Graduate Schools
Infection Immunity and Cancer, UniGe & UniL: CUS
Biology & Medicine, CMU

Seminar in Microbiology

Monday, October 28, 2019

Salle de séminaire, E07.3347.a, CMU

11:30 – 12:30

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Why haven't antibiotic-resistant bacteria taken over the world?

Recent predictions about an antibiotic-resistance apocalypse assume that the prevalence of resistance in all bug-drug combinations will increase rapidly and possibly reach fixation, but this is inconsistent with most existing data on antibiotic use and resistance. Understanding the magnitude of the problem and the potential impacts of various types of solutions requires that we understand why the prevalence of resistance is in many cases remaining roughly constant over time, albeit at different levels that correlate with local quantities of antibiotic use. This talk describes efforts to understand quantitatively the long-term coexistence of susceptible and resistant strains of bacteria focusing on *Streptococcus pneumoniae* and more generally the phenomenon of balancing selection in bacteria.

References

Colijn et al., 2010 What is the mechanism for persistent coexistence of drug≠susceptible and drug resistant strains of Streptococcus pneumoniaeø J R Soc InterfaceÆ 2010

Lehtinen et al., 2017 Evolution of antibiotic resistance is linked to any genetic mechanism affecting bacterial duration of carriageÆ Proc Natl Acad Sci U S A 1141075-1080

Cobey et al., 2017. Host population structure and treatment frequency maintain balancing selection on drug resistanceÆ J R Soc Interface 133 pii 20170295

Lehtinen et al.,2019. On the evolutionary ecology of multidrug resistance in bacteria PLoS Pathog 15 e1007763

Corander et al., 2017. Frequency-dependent selection in vaccine-associated pneumococcal population dynamics Nat Ecol Evol 12: 1950-1960

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