

Sources of variation fueling adaptive radiation after long-distance dispersal in New Caledonian persimmons (*Diospyros*)



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Introduction

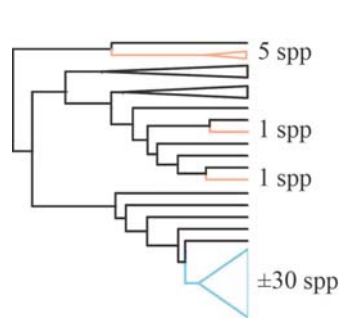
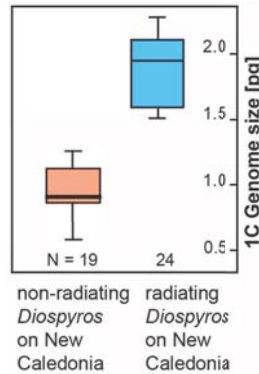


Figure 1: Schematic genus-tree of *Diospyros* representing the four New Caledonian lineages

- ❖ *Diospyros* (Ebenaceae) colonised New Caledonia at least **4x** during **last 20 myr¹**
- ❖ Similar ecological opportunities for every colonising lineage → **varying evolutionary fate**: 1x explosive radiation, 3x evolutionary lethargic



- ❖ Radiating group **doubled** its genome size through **accumulation of transposable elements (TEs)²**

Figure 2: Comparison of genome sizes: radiating vs. non-radiating based on Flow-Cytometry analyses²

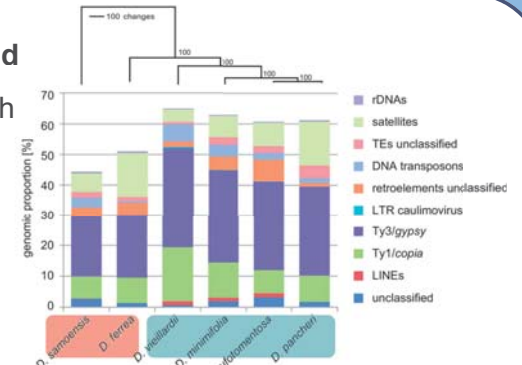


Figure 3: Proportion of the repeated elements present in NC species²

What made the difference? → Drivers of evolutionary opportunity? Can TE dynamics stimulate a diploid explosive adaptive radiation?

Comparative Genomics

- ❖ **PacBio® HiFi reads, Sequel II** of 5 species (~80x coverage)
- ❖ Descriptive: TE-activity, structural variants (SVs), demographic history (PSMC)
- ❖ Functional: SVs in coding regions? Evidence for genomic adaptations?

D. sandwicensis (sister species to radiating group)

Genome size: 1.10 pg / 1C



@http://www.botany.hawaii.edu/

D. impolita

Genome size: ca. 2.02 pg/ 1C



@Julien Barrault

Population Genomics

- ❖ *de-novo* genomes as references for **Illumina® whole genome re-sequencing** libraries from New Caledonian species (approx. 250 individuals)
- ❖ Applying tests for inferring hybridisation (e.g. ABBA-BABA)
- ❖ Estimating temporal dynamics of Ne (effective population sizes)
- ❖ Test for lineage specific evolution
- ❖ Identify signs for ecological adaptation (e.g. PhyloGWAS)

Stay tuned!