Seminar/Talk

The genetic basis of clinally varying life history traits in Drosophila melanogaster and Arabidopsis thaliana

Envel Kerdaffrec
GMI Vienna

Host: Fyodor Kondrashov

Chromosomal inversions are structural rearrangements that suppress recombination and allow alleles to be co-inherited. This feature, along with the fact that inversions form parallel clines on multiple continents and have large effects on adaptive traits, suggests that they play major roles in evolutionary processes, including local adaptation. However, despite many research efforts, little is known about the selective pressures acting on inversions, and identifying the genic targets of clinal selection they might carry remains a considerable challenge. My EMBO LTF fellowship proposal addresses some of these long-standing questions in Drosophila melanogaster, by focusing on the previously established link between body size, a major life history trait, and a cosmopolitan clinal inversion, In(3R)Payne. Briefly, this project will consist in (i) identifying body-size variants potentially under selection within the inversion, (ii) measuring the extent to which the inversion affects body size on multiple continents and (iii) establishing causality between putative targets of selection and body size variation. I will also present my PhD work on the genetic architecture of seed dormancy, a clinally varying life history trait that controls the timing of seed germination and is important for local adaptation in many plant species. In a nutshell, we found that more than half of the dormancy variation observed in Swedish Arabidopsis thaliana is due to multiple alleles at a single locus, the previously identified dormancy gene DOG1. In addition, field experiments showed that these alleles impact seedling survival by affecting the timing of seed germination in nature, resulting in a large fitness differential. Thus, dormancy appears to be regulated by a single, multi-allelic, large effect locus, and this work demonstrates that adaptive traits can have a relatively simple architecture and can sometimes be dissected genetically.

Wednesday, April 18, 2018 11:00am - 12:00pm
Mondi Seminar Room 1, Central Building

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