



DNA Analytica Srl

Spin off of the University of Trieste (Italy)

Coffee DNA and all that....

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PRODUCER



Reduce stature

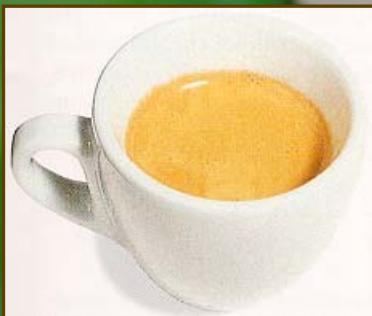


Resistance to pathogens



**Resistance to hostile
environment**

CONSUMER



good



bad



coffee



caffeine

Quality of the beverage

Low caffeine



Goals of the Genetic Research

1. Identification of good agronomic traits

Resistance to pests and diseases

Flowering synchronization, Productivity and more

2. Identification of quality characteristics and more

Cell wall thickness, solubility, bean uniformity





GENES AND ENVIRONMENT

Coffee quality is the result
of the interaction
Genes / Environment

Environment: soil, rain, post harvesting, etc

We cannot have a good coffee
if we do not start from good
genes and good plants

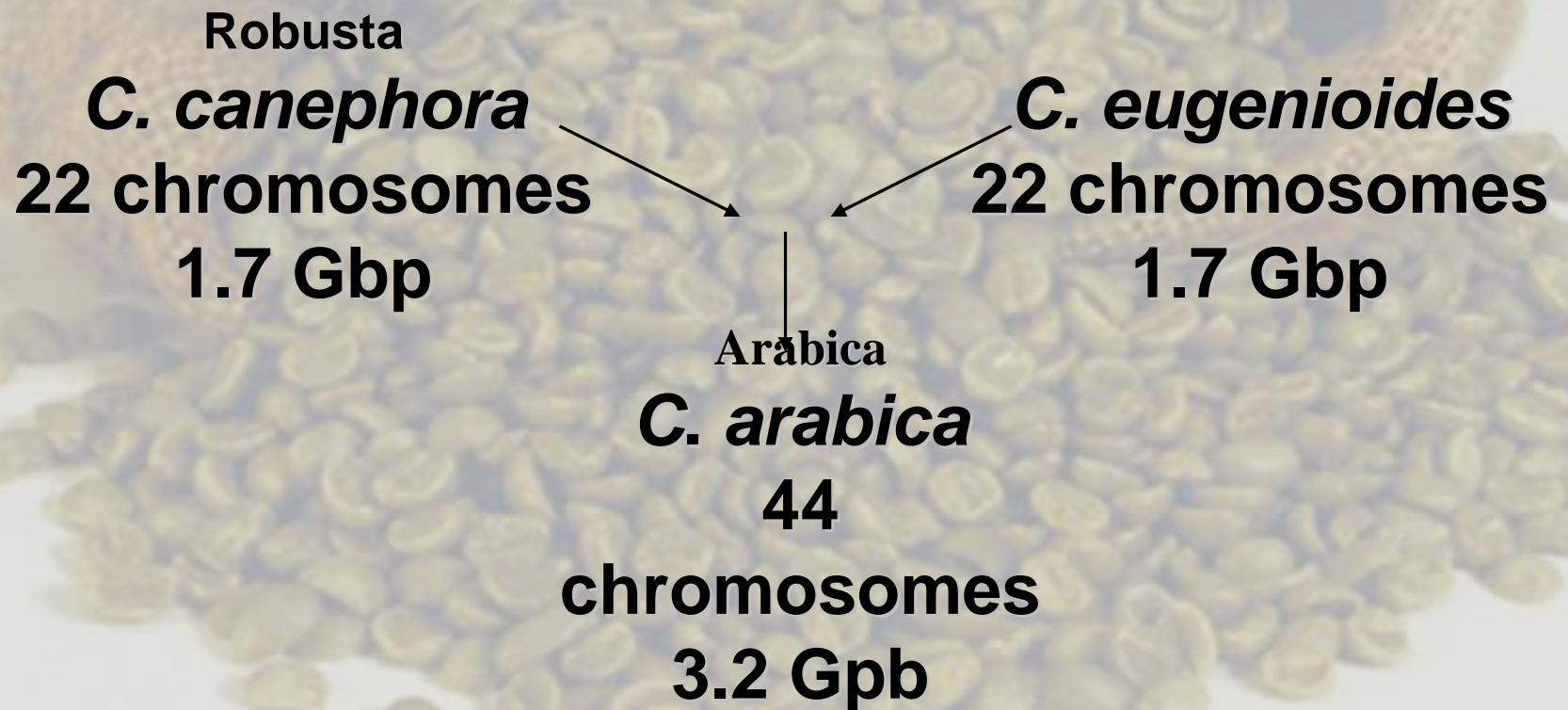


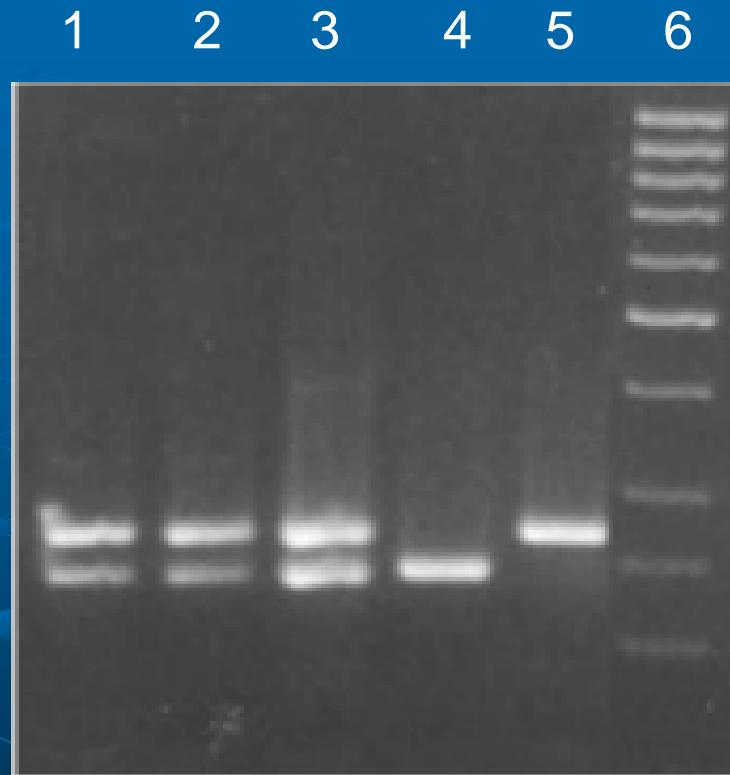
Coffee *Species identification*

Arabica versus Robusta



Coffee genetic composition





255 bp →
230 bp →

Agarose electrophoresis of a PCR fragment of the EST
18. Columns 1, 2, 3: *C. arabica*. Column 4: *C. eugenoides*. Column 5: *C. canephora*. Column 6: ladder.





Checking the level of the blend Arabica/Robusta

1. Small molecules analysis (until now)
2. DNA analysis (from now on)

The problem of Catimor and Sarcimor





Coffea arabica Variety identification





Genetic base ant quality (taste)

Granny Smith

Golden Delicious



Enviroment effect



Normal Granny Smith

Suffered Granny Smith





Rules governing varieties are the same for apple and for coffee.



- 1 Arabica caracolite 2 Arabica normale 3 Robusta normale
4 Arabica normale 5 Liberica normale

WE CANNOT HAVE A GOOD COFFEE IF WE NOT START
FROM A GOOD PLANT WITH GOOD GENES





The Geisha Story





Panama 2004

- The Hacienda La Esmeralda at Boquete, tasted their coffee according the different fields
- Daniel Peterson finds that the coffee coming from Jaramillo was very good, much better than the other fields.
- The Jaramillo coffee was only one botanical variety: Geisha.

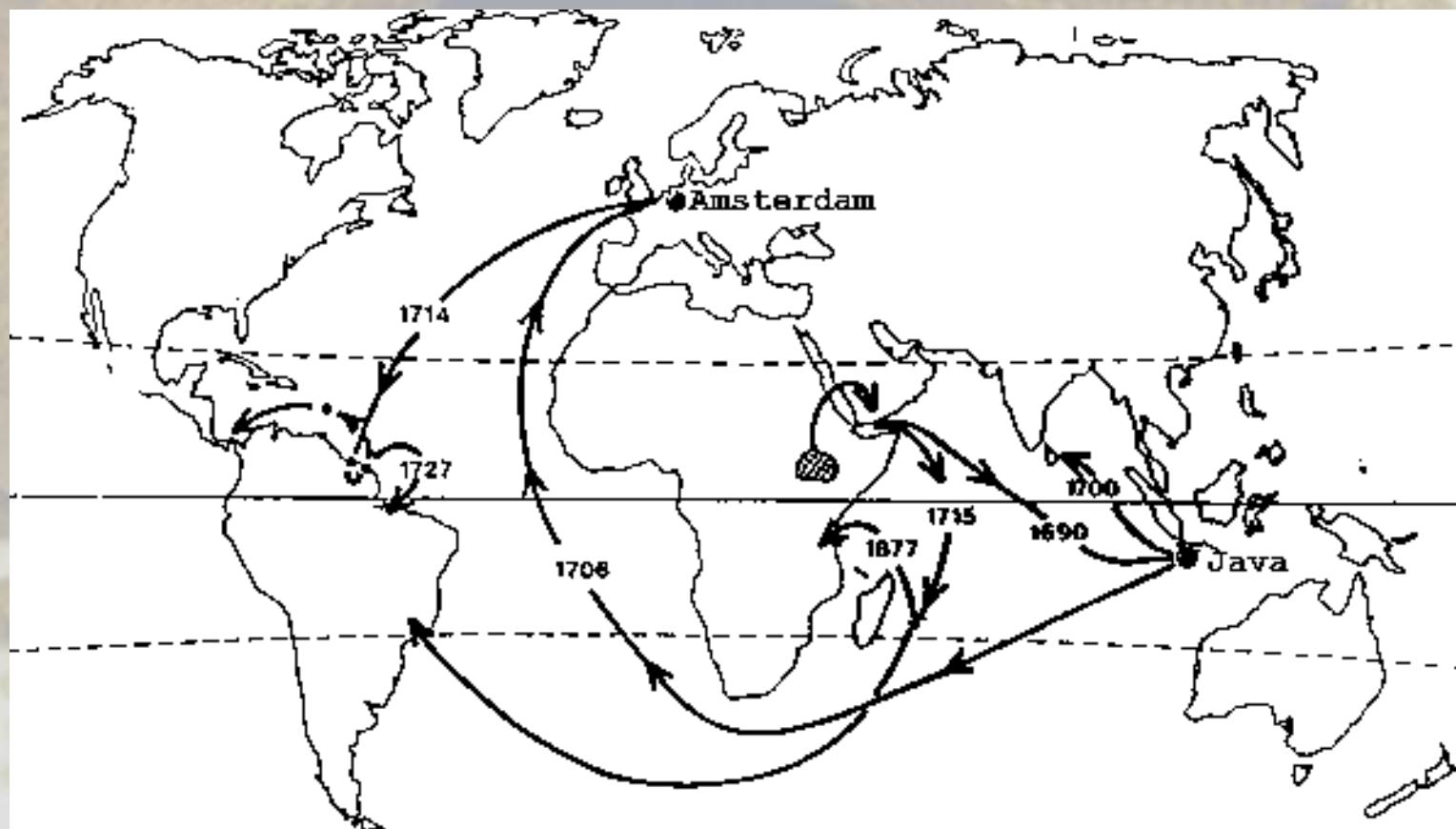


Commercial history of Esmeralda Especial

- 2004 - \$21US per lb
- 2005 - \$20US per lb
- 2006 - \$50US per lb
- 2007 - \$130US per lb
- 2008 – 229 bags for about \$ 400,000)
- The marketing of coffee by the variety offers advantages to the producer as well as to the traders and roasters (market diversification)



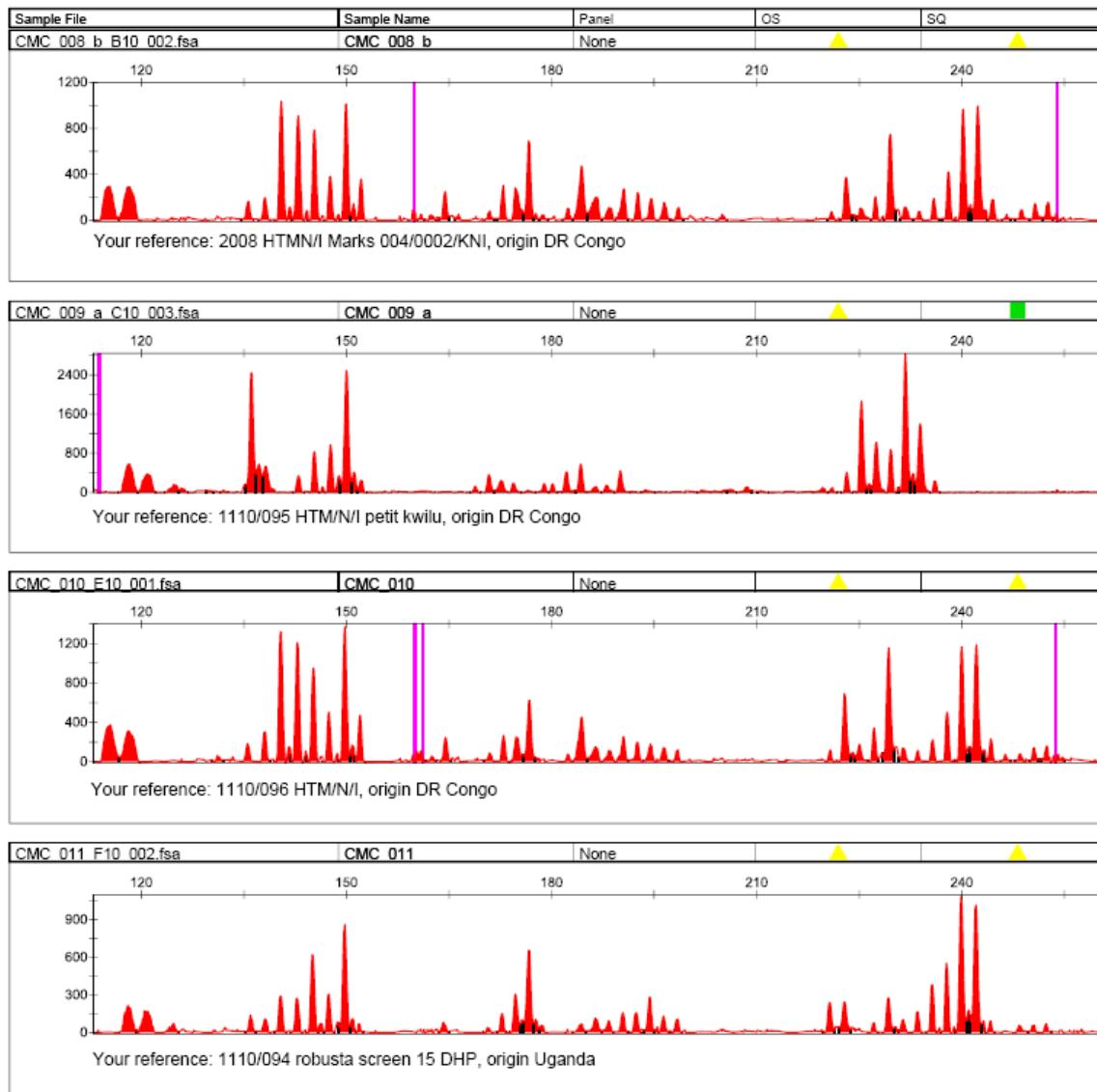
The sailing bean!





GeneMapper 4.0

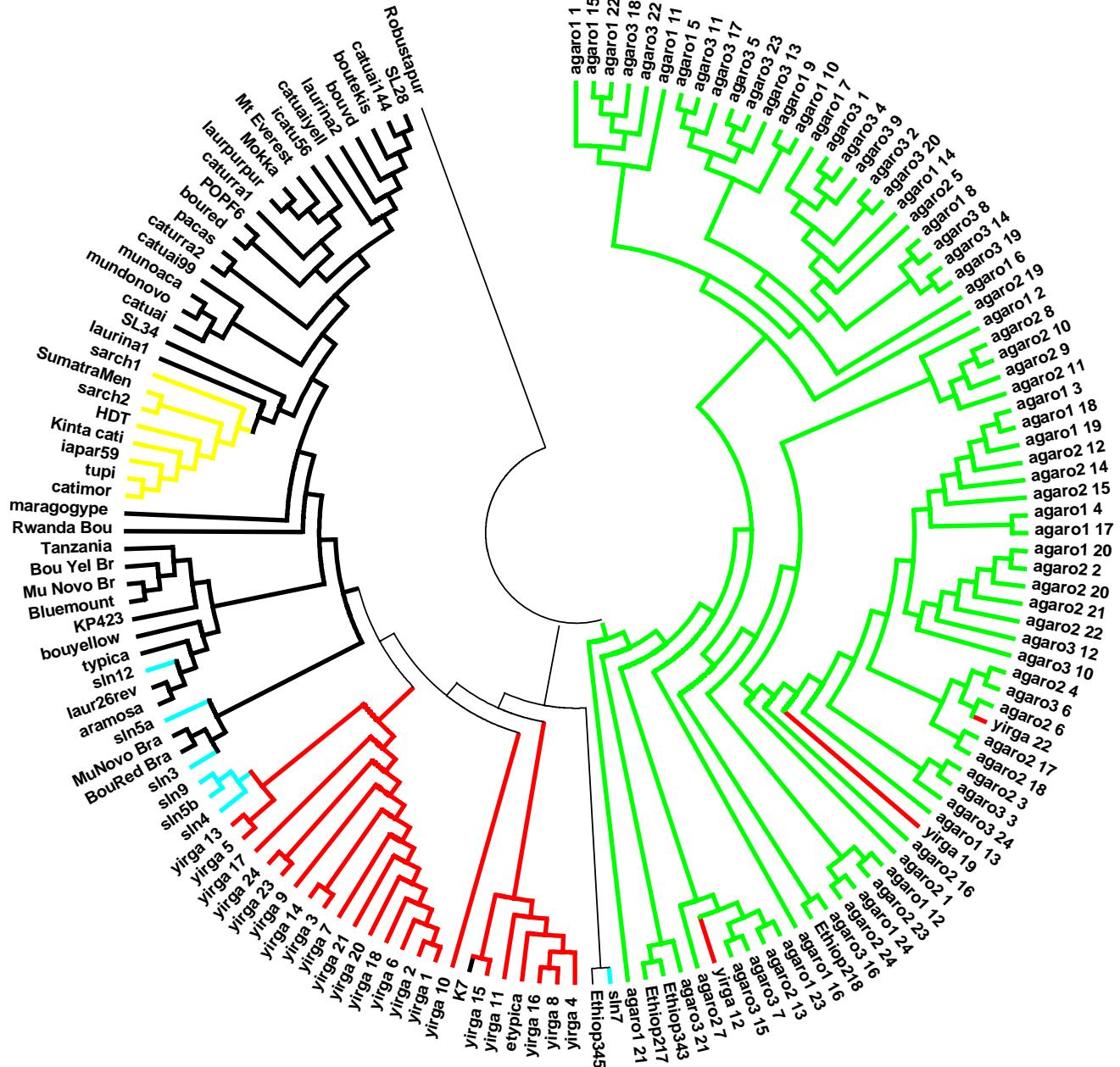
20111110_caffe



DNA Analytica Srl

Varieties

- American
- HDT
- Indian
- Yirga
- Agaro





DNA Analytica Srl
Spin-off of the University of Trieste

Established 2011

Main field of activity : DNA analysis
Coffee DNA





Two patents:

- 1) *Arabica/Robusta blends (%)*
- 2) *Arabica varieties identification*





- 1. Correspondence sample/bulk shipment**
- 2. Checking the level of the blend Arabica/Robusta**
- 3. Origin Certification (data bank)**
- 4. Genetically Modified Organisms (GMO/nonGMO)**







Thank you for your attention