



FORESTE e BIOTECNOLOGIE

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Roma 22 giugno 2011



**ANNO INTERNAZIONALE
DELLE FORESTE • 2011**



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Roma 22 giugno 2011

Forest trees provide an excellent system for understanding the relationships between naturally occurring genotypic and phenotypic variations in plants



GENETICA



GENOMICA



**studia il Genoma
(l'intero contenuto
di DNA di una
Cellula)**



Genomica non Food

ALTA PRODUZIONE di BIOMASSA
per UNITA' di Superficie
E
QUALITA'
es. basso contenuto di lignina
MOLECULAR FARMING



AGRONOMIA BIOTECNOLOGICA

- NUE
- PUE
- WUE
- Patogeni
- Qualita'
- Altri insulti (Temperature, salinita', CO² ecc.)
- Piante Perennanti

VIBRANT and COMPETITIVE RESEARCH

- FUNZIONE dei GENI
 - FUNZIONE delle PROTEINE
 - Interazione Proteina-proteina
 - Interazione Gene-Proteina
- TF-RNAi-PAC ecc.

SCIENTIFIC
AMERICAN

Know Your
DNA

Genes, gene mutations and more
What's your DNA
How does it work?

By Daniel
Krook-Darling

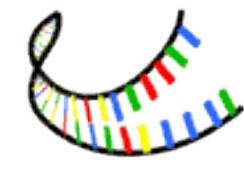
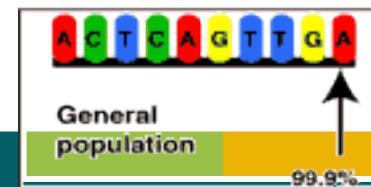
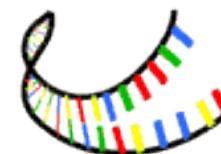
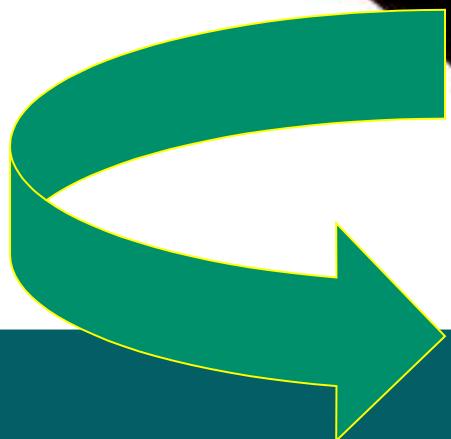
Illustration by
Mark Lutz

Edited by
Michael Slezak

Illustration by
Mark Lutz



Genomi low cost





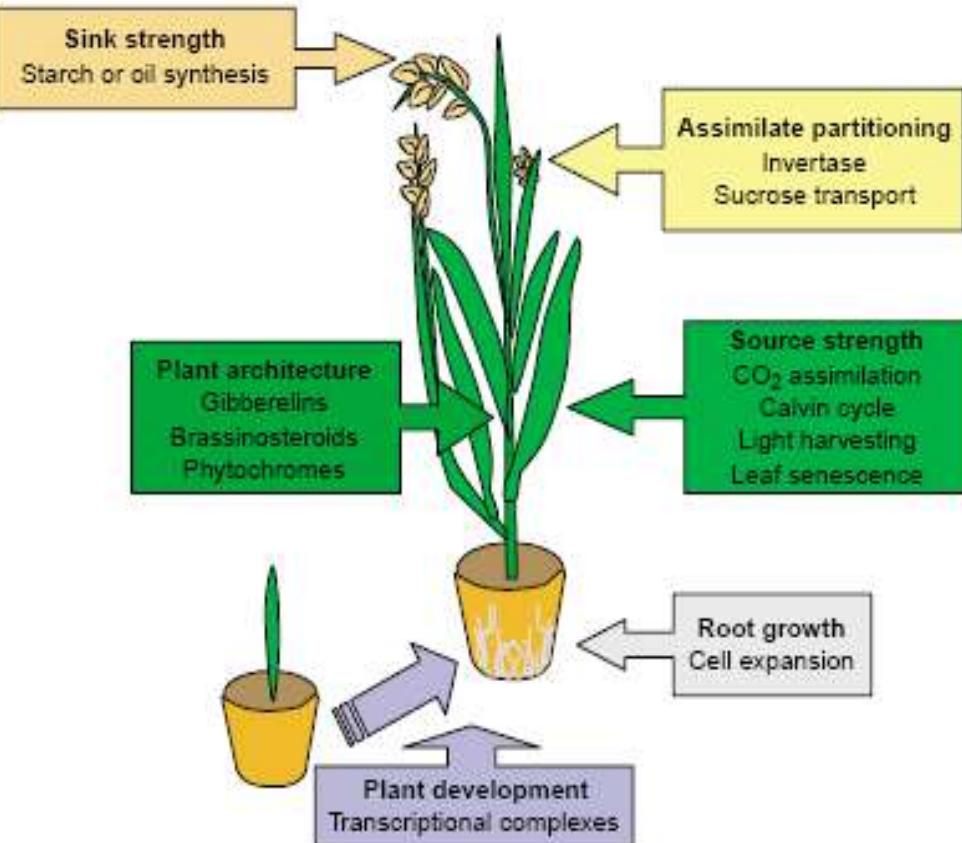
The strategy to understand the genotype *vs* the corresponding phenotype - and *viceversa* – will be the perspective for the near future



CBF

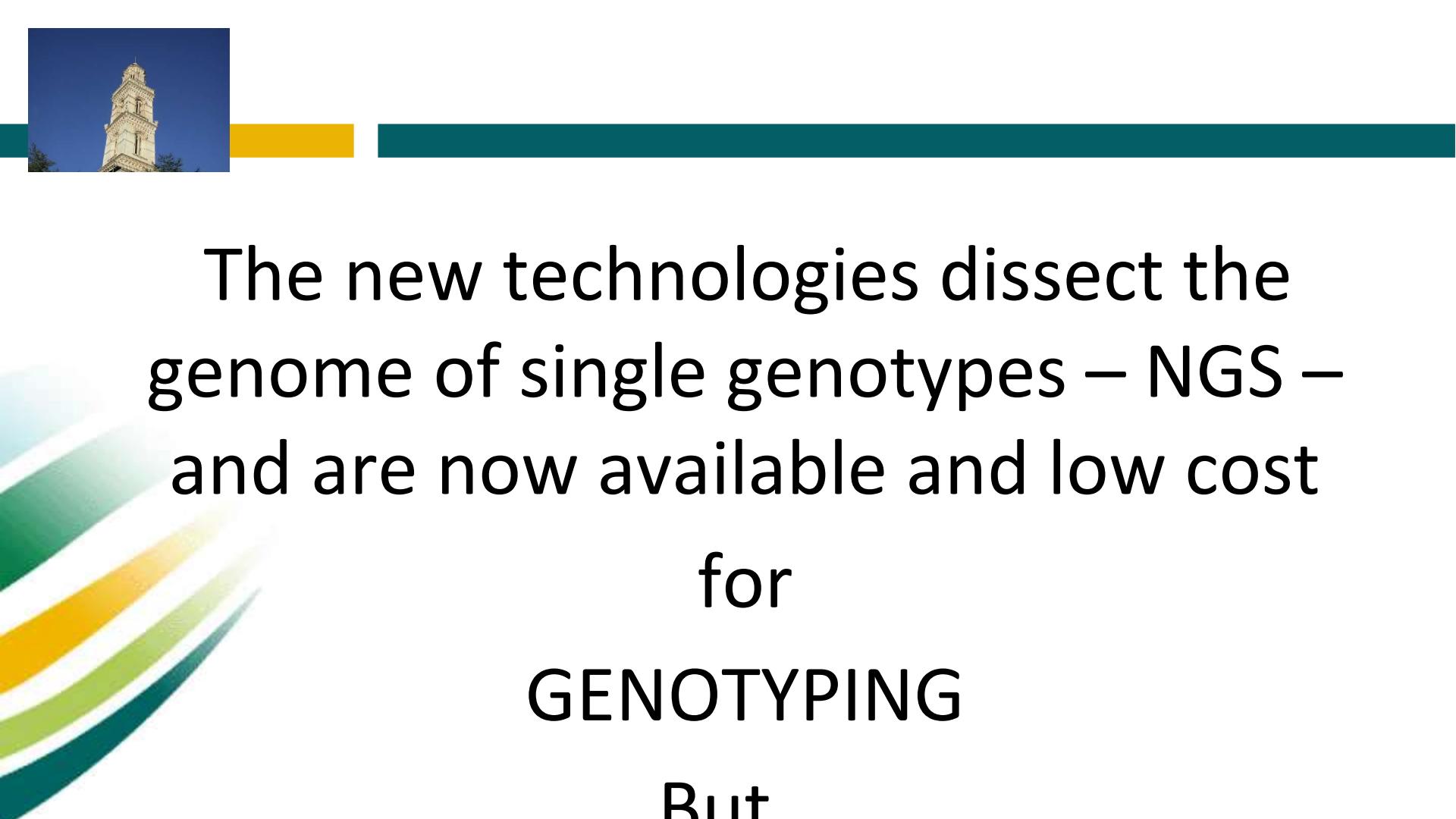
CBF

WRKY



Current Opinion in Biotechnology

YIELD ENHANCEMENT GENES



The new technologies dissect the genome of single genotypes – NGS – and are now available and low cost

for

GENOTYPING

But...

Big BUT !

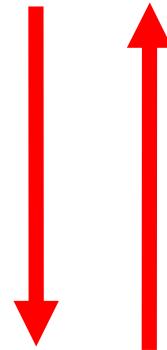


Without a platform for
PHENOTYPING

Molecular investigations are
considered as
intellectual exercise



GENOTYPING



PHENOTYPING



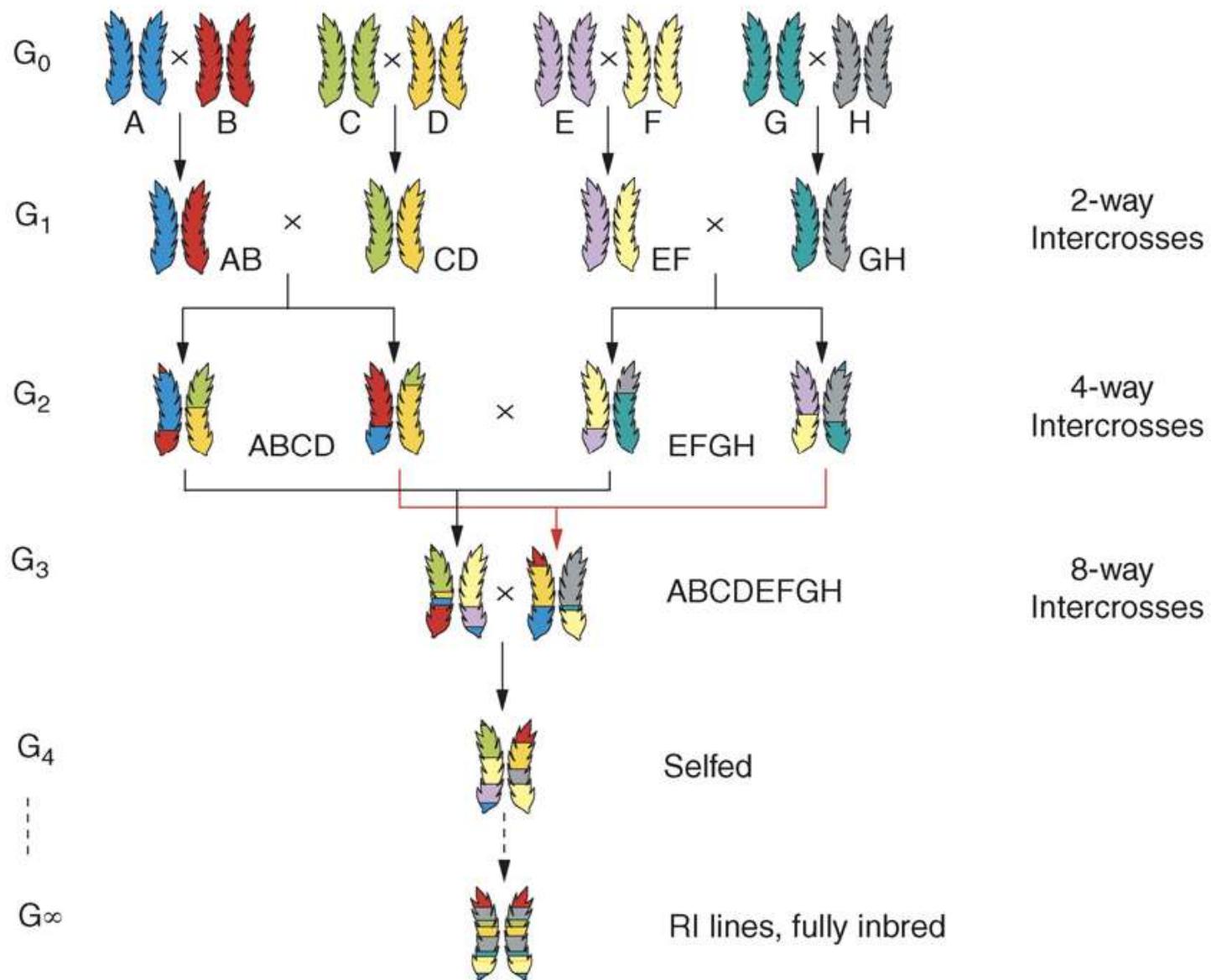
Utilization of genetic resources

and breed new varieties with improved
quality, sustainability and productivity



combine genetic, genomic and ecophysiology analyses
with high throughput
phenotyping and genotyping to identify markers
and candidate genes for yield and quality traits
under new biotic and abiotic stresses
resulting from climate changing

Multi-parent Advanced Generation Inter-Cross (MAGIC)





SYSTEMS BIOLOGY

The STRATEGY should be based on:

- Use of Genetic Resources (new alleles)
- Produce Genome-based resources to support molecular breeding
- Crop physiology- advanced Agronomy – Quality traits for phenotyping
- Bioinformatic tools
- Integration of the actors of the **tree** chain
- Dissemination of the new materials and technologies



FINAL AIM

is to collaborate with International Projects and implement the Italian leadership on *TREE research*, breeding and farming,
in order to deliver safe, high quality Wood and raw materials for energy
in a sustainable production



FORESTE e BIOTECNOLOGIE

NovelTree is integrating an ambitious combination of approaches, including quantitative genetics and breeding, population genetics, genomics, pathology, tree physiology, forestry and economics.



Sin dall'Antichità l'Agricoltura
si è Basata sulla Scienza e la
Tecnologia
e
OGGI?

La Moderna Agricoltura si Fonda sui
Principi della Biologia !

Per TUTTI !



STONE- BREAKER

MANNERIST



STONE- DRESSER







22 maggio 2009