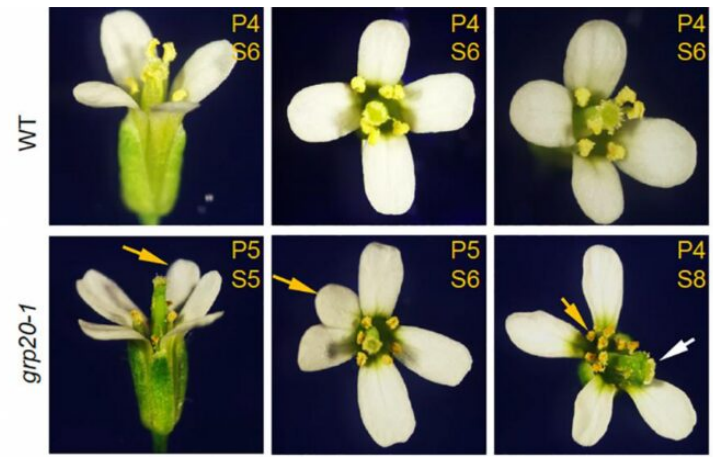
Using GRP20 to Enhance Flower Development in Crop Plants

ID# 2023-5676



Bottom row shows flowers from plants lacking GRP20.

Technology Summary

This invention unveils a novel method to study plant pre-mRNA splicing, especially micro exon retention. It highlights GRP20's role, regulating splicing in 2,100 genes crucial for flower development and responses. GRP20 ensures micro exon retention in floral genes across angiosperms, also aiding small exon splicing (51–100 nt). Its function involves binding poly-purine motifs in exons and interacting with spliceosome components, vital for flower development. GRP20's discovery offers insights into plant molecular processes, with potential applications in diverse species.

Application & Market Utility

Pre-mRNA splicing is a fundamental process in gene expression regulation, mediated by the spliceosome and various splicing factors. Plant exons, with an average size of approximately 180 nucleotides, typically contain motifs facilitating interactions with the spliceosome and splicing factors. Micro exons, which are shorter than 51 nucleotides, are prevalent in eukaryotes and play crucial roles in genes involved in plant development and responses to environmental stimuli.

Next Steps

Plant products have surged in US market, valued over $18B. This invention unveils flower RNA splicing, pivotal for development, with broad agri/ecological implications.

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Licensing |

Keywords

- Flower Development
- Gene Regulation
- RNA Splicing
- Micro-exon Retention
- Floral Homeotic Genes

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