



# Signalling pathways modulating egress and motility in *Toxoplasma*

Thursday 1 May 1 – 2pm

## Speaker

### Dr Chris Tonkin

Walter and Eliza Hall Institute of Medical Research, Melbourne

## Location

### Slatyer Seminar Room

R.N. Robinson Building (Bldg 46),  
Cunningham Close, ANU

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This lecture is free and open to the public

BSB event information:

[biology.anu.edu.au/News/events-bsb.php](http://biology.anu.edu.au/News/events-bsb.php)



Central to the pathology caused by apicomplexan parasites is the rapid and repeated rounds of parasite invasion, replication and egress from host cells. In order to activate these cellular processes parasites must sense environmental cues, secrete adhesins onto their surface and activate the actomyosin-based motor to drive parasite motility. We are interested in revealing the signal transduction pathways that change a relatively quiescent replicating parasite into a motile invasion machine. Using *Toxoplasma* as a model system we use forward and reverse genetics, cellular imaging and quantitative proteomic techniques to uncover the signal transduction

pathways that translate environmental cues into a cellular response. Using combinations of these approaches we have recently identified a 'plant-like' calcium-dependent protein kinase - CDPK3 - that is required for host cell egress and have shown that  $\text{Ca}^{2+}$  oscillations are perturbed in this mutant. Furthermore, we have identified a suppressor of egress - TM5 - and linked its activity to phosphorylation by CDPK3. Global quantitative phosphoproteomics on several of these mutants has highlighted critical factors which are activated by phosphorylation by CDPK3 and suppressed by TM5 to induce egress and motility. Together our work is providing this first insights into how egress and motility are regulated in apicomplexan pathogens.

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