

Identification of Acyl Carrier Protein and the Determination of Type II Fatty Acid Synthesis Pathway in *Babesia bovis*

Marina Caballero, Monica J. Pedroni and Audrey O. T. Lau

Department of Veterinary Microbiology & Pathology, College of Veterinary Medicine, Washington State University, Pullman, WA 99164-7040

As a member of the Apicomplexan phylum, *Babesia bovis*, bears a plastid-like organelle called the apicoplast. It has been shown that this organelle plays a role in the survival of the parasite, although its mechanisms of action are not fully understood. Evidence in related Apicomplexan apicoplasts, such as those in *Plasmodium* and *Toxoplasma*, demonstrate the existence of type II fatty acid (FASII) biosynthesis pathway. This pathway is commonly found in prokaryotes and thus, identifying such pathway in *Babesia* will be beneficial for drug design. We initiate our study by investigating into the existence of FASII biosynthesis pathway in *B. bovis*. We identified a gene which encodes for a putative acyl carrier protein (ACP), the core enzyme of FASII pathway and limited *in silico* characterization suggests that BbACP may be targeted to the lumen of the apicoplast. The putative protein contains a signal peptide and a long 5' extension where a traditional transit peptide may be located. Drug inhibitory studies were also carried out to target substrates known to participate in this pathway. Interestingly, with the exception of one drug that inhibited parasite growth, none of the other drugs has an inhibitory action, suggesting that FASII pathway may not be present in this parasite, contrary to other members of its phylum.