

PMEl6 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=^PMEl6^#gephebase-summary-title)	Gephebase Gene	GP00001272	GepheID
Published	Entry Status	Arnoult	Main curator

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

AXX17_At2g45450	Generic Gene Name	UniProtKB Arabidopsis thaliana
AXX17_At2g45450	Synonyms	A0A178VVA1 (http://www.uniprot.org/uniprot/A0A178VVA1)
-	String	819153 (https://www.ncbi.nlm.nih.gov/nuccore/819153)
-	Sequence Similarities	
GO:0004857 : enzyme inhibitor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004857)	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	

Yes (#gpebase-summary-title)	Presumptive Null
Coding (#gpebase-summary-title)	Molecular Type
Insertion (#gpebase-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 (#gpebase-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
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 Î²-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#gpebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS