SCHOOL OF LIFE SCIENCES / FACULTE DES SCIENCES DE LA VIE

Global Health Institute / Institut de recherche en infectiologie

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

GHI Floor Seminars

Special seminar by invited speaker

Prof. Steven Sinkins

Centre for Virus Research, University of Glasgow

Wolbachia-*mediated arbovirus transmission blocking in mosquitoes*

The intracellular inherited bacteria *Wolbachia* can block the transmission of dengue, chikungunya and Zika viruses by *Aedes* mosquitoes, and can also spread through host populations by manipulating their reproduction. *Wolbachia* is now being deployed as a dengue control tool in a number of countries. We have now created and characterized a number of transinfected lines in *Aedes aegypti* and *Ae. albopictus* using a range of *Wolbachia* strains, and the results highlight the key role host factors play in determining *Wolbachia* intracellular density and fitness parameters. Oral challenges were conducted with the dengue and Zika viruses and the degree of transmission blocking varied widely with strain. *w*Mel, the strain currently being used for dengue control campaigns, produced a comparatively low degree of transmission blocking, and also showed susceptibility to loss after larval heat treatment. A proteomic quantification of the effects of *Wolbachia* revealed unexpected perturbations in cholesterol transport and vesicular trafficking, which could impact viral entry and replication. Treatment with a cholesterol binding agent reversed the dengue-blocking phenotype in *Wolbachia*-infected *Ae. aegypti* cells.

Hosted by Bruno Lemaitre

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12:15, SV 1717a

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