

## GEPHE SUMMARY

<p>PMEL6 (<a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+PMEL6+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+PMEL6+gephebase-summary-title</a>)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001272</p> <p>Arnoult</p>	<p>GepheID</p> <p>Main curator</p>
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## PHENOTYPIC CHANGE

<p>Physiology (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Category+Physiology+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category+Physiology+gephebase-summary-title</a>)</p> <p>Mucilage (seeds) (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Mucilage+seeds+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Mucilage+seeds+gephebase-summary-title</a>)</p> <p>Arabidopsis thaliana- Col-0 and other lines</p> <p>Arabidopsis thaliana- Dja-1</p> <p>Data not curated</p> <p>Intraspecific (<a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Intraspecific+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Intraspecific+gephebase-summary-title</a>)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Latin Name</p> <p>Arabidopsis thaliana (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+Synonyms+Arabidopsis+thaliana+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+Synonyms+Arabidopsis+thaliana+gephebase-summary-title</a>)</p> <p>Common Name</p> <p>thale cress</p> <p>Synonyms</p> <p>thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis</p> <p>Parent</p> <p>Arabidopsis () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a>)</p> <p>NCBI Taxonomy ID</p> <p>3702 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a>)</p> <p>is Taxon A an Intraspecies?</p> <p>Yes</p> <p>Taxon A Description</p> <p>Arabidopsis thaliana- Col-0 and other lines</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Arabidopsis thaliana (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+Synonyms+Arabidopsis+thaliana+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+Synonyms+Arabidopsis+thaliana+gephebase-summary-title</a>)</p> <p>Common Name</p> <p>thale cress</p> <p>Synonyms</p> <p>thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis</p> <p>Parent</p> <p>Arabidopsis () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a>)</p> <p>NCBI Taxonomy ID</p> <p>3702 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a>)</p> <p>is Taxon B an Intraspecies?</p> <p>Yes</p> <p>Taxon B Description</p> <p>Arabidopsis thaliana- Dja-1</p>
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## GENOTYPIC CHANGE

<p>AXX17_At2g45450</p> <p>AXX17_At2g45450</p> <p>-</p> <p>-</p> <p>GO:0004857 : enzyme inhibitor activity (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0004857">https://www.ebi.ac.uk/QuickGO/term/GO:0004857</a>)</p> <p>-</p> <p>-</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p> <p>GO - Cellular Component</p>	<p>UniProtKB Arabidopsis thaliana</p> <p>A0A178VVA1 (<a href="http://www.uniprot.org/uniprot/A0A178VVA1">http://www.uniprot.org/uniprot/A0A178VVA1</a>)</p> <p>GenebankID or UniProtKB</p> <p>819153 (<a href="https://www.ncbi.nlm.nih.gov/nucleotide/819153">https://www.ncbi.nlm.nih.gov/nucleotide/819153</a>)</p>
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Yes ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Yes^#gephebase-summary-title))

Presumptive Null

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Coding^#gephebase-summary-title))

Molecular Type

Insertion ([https://www.gephebase.org/search-criteria?/and+Aberration Type=~Insertion^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Insertion^#gephebase-summary-title))

Aberration Type

1-9 bp

Insertion Size

frameshift mutation due to a 1-bp insertion 581 bp after the ATG codon that changed amino acids 194 to 205 followed by the introduction of a stop codon

Molecular Details of the Mutation

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping^#gephebase-summary-title))

Experimental Evidence

Local evolution of seed flotation in *Arabidopsis*. (2014) (<https://pubmed.ncbi.nlm.nih.gov/24625826>)

Main Reference

Saez-Aguayo S; Rondeau-Mouro C; Macquet A; Kronholm I; Ralet MC; Berger A; Sall   C; Poulain D; Granier F; Botran L; Loudet O; de Meaux J; Marion-Poll A; North HM

Authors

Abstract  
*Arabidopsis* seeds rapidly release hydrophilic polysaccharides from the seed coat on imbibition. These form a heavy mucilage layer around the seed that makes it sink in water. Fourteen natural *Arabidopsis* variants from central Asia and Scandinavia were identified with seeds that have modified mucilage release and float. Four of these have a novel mucilage phenotype with almost none of the released mucilage adhering to the seed and the absence of cellulose microfibrils. Mucilage release was modified in the variants by ten independent causal mutations in four different loci. Seven distinct mutations affected one locus, coding the MUM2  $\beta$ -D-galactosidase, and represent a striking example of allelic heterogeneity. The modification of mucilage release has thus evolved a number of times independently in two restricted geographical zones. All the natural mutants identified still accumulated mucilage polysaccharides in seed coat epidermal cells. Using nuclear magnetic resonance (NMR) relaxometry their production and retention was shown to reduce water mobility into internal seed tissues during imbibition, which would help to maintain seed buoyancy. Surprisingly, despite released mucilage being an excellent hydrogel it did not increase the rate of water uptake by internal seed tissues and is more likely to play a role in retaining water around the seed.

Abstract

PECTIN METHYLESTERASE INHIBITOR6 promotes *Arabidopsis* mucilage release by limiting methylesterification of homogalacturonan in seed coat epidermal cells. (2013) (<https://pubmed.ncbi.nlm.nih.gov/23362209>)

Additional References

## RELATED GEPHE

2 (mucilage-modified 2 (mum2), PER36) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=~3702^/and+Trait=Mucilage/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~3702^/and+Trait=Mucilage/and+groupHaplotypes=true#gephebase-summary-title))

Related Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS