INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study	:	Ph.D.

Thesis Title:
Analysis of Genes Encoding Outer Membrane Protein of *Leptospira interrogans* and Its Modulation Due to Host Factors: An Approach for Understanding Host-Pathogen Crosstalk

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SHORT ABSTRACT

The pathogens like *Leptospira interrogans* upon infection to human or animals and to sustain itself in the diverse host defense system have evolved sensor mechanisms to discern different host factors such as catecholamines (stress hormones), temperature, osmolarity, oxidative stress, etc. These pathogens exploit these host factors as an environmental cue to alter their growth and virulence for its survivability. The leptospiral outer membrane proteins are thought to be important for understanding the host-pathogen interactions due to their location on the bacterial surface. The present study aimed at understanding the function of genes in *L. interrogans* predicted to encode membrane proteins and is experimentally modulated on exposure to host factors under *in vitro* condition. Such membrane proteins are considered to be an interface for the host and pathogen interaction and may be critical in the leptospiral pathogenesis. The molecular characterization of selective genes (*LA0616*, *LA3961*, *LB186*, *LB047*, *LA3307*, *LB191*, and *LA3263*) encoding hypothetical membrane proteins and that are modulated by host factors revealed that these are outer membrane adhesins and can be implemented as novel serodiagnostic candidates for the diagnosis of leptospirosis across a wide range of hosts. This research work elucidates the possible means of leptospiral-host crosstalk after mimicking host environment under *in vitro* condition. In this study, by mimicking a single host factor environment, under the given *in vitro* growth condition, we could identify novel antigen markers and predict its possible role during the *Leptospira* natural infection. As a future perspective, the intervention of the function of identified proteins essential for host-pathogen crosstalk during leptospirosis may aid in treatment and reduction of *Leptospira* virulence.