

On behalf of the **molecular biology committee**

Welcome to the joint 11th breeding & germplasm and 8th molecular biology ISSCT workshop

Molecular biology committee:
Karen Aitken, CSIRO, Australia
Jershon Lopez, Cenicaña, Colombia
Glaucia Souza, Univ. University of São Paulo, Brazil
Derek Watt, SASRI, South Africa
Angélique D'Hont, Cirad, France

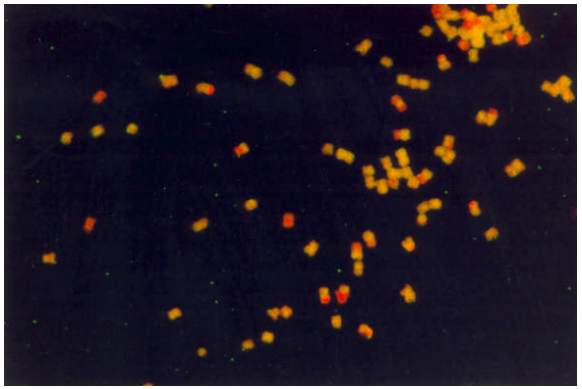


On behalf of the **molecular biology committee**

Thanks to the local organizing committee from eRcane

Laurent Barau
Audrey Thong-Chane
Bernard Siegmung
Jean Yves Hoarau (Cirad/eRcane)
Camille Viot (Tereos)
….

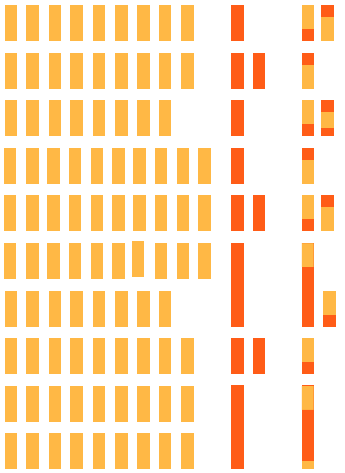
Long collaboration with CERF/**eRcane** and Cirad colleagues in **Pole of Plant Protection (3P)** **in** Saint-Pierre



On characterization of **the genome of cultivar R570** bred here by CERF now eRcane

S. officinarum

S. spontaneum





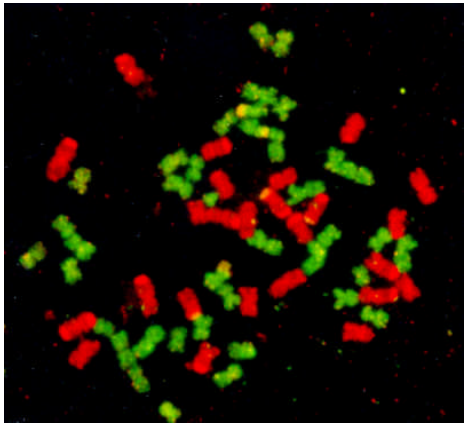
On genetics of sugarcane

- Genetic map, QTL, GWAS and now genomic selection
- Genetics of resistance to diseases (Rust resistance gene, Bru1 ; SCYLV resistance)

Trends since the last molecular biology workshop in 2011 (joint with workshop with breeding/germplasm section)

Important session **on Introgression with wild germplasm**
probably linked with use of sugarcane for biomass production

Progress with *Erianthus* (up to BC4)



Molecular tools to monitor and steer the introgression steps

But F1 from one (single) *Erianthus* accession
Why ? Characteristics of this accession ?

→ Discussion on wild germplasm introgression (Facilitators Anna Hale/Phil Jackson)

Trends since the last molecular biology workshop in 2011 (joint with breeding/germplasm section)

Tropical Plant Biol. (2011) 4:145–156
DOI 10.1007/s12042-011-9079-0

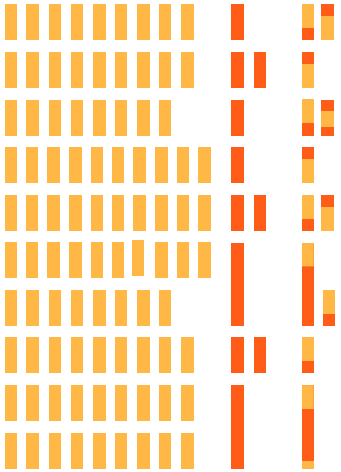
The Sugarcane Genome Challenge: Strategies for Sequencing a Highly Complex Genome

Sugarcane genome sequence initiatives

- Glaucia Souza team, Brazil
→ Shotgun sequencing of a Brazilian cultivar SP80-3280

- Ray Ming teams, USA, China
→ Shotgun sequencing of *S. spontaneun* accession SES208

- Angélique D'Hont, Karen Aitken, Bernard Potier teams and ICSB (International Consortium for Sugarcane Biotechnology)
→ **Sequencing the gene-rich part of the R570 genome based on BAC sequencing**



→ Better knowledge of genome organization and origin

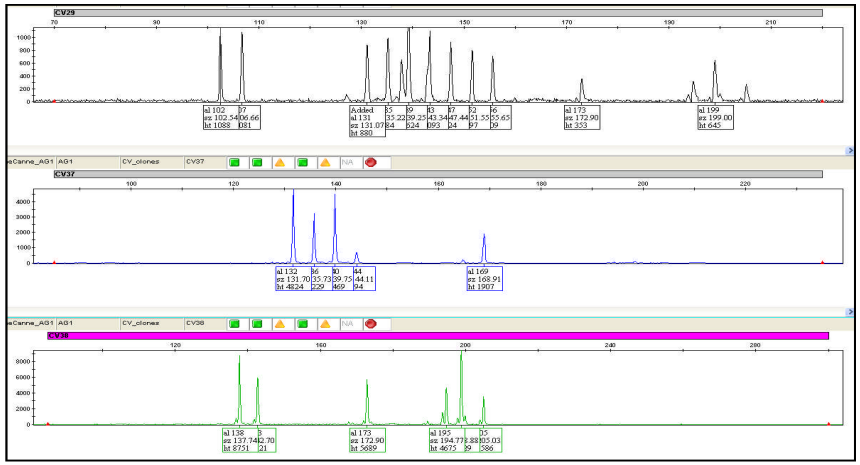
→ Greatly facilitate the development of High-throuput genotyping system

Trends since the last molecular biology workshop in 2011 (joint with workshop with breeding/germplasm section)

Molecular markers system

SSR markers widely used for sugarcane varietal identification

Same technology used
But different sets of SSR used



→ **Discussion on agreeing on a set of SSR (Facilitator George Piperidis)**

Trends since the last molecular biology workshop in 2011 (joint with breeding/germplasm section)

Important session session on marker assisted genetics

Key note Mark Sorrels from Cornell university
" **Genomic selection in Plants : a new tool for crop improvement**"

Community is moving from QTL approaches to GWAS and genomic selection

High throughput marker system starting to be developed

- RADseq , Yogesh Parsmessur, + poster
- SNP array Karen Aitken
- capture sequencing Per McCord + Poster

→ **Discussion on molecular marker system and applications (Facilitator Karen Aitken)**

Molecular biology committee's business session meeting

Friday, 15h

