

## GEPHE SUMMARY

|   |                |            |              |
|---|----------------|------------|--------------|
|   | Gephebase Gene |            | GepheID      |
| Frigida (FRI) ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~Frigida+(FRI)^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~Frigida+(FRI)^#gephebase-summary-title</a> ) |                | GP00000364 |              |
| Published   | Entry Status   | Martin     | Main curator |

## PHENOTYPIC CHANGE

|  |                             |  |                             |
|--|-----------------------------|--|-----------------------------|
|  | Trait Category              |  |                             |
| Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology^#gephebase-summary-title</a> )   |                             |  |                             |
|  | Trait                       |  |                             |
| Flowering time ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=~Flowering+time^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=~Flowering+time^#gephebase-summary-title</a> )   |                             |  |                             |
|  | Trait State in Taxon A      |  |                             |
| Arabidopsis thaliana   |                             |  |                             |
|  | Trait State in Taxon B      |  |                             |
| Arabidopsis thaliana VOU   |                             |  |                             |
|  | Ancestral State             |  |                             |
| Data not curated   |                             |  |                             |
|  | Taxonomic Status            |  |                             |
| Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific^#gephebase-summary-title</a> )                                    |                             |  |                             |
| Taxon A  |                             | Taxon B  |                             |
|  | Latin Name                  |  | Latin Name                  |
| Arabidopsis thaliana<br>( <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> )        |                             | Arabidopsis thaliana<br>( <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                 |  | 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)<br>( <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)<br>( <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<br>( <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<br>( <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 Infrappecies? |  | is Taxon B an Infrappecies? |
| No   |                             | Yes  |                             |
|  |                             |  | Taxon B Description         |
|  |                             | Arabidopsis thaliana VOU   |                             |

## GENOTYPIC CHANGE

|   |                         |  |                                |
|---|-------------------------|--|--------------------------------|
|   | Generic Gene Name       |  | UniProtKB Arabidopsis thaliana |
| FRI   |                         | PoDH90 ( <a href="http://www.uniprot.org/uniprot/PoDH90">http://www.uniprot.org/uniprot/PoDH90</a> )                         |                                |
|   | Synonyms                |  | GenebankID or UniProtKB        |
| -   |                         | AF228500 ( <a href="https://www.ncbi.nlm.nih.gov/nucleotide/AF228500">https://www.ncbi.nlm.nih.gov/nucleotide/AF228500</a> ) |                                |
|   | String                  |  |                                |
| -   |                         |  |                                |
|   | 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> )   |                         |  |                                |
|   | GO - Cellular Component |  |                                |
| GO:0016607 : nuclear speck ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0016607">https://www.ebi.ac.uk/QuickGO/term/GO:0016607</a> )        |                         |  |                                |

Yes (<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>)

Molecular Type

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

Aberration Type

Nonsense

SNP Coding Change

Glu361\*

Molecular Details of the Mutation

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

Experimental Evidence

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

Main Reference

DNA polymorphism at the FRIGIDA gene in *Arabidopsis thaliana*: extensive nonsynonymous variation is consistent with local selection for flowering time. (2002) (<https://pubmed.ncbi.nlm.nih.gov/12140238>)

Authors

Le Corre V; Roux F; Reboud X

Abstract

FRIGIDA (FRI) is a major gene involved in the regulation of flowering time in *Arabidopsis thaliana*. Nucleotide variation at this gene was investigated by sequencing 25 field ecotypes collected from western Europe. Genetic diversity at FRI was characterized by a high number of haplotypes and an excess of low-frequency polymorphisms. A large excess of intraspecific nonsynonymous variation associated with low synonymous variation was detected along the first exon in the FRI gene. In contrast, no excess of nonsynonymous divergence was detected between *A. thaliana* and *A. lyrata*. The Tajima and McDonald and Kreitman tests, however, suggested that this gene has evolved in a nonneutral fashion. Nonsynonymous variation included eight loss-of-function mutations that have probably arisen recently and independently in several locations. A phenotypic evaluation of the sequenced ecotypes confirmed that these loss-of-function mutations were associated with an early-flowering phenotype. Taken together, our results suggest that DNA polymorphism at the FRI gene in *A. thaliana* from western Europe has been shaped by recent positive selection for earliness in a set of isolated populations.

Additional References

## RELATED GEPHE

Related Genes

12 (AGAMOUS-LIKE 50, Cryptochrome 2 (CRY2) ED1 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) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^3702^/and+Trait=Flowering time/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

18 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^Frigida \(FRI\)^/and+Taxon ID=^3702^/or+Gene Gephebase=^Frigida \(FRI\)^/and+Taxon ID=^3702^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^Frigida (FRI)^/and+Taxon ID=^3702^/or+Gene Gephebase=^Frigida (FRI)^/and+Taxon ID=^3702^#gephebase-summary-title))

## EXTERNAL LINKS

## COMMENTS