

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”

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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- κ B pathway by GRA15, a novel *Toxoplasma* dense granule protein. **J. Exp. Med.** 208(1):195-212; 2011. PMCID: PMC3023140.

Cirelli KM, Gorfu 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. PMCID: 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