The Use of Topological Scoring and Chemical Cross-Linking to Identify Direct Protein Interactions in the Sin3 Complex

West, Abigail (School: Shawnee Mission West High School)

Gene deletion can be used in lower eukaryotes to show the protein-protein interactions in complexes. The Sin3 complex is a chromatin remodeling complex, that has been studied extensively in Saccharomyces cerevisiae, but in higher eukaryotes, there are components not found in lower eukaryotes. However, gene deletion cannot be done in higher eukaryotes, so new methods like topological scoring and chemical cross-linking can be performed to find direct protein-protein interactions. If topological scoring is combined with cross-linking, then it can reveal new protein-protein interactions. We then will produce and compared spectral counts and topological scores to proteins in the Sin3 complex with the results from cross-linking the complex to find new protein-protein interactions. Future studies can be done on the Sin3 complex and how the different paralogs impact cancer development or looking into other HDCA and HAT complexes to better understand the process of transcription in humans. Studying topological scoring and cross-linking to find new protein interactions are being studied in the Computational Biology and Bioinformatics field.

Awards Won: