

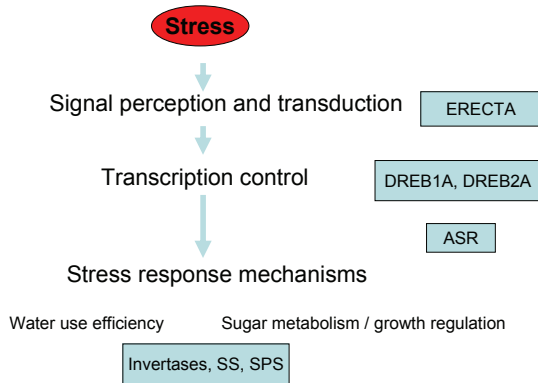
# ADOC: allelic diversity of orthologous candidate genes

GCP, SP1

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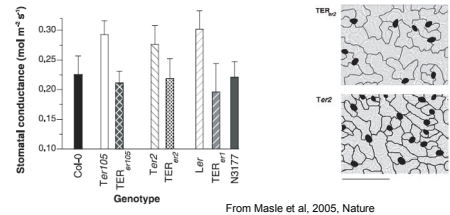
## Candidate genes for drought tolerance



To start with...

A subset of gene families involved at different levels in drought tolerance

Evidence from literature / experimental data



## Seven GCP crops, different strategies to cope with water stress?

Differences in organ targets / drought tolerance breeding schemes (roots or tubers, seeds...)

Differences in sugar accumulation / remobilization and water use efficiency among and within crop species

Differences in gene numbers within each family of candidate genes. Some of them missing? Orthologous relationships?

BUT...

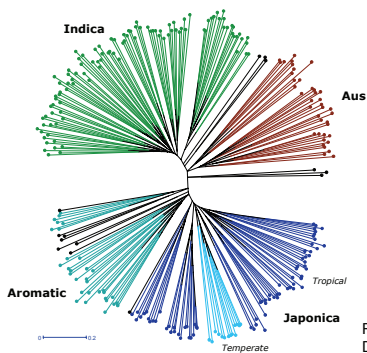
Same problem to face (drought periods affecting production)

Common tools (genes) with some structural changes (allelic diversity)



From Camille This (10 years old), 2006

## Allelic diversity: first step in association mapping



Rice ADOC set from GCP composite collection. DARwin4, UPGMA analysis, 38 SSRs, Provided by K. McNally

For each crop and each orthologous gene:

Amplification and sequencing of overlapping fragments for 283 genotypes (chosen on the basis of neutral markers' diversity and prior knowledge)

SNP analysis (nucleotide diversity, impact on protein structure and activity, traces of selection etc...)

## Expectations from the project

- Apply the more advanced molecular / physiological research on drought tolerance to GCP target crops
- Identify general / specific strategies for drought tolerance through selection history and genepool structure
- Deliver a public database of orthologous sequences and allelic diversity for some promising candidate genes.
- Link with functional studies to be planned