Human Immune Responses to *Burkholderia pseudomallei* Characterized by Protein Microarray Analysis

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**Background:** This study aimed to determine the antibody and T cell responses to *Burkholderia pseudomallei* (*B. pseudomallei*) of healthy individuals in endemic areas with no known history of disease, and recovered melioidosis patients in order to select candidate vaccine antigens.

**Methods:** For antibody profiling, a protein microarray of 154 *B. pseudomallei* proteins was probed with plasma from healthy individuals (n=108) and recovered patients (n=72). Of these, blood from 20 and 30 individuals, respectively were also obtained for T cell assays.

**Results:** Twenty-seven proteins distinctively reacted with plasma from both groups suggesting that different responses occur following environmental exposure or clinical melioidosis. We also compared the responses according to their history of subsequent relapse and the average antibody response to BPSL2765 (putative OmpA family protein) was over 10 times higher in plasma from individuals who had only one episode of disease than those with recurrent melioidosis. A comparison of antibody and T-cell responses to five *B. pseudomallei* proteins revealed that BimA and flagellin induced responses which were similar between both groups but BPSS0530; a conserved hypothetical protein could induce T cell responses of healthy controls more than recovered melioidosis.

**Conclusions:** By combining large scale antibody microarrays and assays of T cell mediated immunity, we have identified a panel of novel *B. pseudomallei*
proteins which show distinct patterns of reactivity in different stages of human melioidosis. These proteins may be useful candidates for development of subunit-based vaccines and in monitoring the risks of treatment failure and relapse.