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Establishing new tools for sorghum genetic studies in temperate climates



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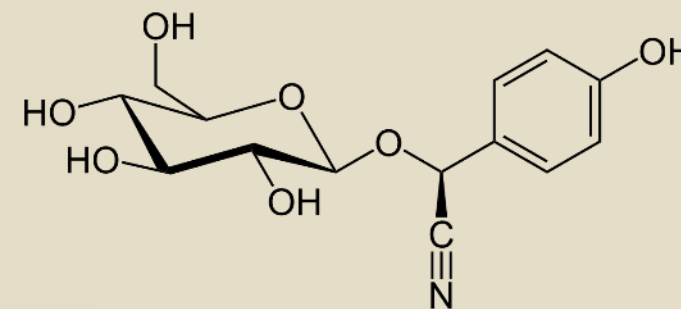




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Knowledge of gene functions advances plant breeding



Dhurrin



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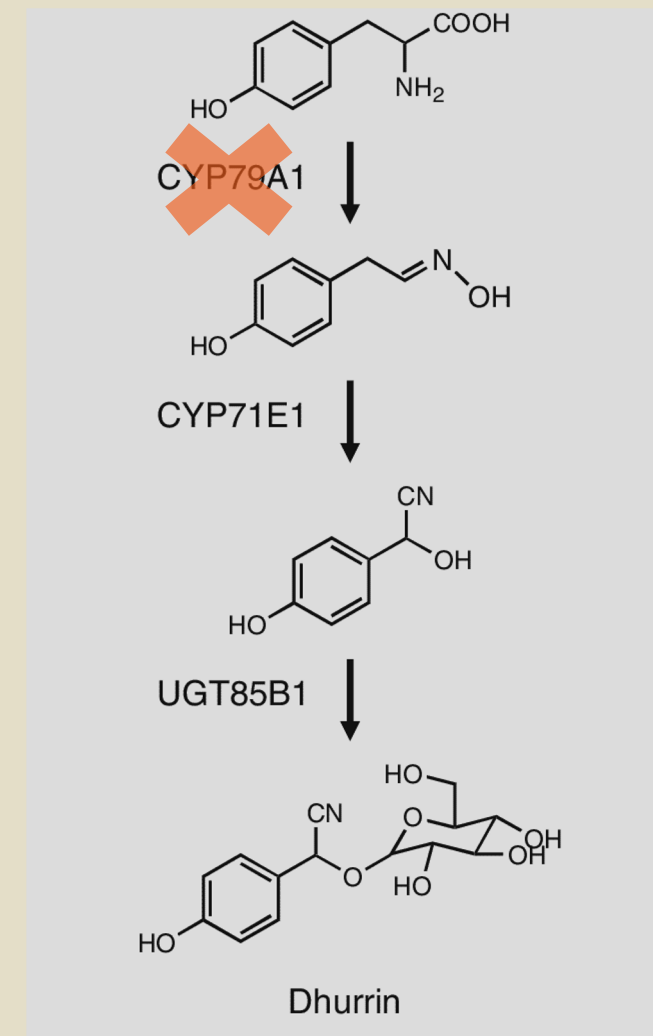
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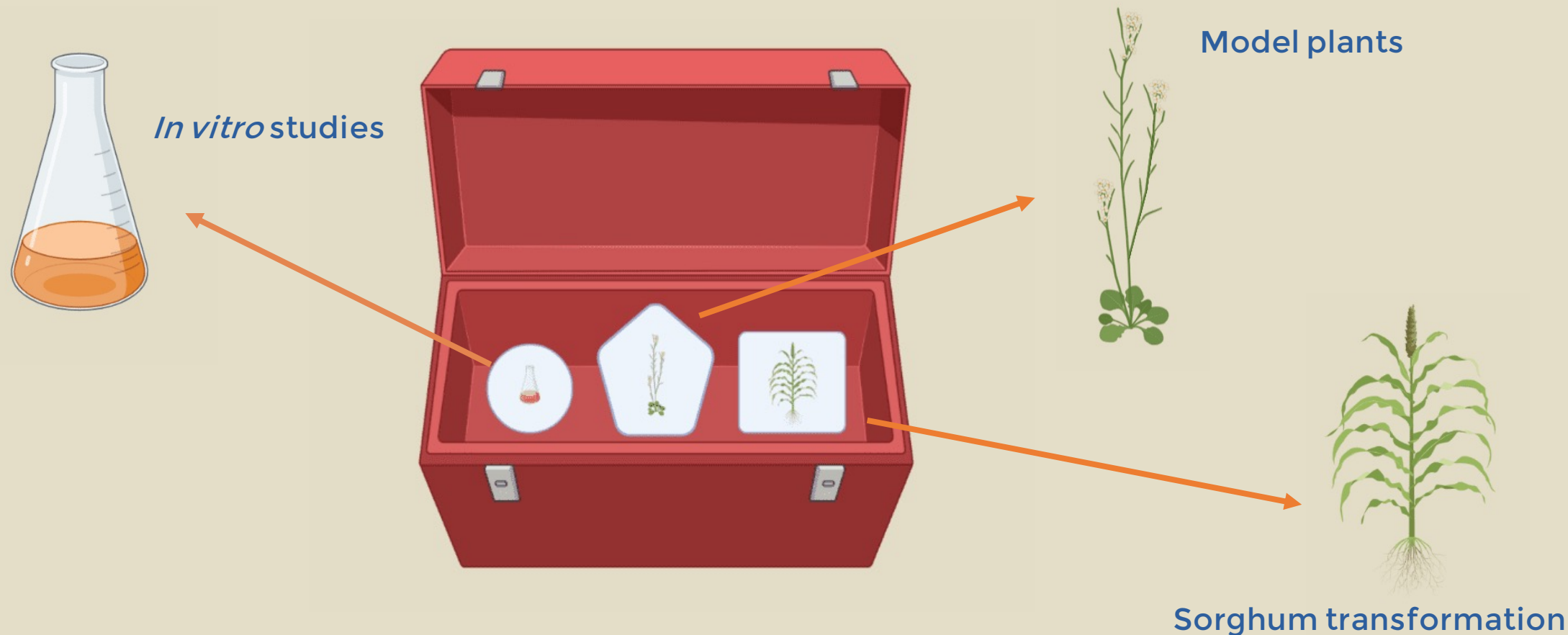
Example: acyanogenic sorghum

Tcd1 mutant

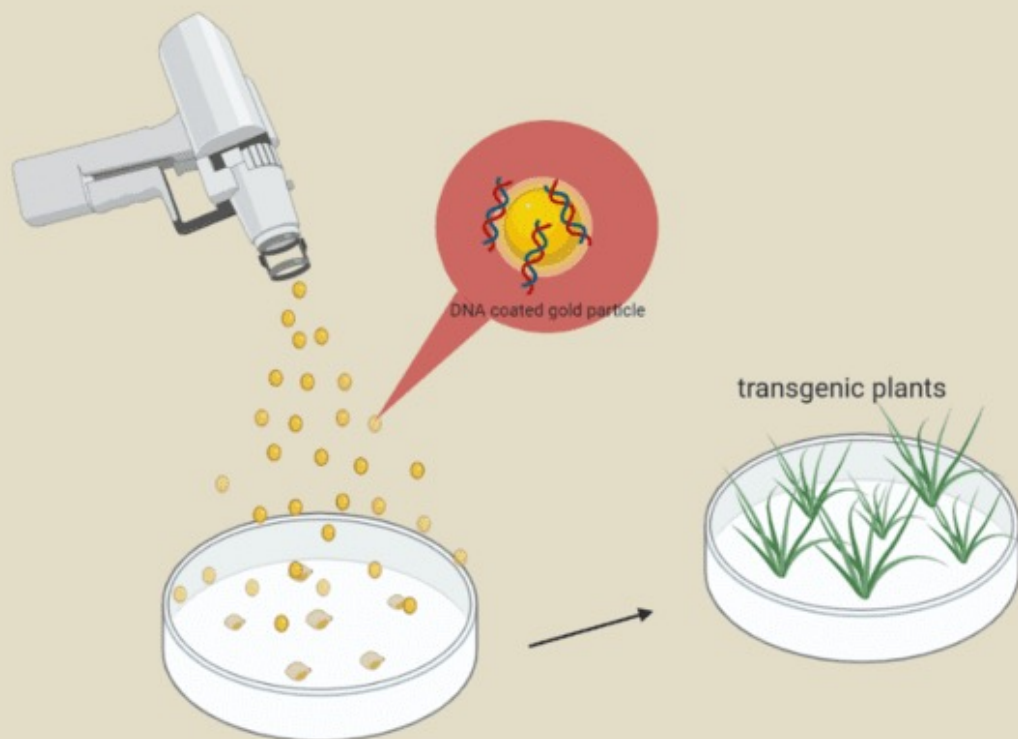
- Acyanogenic → no dhurrin
- Knowledge of dhurrin synthesis pathway helpful
- Normal growth and development
- Used to develop commercial varieties



Toolbox for genetic studies in sorghum



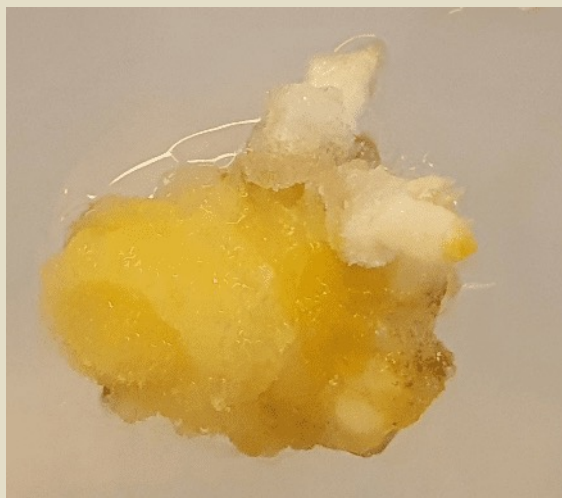
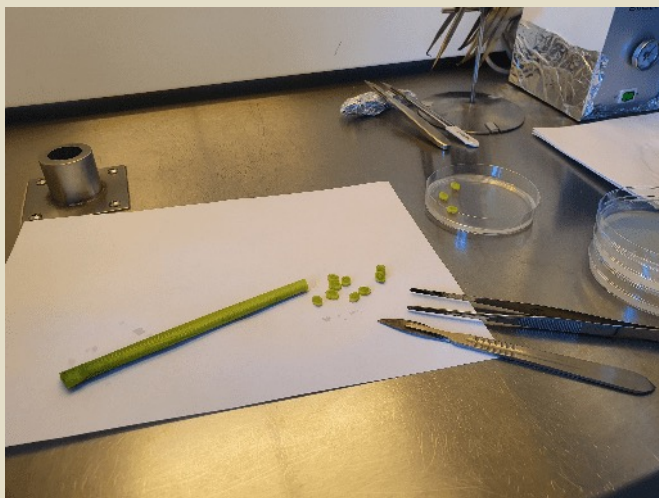
Stable transformation



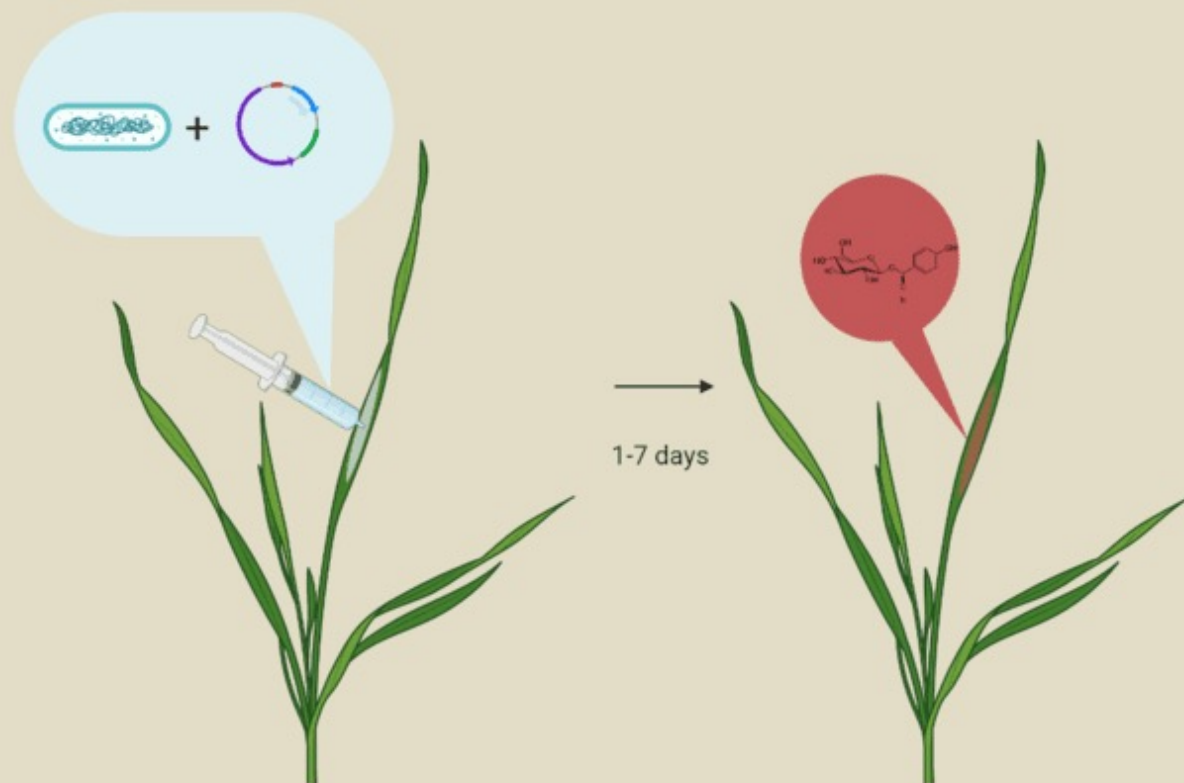
- Very climate dependant → not ideal in Europe
- Genotype dependant
- Low efficiency
- Labour intensive
- Time intensive

- Directed production of mutants
- Many different possibilities: knock out, gene insertion, gene regulation etc.

Stable transformation: leaf whorl system



Transient transformation

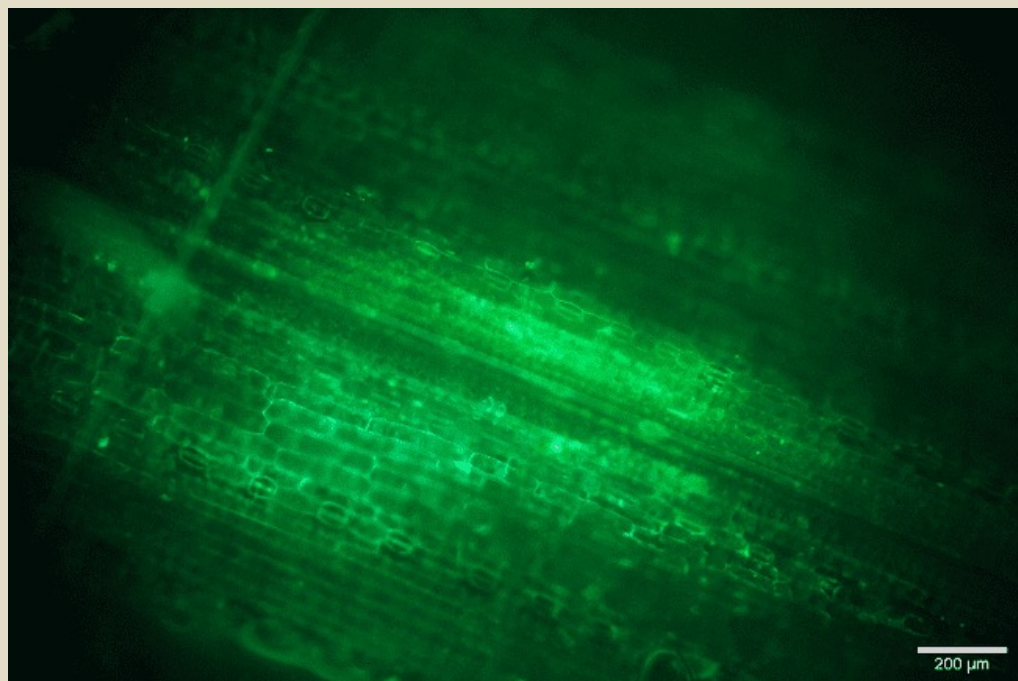


- Fast
 - Simple
 - Versatile: expression of foreign genes, upregulation of genes, test of gene editing constructs etc.
- +**
- Still a lot of optimization needed



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Transient transformation



- Construction of a new expression vector ✓
- Expression of GFP ✓
- Next: reconstitution of mutant





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Outlook

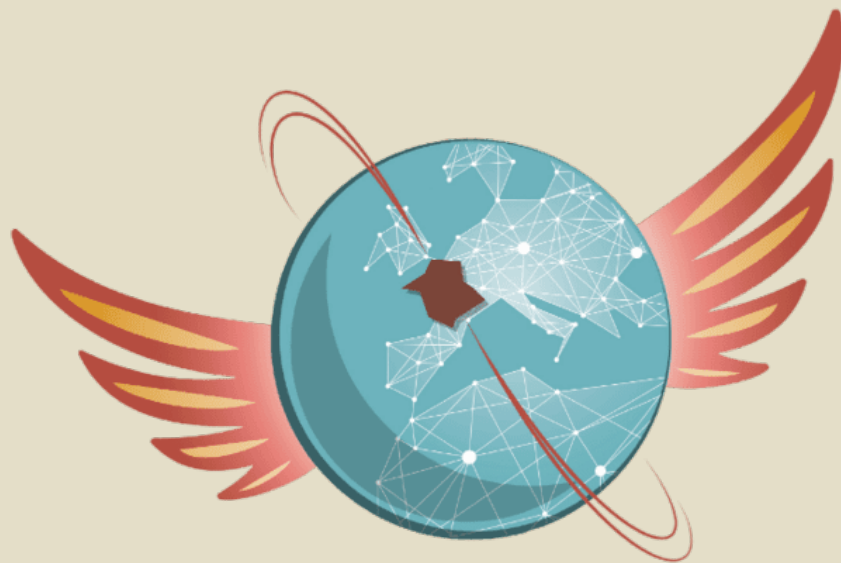
- **Stable transformation:**
 - cooperation with other European researchers
- **Transient transformation:**
 - Expression of native sorghum genes
 - Testing gene editing constructs
 - Expressing sorghum genes in other cereals e. g. barley





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Thank you

Partners



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