ABSTRACT

THESIS: The Relationship between Translocon Modification and Translocon Quality Control

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The endoplasmic reticulum (ER) is the entry point for most proteins residing and functioning in the eukaryotic endomembrane system. The primary mechanism by which proteins enter the ER is via the translocon complex. Dysfunction in this complex can block access into the ER, which is detrimental to cellular health. Studies of translocon dysfunction in the model organism *Saccharomyces cerevisiae* (budding yeast) have historically relied on epitope tags to study protein interactions. I have found that a tag on the translocon pore subunit previously suggested not to impair translocon function subtly affects translocation of proteins into the ER in yeast cells. Intriguingly, this tag also suppresses a phenotype associated with defective protein quality control pathways, consistent with a functional link between translocation and quality control. I have further characterized the effects modification have on translocon quality control and cellular health, and investigated the impact of a panel of epitope tags on translocon function to identify an epitope-tagged translocon complex that functions normally for use in future experiments.