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Mason L. Derendinger
University of Montana, mason.derendinger@umconnect.umt.edu

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Characterization of a *Bartonella bacilliformis* Human Factor H-Binding Protein

Mason Derendinger, Linda Hicks, Shaun Wachter & Michael F. Minnick

Division of Biological Sciences, University of Montana, Missoula, MT

### Abstract –

*Bartonella bacilliformis* is a human bacterial pathogen and the etiological agent of Carrion’s Disease. *B. bacilliformis* is serum-resistant, allowing it to survive in the human bloodstream and persist and replicate in erythrocytes. Human factor H is a circulating protein in human blood that is part of the complement cascade of innate immune defense. Factor H binds to self-cells and prevents autoimmunity by complement fixation. A Far-Western blot followed by mass spectrometry analysis suggests that several *B. bacilliformis* proteins can bind to human Factor H. Here, we describe one protein, BB1133; an outer membrane autotransporter and the Factor H-binding protein identified by mass spectrometry. Two distinct domains of BB1133 were cloned and expressed in E. coli using the Gateway cloning system and pET-DEST42 vector. IPTG induction of the constructs, followed by a Far-Western blot with human Factor H as a probe, shows that the passenger domain of BB1133 is responsible for binding human factor H.

### Results and Discussion –

- Subcloning of two Bb1133 domains into pEXP42, expression in E. coli and FW blots demonstrate that the PD of Bb1133 is responsible for binding human FH and is therefore likely used by the pathogen to avoid destruction by human complement during infection.

### Future Directions –

- Knockout Bb1133 in *Bartonella bacilliformis*.
- Check for FH binding using FW blots in mutated *Bartonella bacilliformis*.
- Determine whether complement resistance is impaired in mutant versus wild-type strains.

### References –


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