

August 9-10, 2007

2007 Ohio Student Research Forum

Wright State University
Dayton, OH

RESEARCH ABSTRACT FORM

TITLE: Analyzing and Classifying RNA-Protein Interactions

AUTHOR: Brandon Young¹

MENTOR(S): Jesse Stombaugh² and Neocles Leontis¹

INSTITUTION: *Bowling Green State University*

Analysis of the covariations for RNA basepairs and Amino Acids have been studied independently, but the release of the 70S *Escherichia coli*, *Thermus thermophilus* and 50S *Haloarcula marismortui* crystal structures has allowed for the opportunity to analyze complementary covariations that occur when an Amino Acid is interacting with an RNA basepair. In this project we have analyzed and characterized the RNA-protein interactions. For the analysis of the complementary covariations, we needed to produce an alignment that is comprised of 70S RNA and their corresponding ribosomal proteins (L2, L4, L18, etc.). For this task, we wrote a Matlab program, which can load sequence alignments of RNA along with sequence alignments of proteins. From these sequences we can compare the organism names for each of the RNAs with each of the proteins to produce an RNA-protein alignment. Since we have produced a list of each of the RNA basepairs along with their corresponding protein interactions, we will be able to use the RNA-protein sequence alignment to produce covariations matrices for each of RNA-protein interactions.