



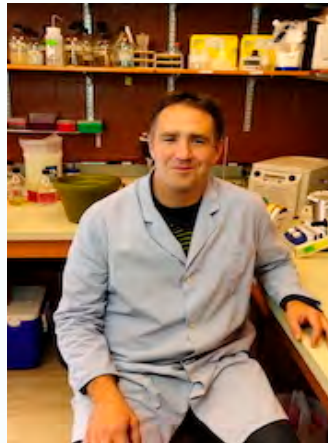
Life Sciences Institute
Department of Microbiology and Immunology

Dmitry Apel Memorial Lecture

Presents a seminar by

Dr. Aaron White

Research Scientist and Jarislowsky Chair in Biotechnology,
Adjunct Professor, Department of Microbiology and Immunology,
Vaccine and Infectious Disease Organization, University of Saskatchewan



entitled:

**Divide and conquer: a potential transmission
strategy for *Salmonella***

For bacterial pathogens, survival is ultimately dependent upon transmission to new hosts. In the case of *Salmonella* Typhimurium, a common human and animal pathogen, there are numerous examples of extreme persistence in food products and environmental reservoirs, but it is not well understood how this relates to virulence. We have recently discovered that specialized cell types of *S. Typhimurium* may account for their ability to survive and transmit in the face of unpredictable conditions. When exposed to environmental stresses, individual populations of *S. Typhimurium* differentiate into planktonic (single) cells and multicellular aggregates. Global expression analysis (RNA-seq) revealed that >1800 genes were differentially expressed between these two cell types. Further comparisons showed that planktonic cells produced greater amounts of a type three secretion system critical for *S. Typhimurium* invasion, while the multicellular aggregates produced a resistant extracellular matrix and survived better under conditions of stress. We hypothesize that the formation of these two cell types within the same population is part of a bet-hedging strategy, whereby the single cells are adapted for direct host-to-host transmission and the aggregates are adapted for survival in the environment and transmission at later time points. This strategy would ensure that a proportion of cells always survive to preserve the genome for the next generation.

Hosted by: Dmitry Apel Memorial Lectureship
Committee and Dr. Erin Gaynor

Tuesday April 28, 2015
12:30pm to 1:30pm, LSC 3