Transposable elements in the
C. canephora genome

Coffee Genome Consortium

Introduction

Class I - Copy and Paste mechanisms via a RNA molecule

Autonomous LTR Retrotransposons

Families
- Ty3/gypsy
- Ty1/copia

Non-autonomous

Class II - Cut and Paste mechanisms via a DNA molecule

Transposase

TR Dna Transposon

MITE

Annotation of TEs in the Robusta genome with REPET

The REPET package (v1.0.1) https://urgi.versailles.inra.fr/Tools/REPET

Manual DB: A database of 948 elements

LTR, STRUC: A database of 1,789 LTR retrotransposons

REPBASE

TE identification (de novo) An initial database of 6,812 references (Y1.0)

High representation of RLX and RXX predicted elements

15% to 85% of plant genomes are TEs

Deep impact of TEs on plant genes and genomes:
- neo-formation of genes, gene mutation, perturbation of gene regulation,
- chromosome structure and genome size variations

Central role of TEs in Plant Gene and Genome Evolution

Véronique Jamilloux
Annotation of TEs in the Robusta genome with REPET

TE identification (de novo) An initial database of 8,012 references (V1.0)

High representation of RLX and RXX predicted elements

Non autonomous LTR retrotransposons: Life with a GAG

TRIM

LARD

BARE-2

Non autonomous LTR retrotransposons: Life with a GAG

TR-GAG1 is a new family of non autonomous elements in Robusta genome

Five new TR-GAG families, of which TR-GAG2 shows a high copy number in Coffee
Non autonomous LTR retrotransposons: Life with a GAG

TR-GAG is a conserved structure in numerous plant genomes

Outlooks

- Improve TE annotation (V 2.0)
  - Improve the detection and identification of Non-autonomous LTR retrotransposons
- Study in details the chromosomal distribution of TE and their localization near or inside (intron) coding regions
- Understand the impact of TE on gene expression : To study TE expression and to identify TE cassettes (co-transcription) using RNAseq data
  - Study the activity of TR-GAG elements and detect their mobility

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Coffee genome consortium

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Non autonomous LTR retrotransposons: Life with a GAG

Transposable elements

Transposons

Tobacco

Rice

Coffee

Mendel-A

Diptera

C. elegans

Arca

C. melanogaster

V. melanoembryonica

D.V.

Zebrafish

Drosophila

C. elegans

C. armata RNAseq

TR-GAG1 is expressed in Coffee species

http://coffee.genome.org

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