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# When lianas and trees talk DNA: new insights into the genetic exchanges in plants

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## Abstract

Horizontal transfer (HT) refers to the exchange of genetic material between divergent species, without reproduction. HT has played a significant role in bacterial evolution, but it is underestimated in higher eukaryotes. Several recent studies have demonstrated HTs in eukaryotes, particularly in the context of parasitic relationships and model species. However, very little is known about the HT in natural ecosystems, particularly those involving non-parasitic wild species and the nature of relationships that promote these HTs. To fill this knowledge, we conducted a pilot study to investigate HTs in a natural ecosystem, the Massane forest located in south of France by sequencing the genomes of 17 wild non-model species. To reach this goal, we developed a new computational pipeline called INTERCHANGE, allowing the characterization of HTs at the whole genome level without prior annotation and directly in the raw sequencing reads. Using this pipeline, we identified 12 HT events, half of which occurred between lianas and trees. We found mainly low copy number of LTR-retrotransposons from Copia superfamily are transferred between wild plant species, especially those of the Ivana and Ale lineages. This work highlights a new possible route for HTs between non-parasitic plants and provide new insights into genomic characteristics of horizontally transferred DNA in plant genomes.

**Keywords:** Horizontal transfers, LTR retrotransposons, Ecosystem, Non assembled genomes, Comparative genomics

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