

SPP 2349 (GEvol): Genomic basis of evolutionary innovations.

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The Diptera's solution to the end-replication problem – selfish genetic elements as an insect innovation?

Abstract

Telomeres, repetitive DNA at chromosome ends, protect coding DNA from the shortening of chromosomes at cell replication. In most eukaryotes, telomeres are maintained by the enzyme telomerase. Accordingly, Diptera are unusual because they have lost telomerase. Alternative telomere-maintenance strategies include, among others, telomere-specific transposable elements that maintain telomeres by replication at chromosomal ends. In our project.FlyInnovation, we will determine if telomere-specific transposable elements are a genomic innovation for preserving telomeres in the absence of telomerase or simply selfish genetic elements avoiding host-silencing in a genomic safe-site.