

## GEPHE SUMMARY

Gephebase Gene  
AGAMOUS-Like6

Entry Status  
Published

GepheID  
GP00000053

Main curator  
Martin

## PHENOTYPIC CHANGE

### Trait #1

Trait Category  
Morphology

Trait  
Plant architecture

Trait State in Taxon A  
Arabidopsis thaliana - Ler

Trait State in Taxon B  
Arabidopsis thaliana - C24 - reduced stem branching

### Trait #2

Trait Category  
Morphology

Trait  
Inflorescence architecture

Trait State in Taxon A  
-

Trait State in Taxon B  
-

### Ancestral State

Taxon A

### 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?

Yes

#### Taxon A Description

Arabidopsis thaliana - Ler

### 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 - C24 - reduced stem branching

## GENOTYPIC CHANGE

**Generic Gene Name****AGL6**

UniProtKB Arabidopsis thaliana

P29386

**Synonyms**

AGAMOUS-like 6; F17K2.18; REDUCED SHOOT BRANCHING 1; RSB1; At2g45650

**GenebankID or UniProtKB****String**

3702.AT2G45650.1

**Sequence Similarities**

-

**GO - Molecular Function**

GO:0046983 : protein dimerization activity

GO:0003700 : DNA-binding transcription factor activity

GO:0000977 : RNA polymerase II regulatory region sequence-specific DNA binding

GO:0043565 : sequence-specific DNA binding

GO:0008134 : transcription factor binding

GO:0000982 : transcription factor activity, RNA polymerase II proximal promoter sequence-specific DNA binding

GO:0044212 : transcription regulatory region DNA binding

**GO - Biological Process**

GO:0007275 : multicellular organism development

GO:0045944 : positive regulation of transcription by RNA polymerase II

GO:0030154 : cell differentiation

GO:0048437 : floral organ development

GO:0048481 : plant ovule development

GO:0009911 : positive regulation of flower development

GO:0010228 : vegetative to reproductive phase transition of meristem

**GO - Cellular Component**

GO:0005634 : nucleus

**Presumptive Null**

No

**Molecular Type**

Coding

**Aberration Type**

SNP

**SNP Coding Change**

Nonsynonymous

**Molecular Details of the Mutation**

Pro201Leu

**Experimental Evidence**

Linkage Mapping

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

**Main Reference**

Epistatic natural allelic variation reveals a function of AGAMOUS-LIKE6 in axillary bud formation in Arabidopsis. (2012)

**Authors**

Huang X; Effgen S; Meyer RC; Theres K; Koornneef M

**Abstract**

In the Arabidopsis multiparent recombinant inbred line mapping population, a limited number of plants were detected that lacked axillary buds in most of the axils of the cauline (stem) leaves, but formed such buds in almost all rosette axils. Genetic analysis showed that polymorphisms in at least three loci together constitute this phenotype, which only occurs in late-flowering plants. Early flowering is epistatic to two of these loci, called REDUCED SHOOT BRANCHING1 (RSB1) and RSB2, which themselves do not affect flowering time. Map-based cloning and confirmation by transformation with genes from the region where RSB1 was identified by fine-mapping showed that a specific allele of AGAMOUS-Like6 from accession C24 conferred reduced branching in the cauline leaves. Site-directed mutagenesis in the Columbia allele revealed the causal amino acid substitution, which behaved as dominant negative, as was concluded from a loss-of-function mutation that showed the same phenotype in the late-flowering genetic background. This causal allele occurs at a frequency of 15% in the resequenced Arabidopsis thaliana accessions and correlated with reduced stem branching only in late-flowering accessions. The data show the importance of natural variation and epistatic interactions in revealing gene function.

**Additional References****RELATED GEPHE****Related Genes**

3 (ACS11, ERECTA, phytochrome D (PHYD))

**Related Haplotypes**

No matches found.

## EXTERNAL LINKS

## COMMENTS

@Epistasis Dominant-negative loss-of-function mutation ; Epistatic interaction with Early Flowering Locus ; use of the AMPRIL mapping population ; Functional Verification : Site-directed mutagenesis in Col background