## GEPHE SUMMARY

Gephebase Gene
Flowering locus T (FT1) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Flowering locus T (FT1)^#gephebase-summary-title)

GepheID
GP00000346

Entry Status
Published

Main curator
Martin

## 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
Helianthus annuus

Trait State in Taxon B
Helianthus annuus

Ancestral State
Taxon A

Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)

### Taxon A

Latin Name
Helianthus annuus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Helianthus annuus^#gephebase-summary-title)

Common Name
common sunflower

Synonyms
common sunflower; Helianthus annuus L.; Helianthus annua; Helianthus annus; Helianthus annuus8

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; campanulids; Asterales; Asteraceae; Asteroideae; Heliantheae alliance; Heliantheae; Helianthus

Parent
Helianthus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4231 )

NCBI Taxonomy ID
4232 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4232 )

is Taxon A an Infraspecies?
No

### Taxon B

Latin Name
Helianthus annuus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Helianthus annuus^#gephebase-summary-title)

Common Name
common sunflower

Synonyms
common sunflower; Helianthus annuus L.; Helianthus annua; Helianthus annus; Helianthus annuus8

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; campanulids; Asterales; Asteraceae; Asteroideae; Heliantheae alliance; Heliantheae; Helianthus

Parent
Helianthus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4231 )

NCBI Taxonomy ID
4232 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4232 )

is Taxon B an Infraspecies?
No

## GENOTYPIC CHANGE

Generic Gene Name
FT

Synonyms
F5I14.3; F5I14_3; FLOWERING LOCUS T; REDUCED STEM BRANCHING 8; RSB8; At1g65480

String
3702.AT1G65480.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT1G65480.1 )

Sequence Similarities
Belongs to the phosphatidylethanolamine-binding protein family.

GO - Molecular Function
GO:0008429 : phosphatidylethanolamine binding (https://www.ebi.ac.uk/QuickGO/term/GO:0008429)

GO - Biological Process
GO:0030154 : cell differentiation (https://www.ebi.ac.uk/QuickGO/term/GO:0030154)
GO:0009911 : positive regulation of flower development

UniProtKB Arabidopsis thaliana
Q9SXZ2 (http://www.uniprot.org/uniprot/Q9SXZ2)

GenebankID or UniProtKB
AEN70128 (https://www.ncbi.nlm.nih.gov/nuccore/AEN70128)

(https://www.ebi.ac.uk/QuickGO/term/GO:0009911)
GO:0009908 : flower development (https://www.ebi.ac.uk/QuickGO/term/GO:0009908)
GO:0009909 : regulation of flower development
(https://www.ebi.ac.uk/QuickGO/term/GO:0009909)
GO:0048573 : photoperiodism, flowering
(https://www.ebi.ac.uk/QuickGO/term/GO:0048573)
GO:0010119 : regulation of stomatal movement
(https://www.ebi.ac.uk/QuickGO/term/GO:0010119)

GO - Cellular Component

GO:0005737 : cytoplasm (https://www.ebi.ac.uk/QuickGO/term/GO:0005737)
GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)
GO:0005783 : endoplasmic reticulum
(https://www.ebi.ac.uk/QuickGO/term/GO:0005783)

Presumptive Null

Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Yes^#gephebase-summary-title)

Molecular Type

Coding (https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding^#gephebase-summary-title)

Aberration Type

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

Deletion Size

1-9 bp

Molecular Details of the Mutation

1bp deletion; frameshift

Experimental Evidence

Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title)

Main Reference

The role of recently derived FT paralogs in sunflower domestication. (2010) (https://pubmed.ncbi.nlm.nih.gov/20303265)

Authors

Blackman BK; Strasburg JL; Raduski AR; Michaels SD; Rieseberg LH

Abstract

Gene duplication provides an important source of genetic raw material for phenotypic diversification, but few studies have detailed the mechanisms through which duplications produce evolutionary novelty within species. Here, we investigate how a set of recently duplicated homologs of the floral inducer FLOWERING LOCUS T (FT) has contributed to sunflower domestication. We find that changes in expression of these duplicates are associated with differences in flowering behavior between wild and domesticated sunflower. In addition, we present genetic and functional evidence demonstrating that a frameshift mutation in one paralog, Helianthus annuus FT 1 (HaFT1), underlies a major QTL for flowering time and experienced a selective sweep during early domestication. Notably, this dominant-negative allele delays flowering through interference with action of another paralog, HaFT4. Together, these data reveal that changes affecting the expression, sequence, and gene interactions of HaFT paralogs have played key roles during sunflower domestication. Our findings also illustrate the important role that evolving interactions between new gene family members may play in fostering phenotypic change.

Additional References

## RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS