

GEPHE SUMMARY

	Gephebase Gene		GepheID
Frigida like 1 (FRL1) (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^Frigida+like+1+(FRL1)^#gephebase-summary-title)		GP00000376	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category+^Physiology^#gephebase-summary-title)			
	Trait		
Flowering time (https://www.gephebase.org/search-criteria?/and+Trait+^Flowering+time^#gephebase-summary-title)			
	Trait State in Taxon A		
Arabidopsis thaliana- Col0			
	Trait State in Taxon B		
Arabidopsis thaliana- Ler0			
	Ancestral State		
Data not curated			
	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+^Intraspecific^#gephebase-summary-title)			
Taxon A		Taxon B	
	Latin Name		Latin Name
Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Arabidopsis+thaliana^#gephebase-summary-title)		Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^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- Col0		Arabidopsis thaliana- Ler0	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Arabidopsis thaliana
FRL1		Q9FFF1 (http://www.uniprot.org/uniprot/Q9FFF1)	
	Synonyms		GenebankID or UniProtKB
FRIGIDA like 1; MQK4.4; MQK4_4; SUF8; At5g16320		AY101525 (https://www.ncbi.nlm.nih.gov/nucleotide/AY101525)	
	String		
3702.AT5G16320.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G16320.1)			
	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:0009908 : flower development (https://www.ebi.ac.uk/QuickGO/term/GO:0009908)			

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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

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

Nonsense SNP Coding Change

E279* in the middle of the conceptual protein sequence 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

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

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>) Main Reference

SchlÃ¸ppi MR Authors

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.

Abstract

Additional References

RELATED GEPHE

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 2 (FRL2), 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](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~3702^/and+Trait=Flowering+time/and+groupHaplotypes=true#gephebase-summary-title)) Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS