Investigation of Inositol-3-phosphate Synthase from Trypanosoma cruzi

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myo-Inositol is one of the nine naturally occurring inositol stereoisomers. It is ubiquitous amongst eukaryotes and acts as an essential metabolite with roles in signal transduction, membrane formation, and cellular physiology. In the protozoan parasite *Trypanosoma cruzi*—the causative agent of Chagas' disease—*myo*-inositol acts as a precursor to phosphatidylinositol (PI), which is an essential component to membrane lipids. In addition, PI in turn is required for formation of inositol phosphorylceramide (IPC), various phosphoinositides, and glycophosphatidylinositol (GPI)-anchored mucin-type glycoproteins, which coats the parasite's cell-surface allowing the parasite to participate in multiple essential steps in parasite-host interactions. In *T. cruzi, myo*-inositol is proposed to be both *de novo* synthesised as well as scavenged from the environment, however, the proteins involved in *myo*-inositol *de novo* synthesis have not been studied in *T. cruzi.* Therefore, the aim of this project is to genetically validate and biochemically characterise the putative inositol-3-phosphate synthase (*Tc*INO1). This is done through recombinant expression and purification of *Tc*INO1 for enzyme assays. Additionally, *TcINO1* will be genetically manipulated in *T. cruzi* to determine essentiality and phenotype decreased *myo*-inositol *de novo* synthesis through lipid analysis.