My investigation looked at the role of the eIF5-mimic protein (5MP), which is a translational regulatory protein that interacts with translation initiation factors and works as a competitive inhibitor of translation initiation. Expression of 5MP promotes translation of ATF4 mRNA through delayed re-initiation mechanism, and contributes to accurate translation initiation through preventing translation from non-AUG start codons. Human encodes two copies of 5MP – 5MP1 and 5MP2, also known as BZW2 and BZW1, respectively. Both of the copies are known to be overproduced in certain types of cancer and promote the tumor growth of salivary mucoepidermoid carcinoma and fibrosarcoma and osterosarcoma, respectively.

Our approach included clean characterization of 5MP as a cytoplasmic, translational regulatory protein, however, the biological significance of its interaction with Adeno-associated virus (AAV) has not been clear. In this application, we began to address this problem. We tested the hypotheses that Rep sequesters 5MP away from the ribosome, thereby contributes to increase in non-AUG initiation of the viral genome. We also examine if Rep transfection increases non-AUG translation or alleviated the effect of 5MP on non-AUG initation through luciferase reporter assays. When this succeeded, we generated luciferase reporter plasmids whose translation start with viral non-AUG initation contexts and examined whether Rep transfection increases the reporter expression.