

Chemistry and Molecular Biology Department
and NIH Center for Protease Research
Candidate Seminar
December 13, 2007
4:00 pm in FLC 122

New Approaches to Study GPI Membrane Anchoring of Proteins

Tamara L. Hendrickson
Department of Chemistry
Johns Hopkins University

Abstract

In eukaryotes, 0.5 - 1.0% of proteins are C-terminally modified with a glycosylphosphatidylinositol (GPI) membrane anchor. This post-translational modification occurs in the endoplasmic reticulum and the resultant GPI-anchored proteins are trafficked to the outer plasma membrane where they serve a variety of extracellular roles. The ultimate reaction in the biosynthesis of GPI-anchored proteins is catalyzed by GPI transamidase (GPI-T), a pentameric, membrane-bound enzyme, with at least 19 transmembrane helices. The complexity and detergent solubility of GPI-T, as well as the lack of a quantitative kinetic assay, has hindered *in vitro* characterization of this enzyme. New approaches to study this enzyme will be discussed, which include the development of a quantitative *in vivo* assay for GPI anchoring, identification of species-specific regions of recognition in GPI-T substrates, mapping of interactions between this enzyme's different subunits, and progress towards the assembly of a soluble, minimalistic GPI-T.