

GEPHE SUMMARY

Gephebase Gene
Frigida (FRI)

Entry Status
Published

GepheID
GP00000365

Main curator
Martin

PHENOTYPIC CHANGE

Trait Category
Physiology

Trait
Flowering time

Trait State in Taxon A
Arabidopsis thaliana

Trait State in Taxon B
Arabidopsis thaliana Cvi accession

Ancestral State
Data not curated

Taxonomic Status
Intraspecific

Taxon A

Latin Name
Arabidopsis thaliana

Common Name
thale cress

Synonyms
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis

Parent
Arabidopsis () - (Rank: genus)

NCBI Taxonomy ID
3702

is Taxon A an Intraspecies?
No

Taxon B

Latin Name
Arabidopsis thaliana

Common Name
thale cress

Synonyms
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis

Parent
Arabidopsis () - (Rank: genus)

NCBI Taxonomy ID
3702

is Taxon B an Intraspecies?
Yes

Taxon B Description
Arabidopsis thaliana Cvi accession

GENOTYPIC CHANGE

Generic Gene Name
FRI

Synonyms
-

String
-

Sequence Similarities
Belongs to the Frigida family.

GO - Molecular Function
-

GO - Biological Process
GO:0030154 : cell differentiation
GO:0009908 : flower development

GO - Cellular Component
GO:0016607 : nuclear speck

UniProtKB Arabidopsis thaliana
P0DH90

GenebankID or UniProtKB
AF228500

Presumptive Null

Yes

Molecular Type

Coding

Aberration Type

SNP

SNP Coding Change

Nonsense

Molecular Details of the Mutation

K232* in exon 1

Experimental Evidence

Candidate Gene

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

Main Reference

Analysis of the molecular basis of flowering time variation in Arabidopsis accessions. (2003)

Authors

Gazzani S; Gendall AR; Lister C; Dean C

Abstract

Allelic variation at the FRI (FRIGIDA) and FLC (FLOWERING LOCUS C) loci are major determinants of flowering time in Arabidopsis accessions. Dominant alleles of FRI confer a vernalization requirement causing plants to overwinter vegetatively. Many early flowering accessions carry loss-of-function fri alleles containing one of two deletions. However, some accessions categorized as early flowering types do not carry these deletion alleles. We have analyzed the molecular basis of earliness in five of these accessions: Cvi, Shakh dara, Wil-2, Kondara, and Kz-9. The Cvi FRI allele carries a number of nucleotide differences, one of which causes an in-frame stop codon in the first exon. The other four accessions contain nucleotide differences that only result in amino acid substitutions. Preliminary genetic analysis was consistent with Cvi carrying a nonfunctional FRI allele; Wil-2 carrying either a defective FRI or a dominant suppressor of FRI function; and Shakh dara, Kondara, and Kz-9 carrying a functional FRI allele with earliness being caused by allelic variation at other loci including FLC. Allelic variation at FLC was also investigated in a range of accessions. A novel nonautonomous Mutator-like transposon was found in the weak FLC allele in Landsberg erecta, positioned in the first intron, a region required for normal FLC regulation. This transposon was not present in FLC alleles of most other accessions including Shakh dara, Kondara, or Kz-9. Thus, variation in Arabidopsis flowering time has arisen through the generation of nonfunctional or weak FRI and FLC alleles.

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 like 1 (FRL1), Frigida like 2 (FRL2), MADS AFFECTING FLOWERING 2 (MAF2), SVP (SHORT VEGETATIVE PHASE), VIN3, HUA2)

Related Haplotypes

18

EXTERNAL LINKS**COMMENTS**