Modification of tRNA is important for cell growth and translation, and errors can lead to disease. Of the nearly 100 known tRNA modifications, the enzymes responsible for several modifications are not known. One of these modification is 2’-O-methylation of residue 39 (Nm39) in plants and animals. The goal of this research is to identify the enzyme responsible for the Nm39 modification in plants by expressing plant tRNA and candidate genes in yeast, which do not possess the modification. Presence of Nm39 on tRNA would indicate that the candidate gene is responsible for the modification. Once identified, the human homolog will be identified using bioinformatics. .