

# Medical Microbiology and Immunology

## MMI 291 Seminar Series

### Emerging Challenges in Microbiology and Immunology

#### Current Theme: Interdisciplinary Research



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“Systemic identification of *Toxoplasma* virulence factors”

Friday, November 9, 2018

Genome and Biomedical Sciences Facility, Auditorium Room 1005

12:10 PM – 1:00 PM

**Research work:** We are interested in susceptibility to infection which is likely caused by a complex interplay between host and parasite. We study host-parasite interactions between the obligate intracellular eukaryotic parasite *Toxoplasma gondii* and its hosts. *Toxoplasma* can infect virtually any cell and causes life-long chronic infections ([toxoplasmosis](#)) in most warm-blooded animals. It is estimated that 30% of humans are infected with *Toxoplasma*. Although most infected individuals are asymptomatic, *Toxoplasma* can cause severe disease in immunosuppressed individuals and fetuses and also causes [ocular disease](#) in otherwise healthy people. *Toxoplasma* virulence differs, often quite dramatically, depending on the infecting strain and the host. The focus of the Saeij laboratory over the last years has been to identify genes of *Toxoplasma* that modulate the host cell and/or determine virulence, host genes and pathways that determine resistance/susceptibility, and to characterize their specific interactions.

#### Publication references:

Rosowski E, Lu D, Julien L, Rodda L, Gaiser R, Kirk J, Saeij JP. Strain-specific activation of the NF- $\kappa$ B pathway by GRA15, a novel *Toxoplasma* dense granule protein. **J. Exp. Med.** 208(1):195-212; 2011. PMID: PMC3023140.

Cirelli KM, Gorfou G, Hassan MA, Printz M, Crown D, Leppla SH, Grigg ME, Saeij JP, Moayeri M. Inflammasome sensor NLRP1 controls rat macrophage susceptibility to *Toxoplasma gondii*. **PLoS pathogens.** 10(3):e1003927; 2014. PMID: PMC3953412.

Gold DA, Kaplan AD, Lis A, Bett GC, Rosowski EE, Cirelli KM, Bougdour A, Sidik SM, Beck JR, Lourido S, Egea PF, Bradley PJ, Hakimi MA, Rasmussen RL, Saeij JP. The *Toxoplasma* dense granule proteins GRA17 and GRA23 mediate the movement of small molecules between the host and the parasitophorous vacuole. **Cell Host & Microbe.** 17(5):642-52; 2015