

CRBM external seminar
BIOLuM

Friday February 13th at 11:00 am, Salle P. Jeanteur IGMM

***wtf* evolution**

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SaraH Zanders became interested in selfish genes while investigating meiotic recombination, a critical step in the formation of gametes, as a graduate student at Cornell University. While at Cornell, Zanders heard a research presentation by Harmit S. Malik, Ph.D., a scientist at the Fred Hutchinson Cancer Research Center (FHCRC). After receiving her Ph.D. degree in genetics and development from Cornell in 2010, Zanders joined FHCRC as a postdoctoral fellow in the basic sciences division. Malik, along with FHCRC faculty member Gerry Smith, Ph.D., advised her research on fertility, genome evolution, and the origin of new species. Her research findings, which suggest that selfish genes play a role in speciation, the evolutionary process by which biological populations evolve to become distinct reproductively isolated species, were published in 2014 in the journal *eLife*. Zanders joined the Stowers Institute in July of 2016.

Abstract:

Killer meiotic drivers are selfish genetic elements that promote their own transmission into the next generation by killing the gametes that do not inherit them from a heterozygote. Killer meiotic drivers have independently evolved many times and are found throughout eukaryotes. Despite generally being unrelated, killer meiotic drivers found in distinct lineages often share mechanistic and evolutionary themes. Fission yeasts offer a particularly tractable system for identifying and characterizing these themes. My talk will introduce the *wtf* killer meiotic drivers found in fission yeasts, their mechanisms and features that may facilitate their striking evolutionary longevity.

Two publications related to the talk:

Nidamangala Srinivasa A, Campbell S, Venkatesan S, Nuckolls NL, Lange JJ, Halfmann R, Zanders SE. Functional constraints of *wtf* killer meiotic drivers. *PLoS Genetics* 2025 21(2):e1011534. doi: 10.1371/journal.pgen.1011534.

De Carvalho M, Jia GS, Nidamangala Srinivasa A, Billmyre RB, Xu YH, Lange JJ, Sabbarini IM, Du LL, Zanders SE. The *wtf* meiotic driver gene family has unexpectedly persisted for over 100 million years. *Elife* 2022 13;11:e81149. doi: 10.7554/eLife.81149.