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Characterizing the host response of Balb/c mice to *Burkholderia pseudomallei* using RNA- seq

Jonathan David
Dstl, UK

Recent advances in Next Generation Sequencing (NGS RNASeq) along with data analysis methodologies have facilitated the potential for the analysis of the entire host response to infection. Here we describe an ambitious technical approach used in order to analyse the host transcriptome during the course of an infection with *Burkholderia pseudomallei*; the causative agent of melioidosis. Statistically powered experiments have been used to map the response in Balb/C mice challenged via the pulmonary route with *B. pseudomallei* K96243 during a four day time-course of infection. Methodologies have been developed for the extraction of the high quality RNA required for NGS from three tissue types (i.e., lung, spleen and blood). The transcriptome from these tissues have been analysed using NGS RNA-seq. In parallel, bioinformatics pipelines have been developed to handle the large volumes of data generated by RNA-seq. The work is rapidly encountering and solving novel problems as biology moves into handling and analysing “Big Data”. This poster will present the analytical pipelines used and the preliminary biological findings for the lung at both gene and pathway level. Tissue-specific biological processes have also been identified. This approach provides an improved understanding of bacterial pathogenesis as well as the host responses generated during infection. Ultimately this research will aid the identification of innovative targets in the host for therapeutics and facilitate the development of novel medical countermeasures for the treatment of diseases such as melioidosis.

Biography

Jonathan David completed his PhD in “Investigating the importance of the lung epithelium in response to *Francisella tularensis*” using microarray technology. His interests lie in using high throughput technologies to investigate the host response to infections in order to identify novel therapeutic targets. He is a committed research scientist with 10 years experience working with numerous dangerous pathogens (ACDP3), delivering medical countermeasures for UK government. He has been a Senior Scientist at Dstl since 2010.

jdavid@dstl.gov.uk