

## TRANSLATIONAL BIOLOGY APPROACH TO INHIBIT ANTHESIS IN BRASSICA RAPA SUSP. SYLVESTRIS

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Anthesis represents a key developmental trait for plant survival and onset of future generation. However, it may turn into undesired trait in some vegetables such as *Brassica rapa* susp. *sylvestris* (“cime di rapa”/broccoli-raab) since the yellow open flowers affect key traits such as shelf-life and acceptability of fresh and packaged products. The gene regulatory network (GRN) controlling anthesis is still poorly understood; here, pharmacological and transcriptomic approaches were combined to identify genes that regulate anthesis in the model plant *Arabidopsis thaliana* and subsequently transfer the knowledge to the Italian crop “cime di rapa”. We found that treatment with a gibberellin biosynthesis inhibitor, paclobutrazol (PAC), blocks anthesis in *Arabidopsis*. PAC treatment inhibits anthesis by the downregulation of the *MYB DOMAIN PROTEIN 21* (*MYB21*) and *MYB24* genes, which are two key regulators of stamen elongation, but also in a *MYB21-MYB24* independent manner. The anthesis inhibition by PAC treatment was also observed in “cime di rapa” in field experiments on two genotypes, strongly suggesting that GRN controlling anthesis is conserved between the two species. We are currently performing RNA-Seq transcriptomic analyses in both species to identify differentially expressed genes upon PAC-treatment as possible new regulator of anthesis. Finally, a genome resequencing strategy is being used to identify allele variants in genes controlling anthesis in the *Brassica rapa sylvestris* collection of the Mediterranean

Germplasm Database to select new genotypes best suitable for cultivation or to be used in breeding programmes.