

## GEPHE SUMMARY

	Gephebase Gene	GephelD
Frigida like 2 (FRL2) ( <a href="https://www.gephebase.org/search-criteria/?and+Gene">https://www.gephebase.org/search-criteria/?and+Gene</a> Gephebase=^Frigida like 2 (FRL2)^#gephebase-summary-title)	GP00000377	
	Entry Status	Main curator
Published	Martin	

## PHENOTYPIC CHANGE

	Trait Category
Physiology ( <a href="https://www.gephebase.org/search-criteria/?and+Trait">https://www.gephebase.org/search-criteria/?and+Trait</a> Category=^Physiology^#gephebase-summary-title)	Trait
Flowering time ( <a href="https://www.gephebase.org/search-criteria/?and+Trait=^Flowering">https://www.gephebase.org/search-criteria/?and+Trait=^Flowering</a> time^#gephebase-summary-title)	Trait State in Taxon A
Arabidopsis thaliana- Ler0	Trait State in Taxon B
Arabidopsis thaliana- Colo	Ancestral State
Data not curated	Taxonomic Status
Intraspecific ( <a href="https://www.gephebase.org/search-criteria/?and+Taxonomic">https://www.gephebase.org/search-criteria/?and+Taxonomic</a> Status=^Intraspecific^#gephebase-summary-title)	

Taxon A	Latin Name	Taxon B	Latin Name
Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title</a> )	Common Name	Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title</a> )	Common Name
thale cress	Synonyms	thale cress	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	
species	Rank	species	Rank
	Lineage		Lineage
cellular organisms; Eukaryota; Viriplantae; Streptophytina; Streptophytina; Embryophytina; Tracheophytina; Euphylophyta; Spermatophytina; Magnoliophytina; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis		cellular organisms; Eukaryota; Viriplantae; Streptophytina; Streptophytina; Embryophytina; Tracheophytina; Euphylophyta; Spermatophytina; Magnoliophytina; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	
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> )	Parent	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> )	Parent
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> )	NCBI Taxonomy ID	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> )	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Arabidopsis thaliana- Ler0		Arabidopsis thaliana- Colo	

## GENOTYPIC CHANGE

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

-	Presumptive Null
No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%22No%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%22No%22#gephebase-summary-title</a> )	Molecular Type
Coding ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular+Type=%22Coding%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Molecular+Type=%22Coding%22#gephebase-summary-title</a> )	Aberration Type
SNP ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration+Type=%22SNP%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration+Type=%22SNP%22#gephebase-summary-title</a> )	SNP Coding Change
Nonsynonymous	Molecular Details of the Mutation
A132P and/or L401Q	Experimental Evidence
Linkage Mapping ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%22Linkage+Mapping%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%22Linkage+Mapping%22#gephebase-summary-title</a> )	

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

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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 Felio-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 1 (FRL1), MADS AFFECTING FLOWERING 2 (MAF2), SVP (SHORT VEGETATIVE PHASE), VIN3, HUA2) (<https://www.gephebase.org/search-criteria?/or+TaxonID=%223702%22/and+Trait=Flowering+time/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS