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The Bionic Parasite: Deconstructing malaria parasite cell motility from whole cell down to single molecule

Thursday 15 August 2013 1 – 2pm

Dr Jake Baum Walter and Eliza Hall Institute

Slatyer seminar room R.N. Robertson Building (Bldg. 46), Linnaeus Way, ANU



Cell movement is essential for many biological processes during development, homeostasis and reproduction. It is also a core feature in the establishment of many infectious diseases, not least the parasites that cause malaria, protozoan pathogens from the genus *Plasmodium*. The core motile stages of malaria parasites must each actively cross tissue barriers and penetrate different target host cells during their lifecycle between mosquito and human hosts. They achieve this mobility, called 'gliding motility', without changing cell shape but instead via the interaction of parasite actin filaments with an internal single-headed myosin motor. Whilst based on such widely conserved proteins as actin and myosin, however, the core biomechanics of gliding are radically divergent from cell motility systems used by nearly all other eukaryotes, and are still poorly understood. Given the centrality of movement to malaria parasite infection, new understanding into the biomechanics of gliding is clearly of great relevance. Not only would this lead to insights into a fundamental aspect of malaria parasite biology but, given divergence between metazoan and *Plasmodium* cell motility mechanisms, provides a potential foundation for development of novel therapeutics. Here I present my group's research towards this goal and our ongoing efforts to take apart and reconstitute this exquisite moving machine.

Dr. Jake Baum is a laboratory head and member of faculty at the Walter and Eliza Hall Institute (WEHI) in Melbourne. He is a current ARC Future Fellow, HFSP program awardee and has held continuous funding from the NHMRC since 2008. In recognition of his work in parasitology, Jake has received an Australian Society for Parasitology ECR award ('07), a Victorian Young Tall Poppy Award ('09), the 2011 WEHI Burnet Prize and is the forthcoming 2013 Merck-Millipore Medalist (ASBMB). In 2014, Jake will move his lab to Imperial College London, where he will be taking up a Readership in Parasite Cell Biology, with funding from the UK Wellcome Trust.

Presented by

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