Investigating the role of glycosylation in *Toxoplasma gondii* protein homeostasis

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Protein glycosylation is one of the most abundant and widespread post-translational modifications (PTMs). This PTM class is involved in many biological processes including host-pathogen interactions and protein quality control and therefore plays a role in many key aspects of parasite biology.

Toxoplasma gondii is an opportunistic pathogen of humans that is estimated to infect up to 30% of the world population. Different glycosylation pathways have been shown to affect the kinetics of protein folding and stabilisation in the parasite. *O*-fucosylation of nucleocytoplasmic proteins by *Tg*SPY, a paralog of host *O*-GlcNAc transferase (OGT), is one of these pathways. This modification affects protein steady state levels, resulting in slower parasite replication and differentiation to the chronic stage *in vitro*.

Additionally, complementation of *spy*-deficient parasites with specifically selected mutants allows the study of the biochemistry and evolution of this family of glycosyltransferases in a cell system, highlighting the importance of divergent protozoa as model organisms.