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Abstract
TBIOMD 410
Aug 8, 2022

Analysis of the Catalytic Sites within the Plasmodium BEM46-Like Protein.

The bud emergence (BEM)46 protein, which is highly evolutionarily conserved, is known to be present in all eukaryotic cells. BEM46 proteins are encoded by the bud emergence BEM 46 genes; a gene that encodes proteins belonging to the BEM46 family within the α/β hydrolase superfamily who are characterized by the α/β hydrolase domain. Those proteins include enzymes with various functions and a wide range of substrates (Ollis et al. 1992). Here we are specifically studying the Plasmodium BEM46-like protein (PBLP) which also shares structural homology and amino acid identity with BEM46-like proteins in the α/β-hydrolase superfamily. Since the biological function of the Plasmodium BEM46-like protein is still poorly understood, previous studies have proved that PBLP has an important role in parasite invasive-stage morphogenesis throughout the parasite life cycle; and by performing a P. yoelii knockout (Δpblp) strain, it was found that the Δpblp strains were unable to achieve the same level of growth as the wild type parasites (Anna M. Groat et all). Although P. yoelii knockout (Δpblp) strain reinforced the hypothesis that Plasmodium BEM46-like protein is an essential protein, the biochemistry function of that protein is still not understood. So, in our study, we aimed to study the protein itself. So, since there are three known sites on this Plasmodium BEM46-like protein that are assumed, compared to similar proteins, to be important for catalytic activity, our experiment is focusing on those three sites as a start point. The overall purpose of this project is to narrow our assumption by inducing mutation on those three sites to determine whether there's something enzymatic that's part of this protein function.