

GEPHE SUMMARY

AGAMOUS-Like6 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=^AGAMOUS-Like6^#gephebase-summary-title)	Gephebase Gene	GP00000053	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Trait #1	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=^Morphology^#gephebase-summary-title)	Trait
Plant architecture (https://www.gephebase.org/search-criteria?/and+Trait=^Plant architecture^#gephebase-summary-title)	Trait State in Taxon A
Arabidopsis thaliana - Ler	Trait State in Taxon B
Arabidopsis thaliana - C24 - reduced stem branching	

Trait #2	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=^Morphology^#gephebase-summary-title)	Trait
Inflorescence architecture (https://www.gephebase.org/search-criteria?/and+Trait=^Inflorescence architecture^#gephebase-summary-title)	Trait State in Taxon A
-	Trait State in Taxon B
-	

Taxon A	Ancestral State
Intraspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=^Intraspecific^#gephebase-summary-title)	Taxonomic Status

Taxon A	Latin Name
Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Arabidopsis thaliana^#gephebase-summary-title)	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) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)	NCBI Taxonomy ID
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	is Taxon A an Intraspecies?
Yes	Taxon A Description
Arabidopsis thaliana - Ler	

Taxon B	Latin Name
Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Arabidopsis thaliana^#gephebase-summary-title)	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) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)	NCBI Taxonomy ID
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	is Taxon B an Intraspecies?
Yes	Taxon B Description
Arabidopsis thaliana - C24 - reduced stem branching	

GENOTYPIC CHANGE

<p>AGL6</p> <p>AGAMOUS-like 6; F17K2.18; REDUCED SHOOT BRANCHING 1; RSB1; At2g45650</p> <p>3702.AT2G45650.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT2G45650.1)</p> <p>-</p> <p>GO:0046983 : protein dimerization activity (https://www.ebi.ac.uk/QuickGO/term/GO:0046983)</p> <p>GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)</p> <p>GO:0000977 : RNA polymerase II regulatory region sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0000977)</p> <p>GO:0043565 : sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043565)</p> <p>GO:0008134 : transcription factor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0008134)</p> <p>GO:0000982 : transcription factor activity, RNA polymerase II proximal promoter sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0000982)</p> <p>GO:0044212 : transcription regulatory region DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0044212)</p> <p>GO:0007275 : multicellular organism development (https://www.ebi.ac.uk/QuickGO/term/GO:0007275)</p> <p>GO:0045944 : positive regulation of transcription by RNA polymerase II (https://www.ebi.ac.uk/QuickGO/term/GO:0045944)</p> <p>GO:0030154 : cell differentiation (https://www.ebi.ac.uk/QuickGO/term/GO:0030154)</p> <p>GO:0048437 : floral organ development (https://www.ebi.ac.uk/QuickGO/term/GO:0048437)</p> <p>GO:0048481 : plant ovule development (https://www.ebi.ac.uk/QuickGO/term/GO:0048481)</p> <p>GO:0009911 : positive regulation of flower development (https://www.ebi.ac.uk/QuickGO/term/GO:0009911)</p> <p>GO:0010228 : vegetative to reproductive phase transition of meristem (https://www.ebi.ac.uk/QuickGO/term/GO:0010228)</p> <p>GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)</p> <p>No (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~No^#gephebase-summary-title)</p> <p>Coding (https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Coding^#gephebase-summary-title)</p> <p>SNP (https://www.gephebase.org/search-criteria?/and+Aberration+Type=~SNP^#gephebase-summary-title)</p> <p>Nonsynonymous</p> <p>Pro201Leu</p> <p>Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping^#gephebase-summary-title)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p> <p>GO - Cellular Component</p>	<p>UniProtKB Arabidopsis thaliana</p> <p>GenebankID or UniProtKB</p> <p>Presumptive Null</p> <p>Molecular Type</p> <p>Aberration Type</p> <p>SNP Coding Change</p> <p>Molecular Details of the Mutation</p> <p>Experimental Evidence</p>
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	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) (<https://pubmed.ncbi.nlm.nih.gov/22730404>)

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.

RELATED GEPHE

4 (ACS11, ERECTA, ICARUS1, phytochrome D (PHYD)) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~3702~/and+Trait=Plant architecture/or+Taxon ID=~3702~/and+Trait=Inflorescence architecture/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

No matches found.

Related Haplotypes

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