

Abstract

The anaerobic protist *Giardia intestinalis* is the most common intestinal parasite of human. Parasitic life style and evolutionary divergence have led to remarkable adaptations of cellular compartments and metabolic pathways in *G. intestinalis*. For this reason, *G. intestinalis* represents a unique model organism for studying the evolution of fundamental cellular pathway that plays a key role in the post-translational insertion of tail-anchored proteins (TAs) to the endoplasmic reticulum (ER) in eukaryotes called Guided Entry of Tail-anchored proteins (GET) pathway. TAs carry a single C-terminal transmembrane domain which also serves as a targeting sequence for the insertion to the ER membrane. TA protein functions include membrane fusion, protein translocation and regulation of apoptosis. GET pathway is well studied in yeast and mammals but almost all of the GET pathway components have been identified in *G. intestinalis*. However, not much attention was paid to Get1 protein which plays part in the final steps of GET pathway as the membrane insertase. It is also the only member of Oxa1 superfamily of insertases found in *G. intestinalis* which are mediating co- and post-translational insertion of proteins to organelle membranes. That makes Get1 the main topic of this thesis.

Key words: *Giardia intestinalis*, Guided Entry of Tail-anchored proteins, tail-anchored proteins, endoplasmic reticulum, Get1, pull-down, knock-out