UC DAVIS HEALTH | SCHOOL OF MEDICINE

Medical Microbiology & Immunology
MMI 291 Seminar Series
Emerging Challenges in Microbiology and Immunology

MMI 291 Seminar Series

Current Theme: Interdisciplinary Research
Winter Quarter 2023 – CRN 33700

Friday Seminar – 12:10-1 p.m. – Hybrid and Zoom
Genome and Biomedical Sciences Auditorium 1005

"Brucella abortus relies on nutrient deprivation to coordinate T4SS and effector expression"

Exit Seminar - Research

My dissertation research investigates how *Brucella spp.* coordinate the regulation of their Type IV secretion system (T4SS) structural genes with their broad repertoire of effectors, which are substrates of the T4SS that are injected into the host cell during infection. Unlike many other pathogens, whose secretion system and effectors tend to be co-localized in the genome and co-regulated by the same transcriptional regulators, the genes encoding *Brucella*'s T4SS effectors are scattered throughout its genome. Therefore, the mechanisms that ensure that the effectors are expressed together with their secretion system at the right time in infection remain a mystery. My research has revealed that, in the case of the effector protein VceB, *Brucella abortus* utilizes a post transcriptional mechanism to direct the translation of transcript that is already present and therefore does not need to induce its transcription. The environmental signals driving induction of VceB translation include nutrient limitation, specifically a lack of amino acids. Amino acid starvation is known to elicit a general stress response called the stringent response which is implicated by these findings. Preliminary data, suggests that this phenomenon could be widely employed by *Brucella abortus* to regulate several other of its known effectors. This is the first instance where post transcriptional regulation has been implicated in effector regulation in *Brucella spp.*

March
17

Beau Parry
Ph.D. Candidate, Renée Tsolis Lab
Microbiology Graduate Group
UC Davis

March 17, 2023
12:10 – 1 p.m.

Medical Microbiology and Immunology
School of Medicine

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We hope to see you there!