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Visioconférence Jitsi

THE ARCHITECTURE OF GENETIC ADAPTATION DURING EXPERIMENTAL EVOLUTION IN A NOVEL THERMAL ENVIRONMENT

par

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🔍 To investigate the genetic architecture of thermal adaptation – a highly complex trait – we performed experimental evolution on a natural *Drosophila simulans* population. Transcriptome and respiration measurements reveal extensive metabolic rewiring after only approximately 60 generations in a hot environment. Analysis of genome-wide polymorphisms identifies two interacting selection targets, *Sestrin* and *SNF4Ay*, pointing to AMPK, a central metabolic switch, as a key factor for thermal adaptation.

🔍 Our results demonstrate that large-effect loci segregating at intermediate allele frequencies can allow natural populations to rapidly respond to selection. Because *SNF4Ay* also exhibits clinal variation in various *Drosophila* species, our results suggest that laboratory natural selection is a powerful approach to identify genetic region under selection in natural environments.