Lines

Study of the causes and evolutionary consequences of natural chromosomal rearrangements

- Search for Galileo in other species of Drosophila: detection of horizontal transfer. We seek to understand the distribution and evolution of Galileo in the genus Drosophila and in particular whether it has been involved in cases of horizontal transfer. These causes are common in transposons and some authors have proposed that it is a necessary stage for long-term survival. We intend to investigate the presence of Galileo in the full group species of Drosophila. Also tested for the presence of Galileo in other species of different groups within the subgenera Sophophora and Drosophila. The horizontal transfer hypothesis was tested comparing the phylogeny of Galileo with the phylogeny of the species.

- Galileo support development of Drosophila and molecular analysis of breakpoints overlap between different investments. We propose analyzing the breakpoints of polymorphic chromosomal inversions fixed and other species (besides D. buzzatii). Among these species there are three known chromosomal polymorphisms, D. mojavensis, D. Williston, D. ananassae, which belong to different subgenera. In the full group, in general, and in the buzzatii complex in particular, are frequent overlaps between the cytological breakpoints of different investments. We have recently proposed that TE are responsible for these matches. To test our hypotheses, is intended to analyze a molecular level the breakpoints overlap between different investments. Specifically, we discuss in detail three "hotspots" of the buzzatii complex at the intersection multiple breaks.

- Effect of natural Drosophila investments on the expression of genes adjacent to breakpoints. Investments can affect the expression of genes near the break points, directly, eliminating or providing regulatory sequences, or indirectly through the influence they can exercise the TEs inserted at the break points. It seeks to determine what is the frequency of position effects and whether they contribute significantly to the evolutionary success of natural investment. For this reason, we systematically analyzed the possible effects of position on all the genes adjacent to breakpoints of polymorphic and fixed investments identified by our group. In each case, compared the expression levels of genes in lines (or species) with or without inversion.