

## GEPHE SUMMARY

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

## 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 flowering"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="Flowering</a> )		
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 ( <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">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms="Arabidopsis thaliana"#gephebase-summary-title)		Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> 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) ( <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> )		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> )	
	NCBI Taxonomy ID		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> )		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> )	
	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 ( <a href="http://www.uniprot.org/uniprot/Q9FFF1">http://www.uniprot.org/uniprot/Q9FFF1</a> )	
	Synonyms		GenebankID or UniProtKB
FRIGIDA like 1; MQK4.4; MQK4_4; SUF8; At5g16320		AY101525 ( <a href="https://www.ncbi.nlm.nih.gov/nucleotide/AY101525">https://www.ncbi.nlm.nih.gov/nucleotide/AY101525</a> )	
	String		
3702.AT5G16320.1 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G16320.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G16320.1</a> )			
	Sequence Similarities		
Belongs to the Frigida family.			
	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:0009908 : flower development ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0009908">https://www.ebi.ac.uk/QuickGO/term/GO:0009908</a> )			

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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

Schlöpfi 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) ED1 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