Poster Presentation

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Structural studies of Plasmodium falciparum GTP:AMP phosphotransferase

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Malaria is a global health concern accounting for approximately 219 million cases and an estimated 660 000 deaths in 2010[1]. The most fatal strain of malarial parasite, Plasmodium falciparum is found to contain 3 adenylate kinases (PfAK1, PfAK2 and PfGAK). Adenylate kinases are important enzymes that essentially catalyze and regulate energy metabolism processes. PfAK1 and PfAK2 catalyze the reversible MG2+ reaction ATP + AMP -> 2ADP whereas, the PfGAK catalyzes the Mg2+ dependent reaction GTP+AMP -> ADP+GDP. PfGAK was successfully cloned and expressed in Escherichia Coli. Furthermore, using 2-step chromatography the enzyme was purified and screened for crystallization conditions. PfGAK crystallized into brown hexagonal crystals and diffracted at a 2.9 Å resolution. The apo-structure have been solved and now we are working on determining the structure for PfGAK when bound to its substrate analog GP5A.

[1] *Rahlfs Stefan et al., Myristoylated adenylate kinase-2 of Plasmodium falciparum forms a heterodimer with myristoyltransferase', Molecular & Biochemical parasitology 163 (2009) 77-84.*

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