

### **Abstract title**

*Schistosoma* life in the blood (and in the lab) illuminated by RNA-sequencing

### **Author**

A Wangwiwatsin<sup>2</sup>; A Protasio<sup>2</sup>; G Rinaldi<sup>2</sup>; C Owusu<sup>2</sup>; M Lotkowska<sup>2</sup>; M Doenhoff<sup>1</sup>; M Berriman<sup>2</sup>;

<sup>1</sup> School of Life Sciences, University of Nottingham; <sup>2</sup> Wellcome Trust Sanger Institute

### **Abstract**

Host-parasite interactions in *Schistosoma mansoni* have been widely studied for both intra-molluscan and intra-mammalian stages. For the intra-mammalian stages, many gene expression studies have focused on mature adult worms perfused from hosts or on early schistosomules cultured *in vitro*. In this study, we aim to investigate the early stages of *S. mansoni* development *in vivo* over a time course from the lung stage through to early liver stages, using transcriptomic information obtained from RNA-sequencing. Such data opens a window into a poorly characterised period of infection when the parasites morphologically transform, migrate within the host and develop into adults. After leaving the lung, schistosomes are found accumulating in the liver, where males and females pair up before – in the case of *S. mansoni* - migrating into mesenteric circulation. To identify specific processes that could influence this journey, we examined parasite responses to host by co-culturing mechanically transformed schistosomules with cell lines over time. Both time and cells have distinctive effects on the parasite transcriptomes and such signals might reflect changes that happen as parasites encounter host tissues. Together with the *in vivo* transcriptomic data, this could also improve our understanding on the limitation and relevance of using an *in vitro* system for studying intra-mammalian parasites.