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CRISPR, herd immunity and transduction - the unexpected ways of how bacteria have sex

Pavel Payne (University of Liverpool)

Host: Gasper Tkacik

Unlike most eukaryotes, bacteria reproduce by binary fission, which is devoid of recombination. Recombination is known to be able to speed up adaptation by bringing beneficial alleles arising in different individuals together. In a purely clonal bacterial population, however, the beneficial alleles compete with each other in a process called clonal interference. Although bacteria lack recombination as it occurs in eukaryotes, they can occasionally exchange genetic information directly between individuals in a process called horizontal gene transfer (HGT), and one of the common means of HGT is transduction by bacteriophages. In my presentation I am going to tell you about my ongoing project, which in turn shows that in bacterial populations recombination may be much more prevalent than previously thought, hence have a strong impact on bacterial evolution. In particular, I will show that presence of CRISPR-based herd immunity results in maintenance of CRISPR+ and CRISPR- strains in the population and allows for a continuous gene flux by transduction from the susceptible part of the population to the resistant one. Therefore, the CRISPR immunity can in fact enable recombination in bacterial populations and essentially serve as an unexpected way of how bacteria have sex.

Friday, September 21, 2018 03:00pm - 04:00pm

IST Austria Campus Mondi Seminar Room 2, Central Building

This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: https://ist.ac.at/en/campus/how-to-get-here/ The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.