

Gephebase Gene		GepheID
Frigida like 2 (FRL2) (https://www.gepibase.org/search-criteria?and+Gene+Gephebase=~Frigida+like+2+(FRL2)^#gepibase-summary-title)	GP00000377	Main curator
Entry Status	Martin	
Published		

Physiology (#gephebase-summary-title)		Trait Category	
Flowering time (#gephebase-summary-title)		Trait	
Arabidopsis thaliana- Ler0		Trait State in Taxon A	
Arabidopsis thaliana- Colo		Trait State in Taxon B	
Data not curated		Ancestral State	
Intraspecific (#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Latin Name		Latin Name	
Arabidopsis thaliana (#gephebase-summary-title)		Arabidopsis thaliana (#gephebase-summary-title)	
Common Name		Common Name	
thale cress		thale cress	
Synonyms		Synonyms	
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	
Rank		Rank	
species		species	
Lineage		Lineage	
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	
Parent		Parent	
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		NCBI Taxonomy ID	
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)		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- Ler0		Arabidopsis thaliana- Colo	

Accession	Generic Gene Name	UniProtKB Arabidopsis thaliana
FRL2		Q9C6S2 (http://www.uniprot.org/uniprot/Q9C6S2)
F5M6.26; F5M6_26; FRIGIDA like 2; At1g31814	Synonyms	GenebankID or UniProtKB
	String	AC079041 (https://www.ncbi.nlm.nih.gov/nuccore/AC079041)
3702.AT1G31814.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier= 3702.AT1G31814.1)		
	Sequence Similarities	
Belongs to the Frigida family.		
	GO - Molecular Function	
-		
	GO - Biological Process	
GO:0030154 : cell differentiation (https://www.ebi.ac.uk/QuickGO/term/GO:0030154)		
GO:0010228 : vegetative to reproductive phase transition of meristem		

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Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No^#gephebase-summary-title>)

Molecular Type

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

Aberration Type

SNP (<https://www.gephebase.org/search-criteria?/and+Aberration Type=~SNP^#gephebase-summary-title>)

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

A132P and/or L401Q

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Main Reference

FRIGIDA LIKE 2 is a functional allele in Landsberg erecta and compensates for a nonsense allele of FRIGIDA LIKE 1. (2006) (<https://pubmed.ncbi.nlm.nih.gov/17056759>)

Authors

Schl  ppi MR

Abstract

The Landsberg erecta (Ler) accession of Arabidopsis (Arabidopsis thaliana) has a weak allele of the floral inhibitor FLOWERING LOCUS C (FLC). FLC-Ler is weakly up-regulated by the active San Feliu-2 (Sf2) allele of FRIGIDA (FRI-Sf2), resulting in a moderately late-flowering phenotype. By contrast, the Columbia (Col) allele of FLC is strongly up-regulated by FRI-Sf2, resulting in a very late-flowering phenotype. In Col, the FRI-related gene FRI LIKE 1 (FRL1) is required for FRI-mediated up-regulation of FLC. It is shown here that in Ler, the FRL1-related gene FRI LIKE 2 (FRL2), but not FRL1, is required for FRI-mediated up-regulation of FLC. FRL1-Ler is shown to be a nonsense allele of FRL1 due to a naturally occurring premature stop codon in the middle of the conceptual protein sequence, suggesting that FRL1-Ler is nonfunctional. Compared to FRL2-Col, FRL2-Ler has two amino acid changes in the conceptual protein sequence. Plants homozygous for FRI-Sf2, FLC-Ler, FRL1-Ler, and FRL2-Col have no detectable FLC expression, resulting in an extremely early flowering phenotype. Transformation of a genomic fragment of FRL2-Ler, but not of FRL2-Col, into a recombinant inbred line derived from these plants restores both FRI-mediated up-regulation of FLC expression and a late-flowering phenotype, indicating that FRL2-Ler is the functional allele of FRL2. Taken together, these results suggest that in the two different Arabidopsis accessions Col and Ler, either FRL1 or FRL2, but not both, is functional and required for FRI-mediated up-regulation of FLC.

Additional References

RELATED GEPHE

Related Genes

12 (AGAMOUS-LIKE 50, Cryptochrome 2 (CRY2) EDI allele, EARLY FLOWERING 3(ELF3), FLC (Flowering Locus C), FLM (MAF1), Flowering locus T (FT), Frigida (FRI), Frigida like 1 (FRL1), MADS AFFECTING FLOWERING 2 (MAF2), SVP (SHORT VEGETATIVE PHASE), VIN3, HUA2) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~3702^/and+Trait=Flowering time/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS