

Genetic Analysis of seed vigour in *Brassica oleracea*



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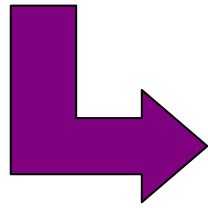
E. Howell (The University of Birmingham)

Paul van den Wijngaard and Bill Briggs (Syngenta Seeds B.V.)

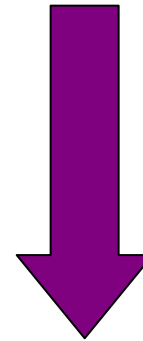


Sustainability

CROP PRODUCTION



SEEDLING ESTABLISHMENT



Environmental
Factors

Genetic
Factors



SEED VIGOUR

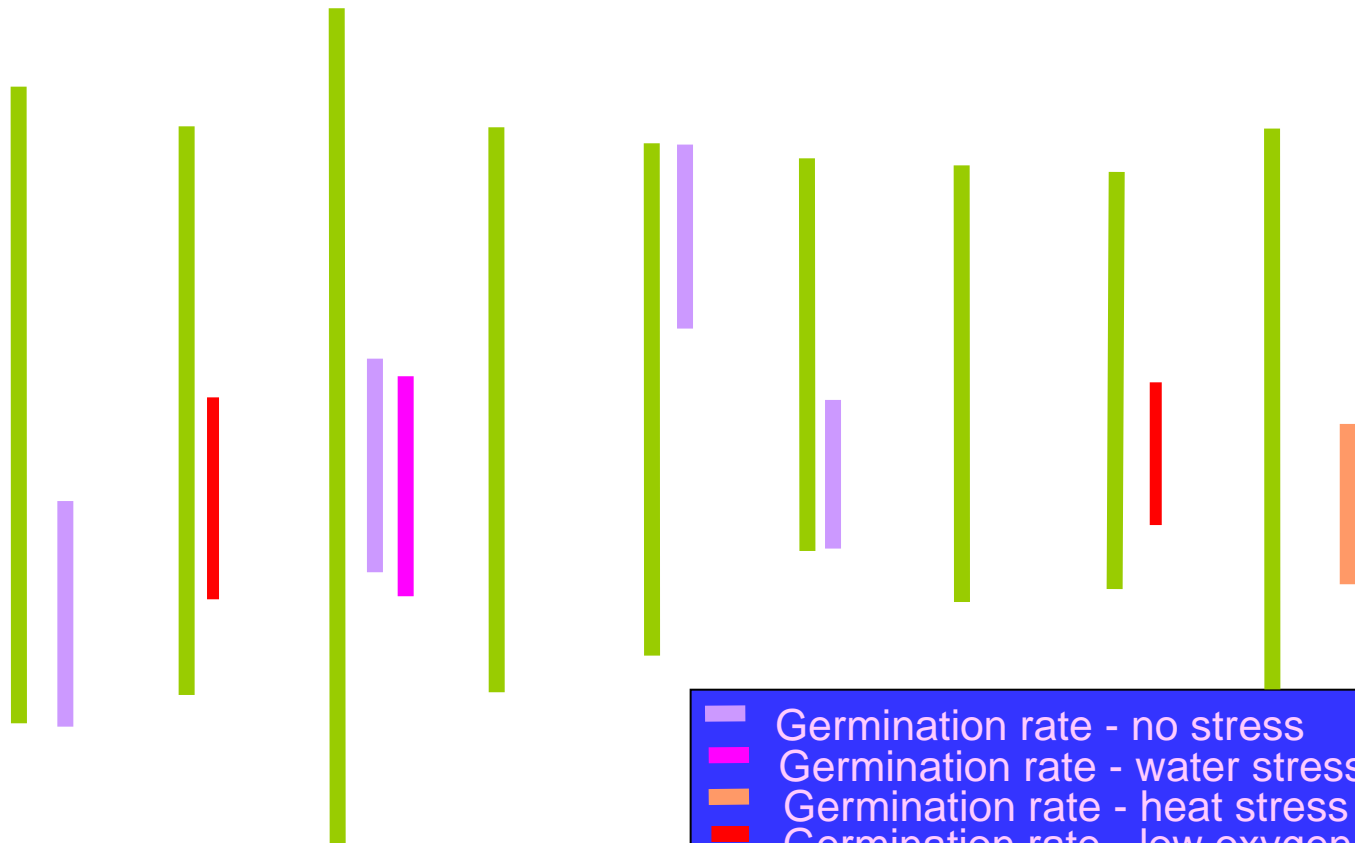
Aim

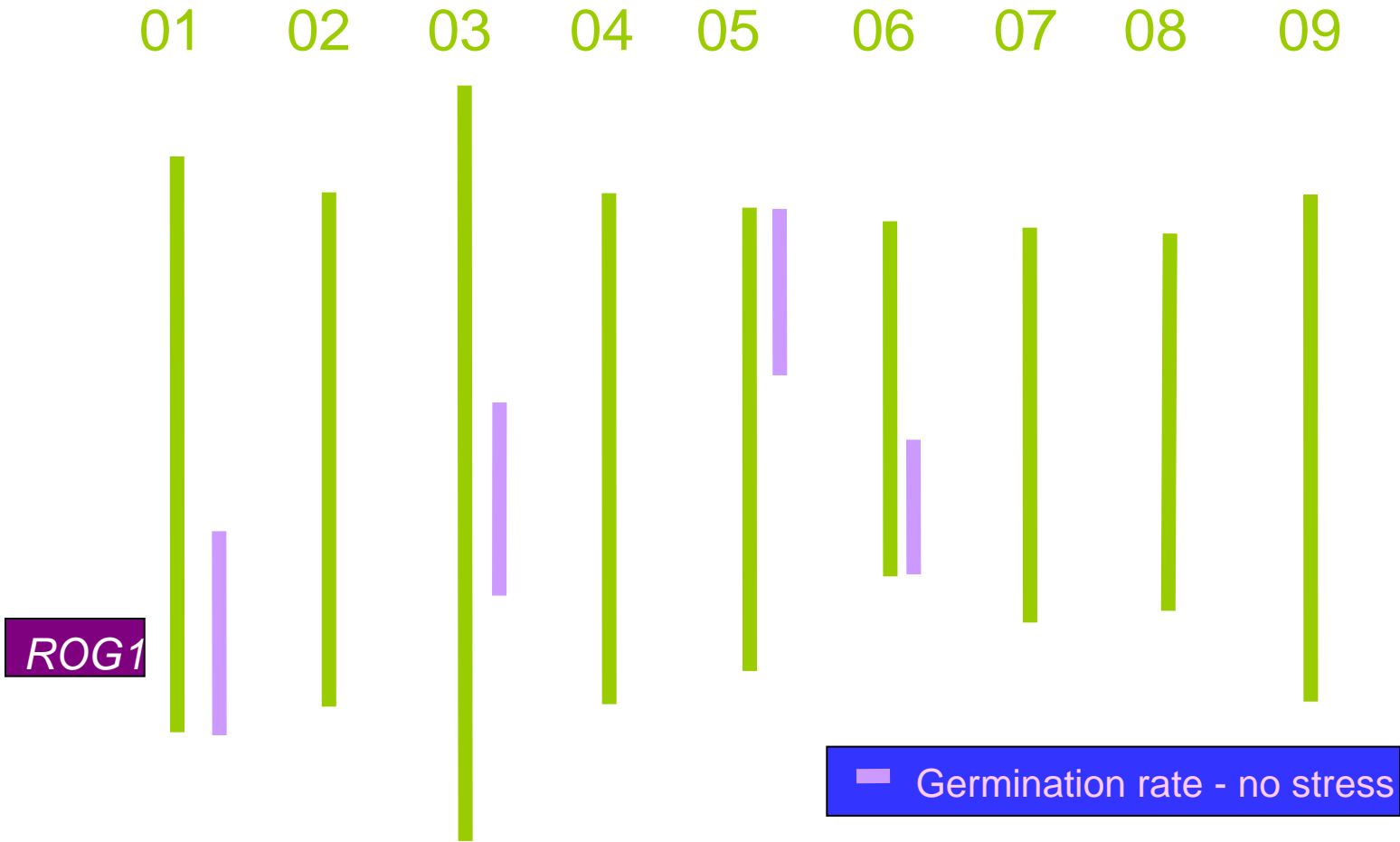
To demonstrate how trait-led approaches can lead to the Identification of candidate genes which contribute to the major QTL for *Rate of Germination (ROG1)*.

Genetic Resources:

DH A12 x GD33 fixed lines

01 02 03 04 05 06 07 08 09





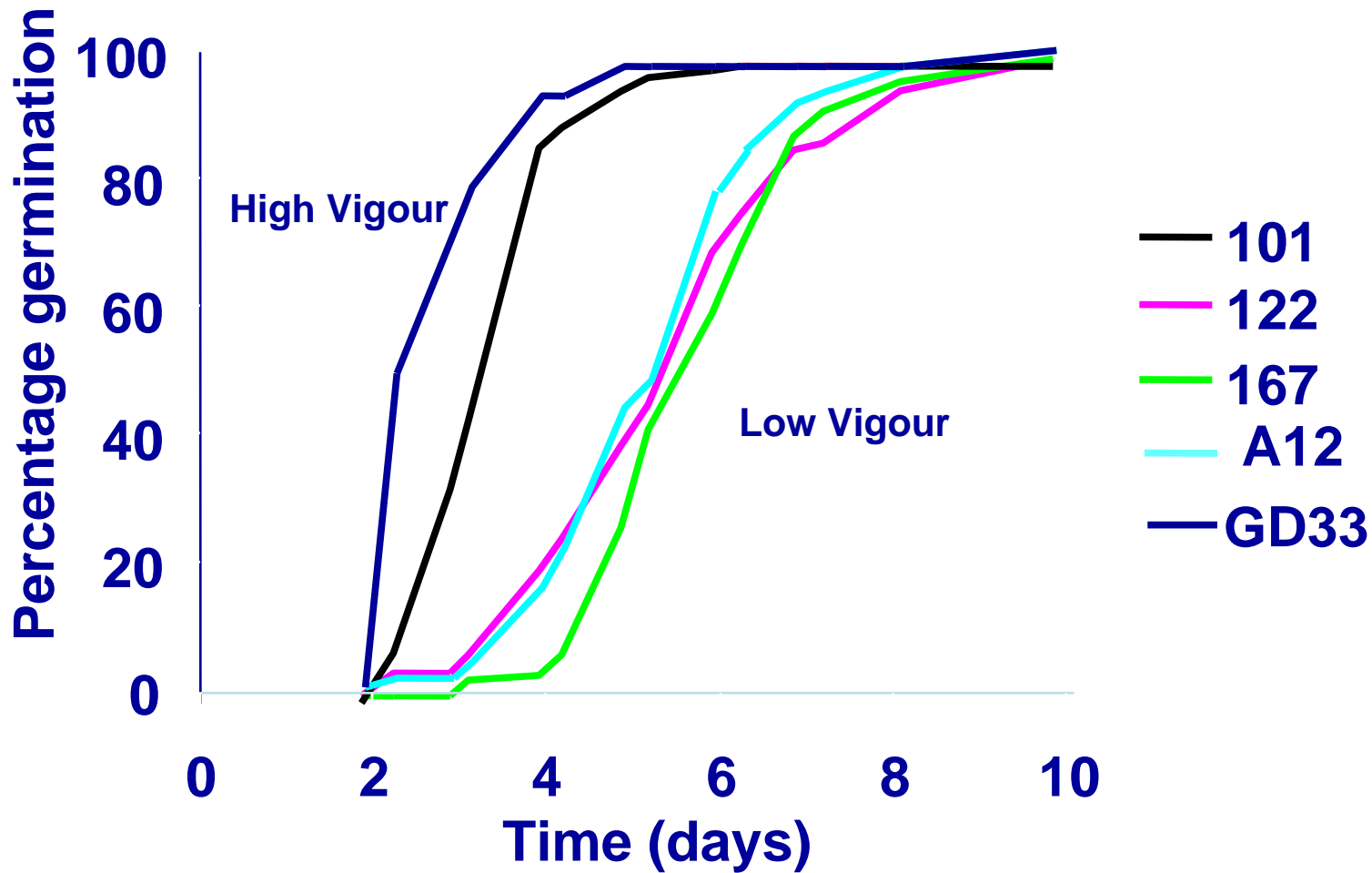
OBJECTIVES

- Complete identification of candidate genes in ROG1 and screen them for their influence on seed vigour.
- Investigate allelic and phenotypic variation in *B. oleracea*
- Investigate the impact of multiple paralogous loci in Brassica
- Provide alleles for breeding programmes and for commercial assessment of seed vigour

ROG1

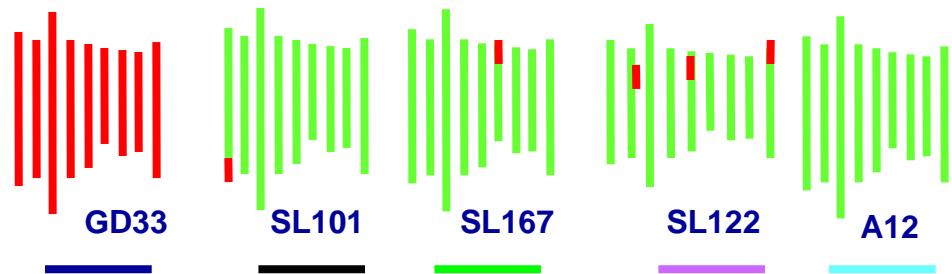
— Germination rate - no stress

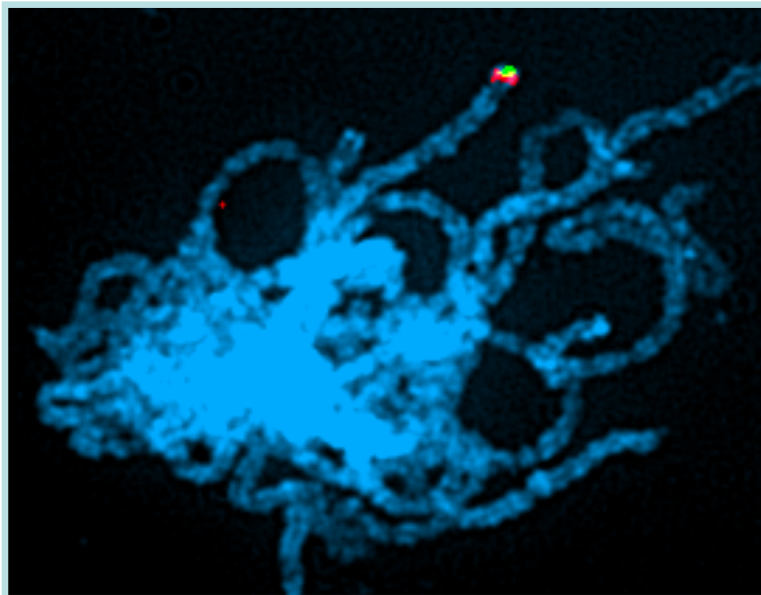
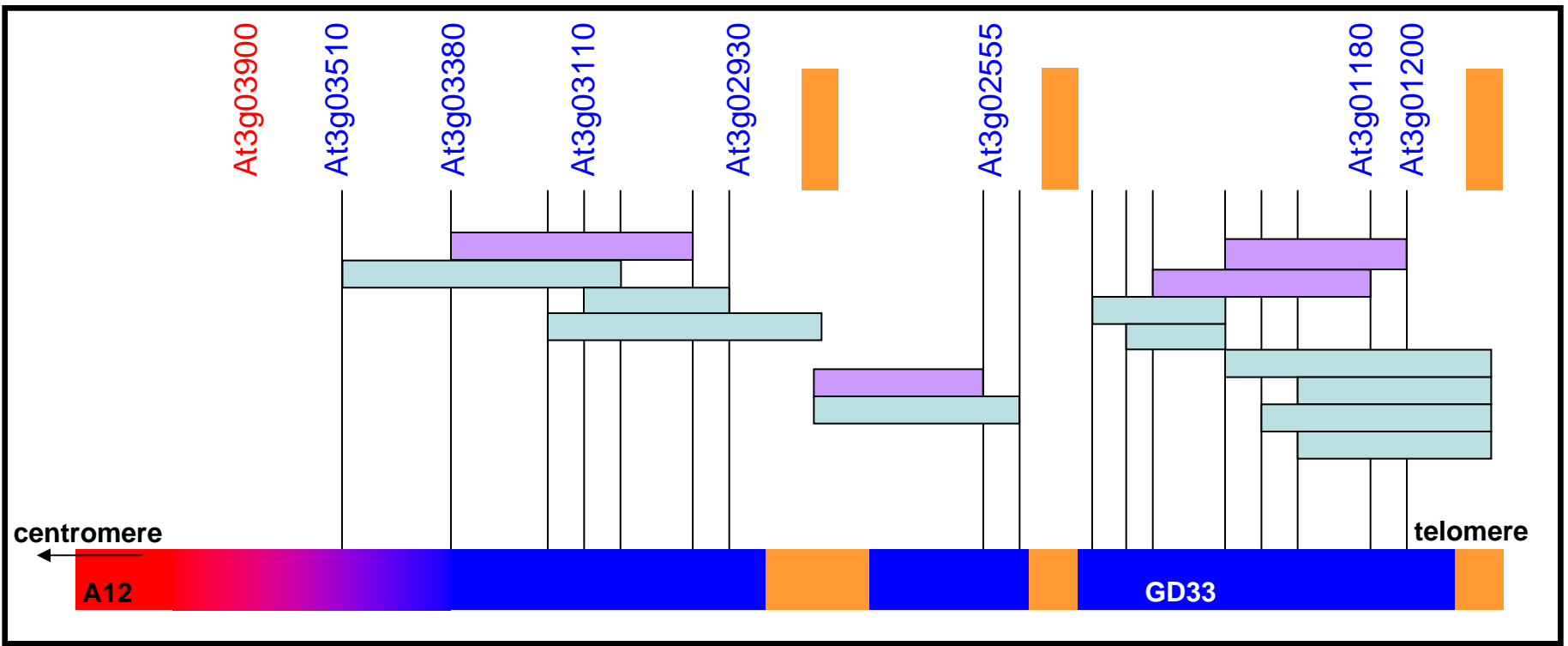
A12 and GD33 Substitution Lines (M. Kearsey, Birmingham University)



High Vigour

Low Vigour





Markers GD33 in SL101

Markers A12 in SL101

 Brassica specific tandem repeats

 BAC confirmed by FISH

————— = 120 Kbp

BAC = Bacteria Artificial Chromosome

FISH = Fluorescent in situ hybridization

Summary

- Crop establishment is essential for crop production.
- Seed vigour is an important trait for improving the predictability of crop establishment.
- Seed vigour traits are under genetic as well as environmental control.
- Identification of the gene/genes underlying ROG1 and how they influence seed vigour.

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