unmodified RNAs for stability, structure, and conformational changes. Peptide ligands for these different modified rRNA regions were identified by using a method called phage display with a seven-amino-acid library. The relative affinities and selectivities of the peptides for the modified rRNA targets and ribosomes were determined by using a variety of biophysical methods.

Biography

As a nucleic acid chemist whose lab studies structure and dynamics of RNA molecules, Dr. Chow and her students use the tools of structural biology, synthesis, and biochemistry to analyze the complexities of RNA function. Originally from New Jersey, Dr. Chow stayed on the east coast for her bachelor's degree in chemistry and environment studies from Bowdoin College in Maine and a Master's in chemistry from Columbia University. She headed west to the California Institute of Technology in Pasadena to earn her PhD in DNA chemistry with Jackie Barton, then back east for postdoctoral work with Stephen Lippard at MIT on protein interactions with cis-platinated DNA. She began her independent scientific career at Wayne State University in 1994, where she has been full Professor in the chemistry department since 2004.