

GEPHE SUMMARY

	Gephebase Gene		GepheID
GIBBERELIC ACID REQUIRING 1 (GA1) (<a +gibberelic+acid+requiring+1+(ga1)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+GIBBERELIC+ACID+REQUIRING+1+(GA1)+"#gephebase-summary-title)		GP00000395	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Morphology (<a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title)		Trait	
Flower morphology (<a +flower+morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Flower+morphology+"#gephebase-summary-title)			
	Trait State in Taxon A		
Arabidopsis thaliana - Sha		Trait State in Taxon B	
Arabidopsis thaliana- Bay-0			
	Ancestral State		
Data not curated		Taxonomic Status	
Intraspecific (<a +intraspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific+"#gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Arabidopsis thaliana (<a +arabidopsis+thaliana+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Arabidopsis+thaliana+"#gephebase-summary-title)		Arabidopsis thaliana (<a +arabidopsis+thaliana+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Arabidopsis+thaliana+"#gephebase-summary-title)	
	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; Pentapetales; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	
	Parent		Parent
Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)		Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)		3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	
	is Taxon A an Infrapopulation?		is Taxon B an Infrapopulation?
Yes		Yes	
	Taxon A Description		Taxon B Description
Arabidopsis thaliana - Sha		Arabidopsis thaliana- Bay-0	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Arabidopsis thaliana
GA1		Q38802 (http://www.uniprot.org/uniprot/Q38802)	
	Synonyms		GenebankID or UniProtKB
ABC33; ARABIDOPSIS THALIANA ENT-COPALYL DIPHOSPHATE SYNTHETASE 1; ATCP51; CPP synthase; CPS; CPS1; ENT-COPALYL DIPHOSPHATE SYNTHETASE; ENT-COPALYL DIPHOSPHATE SYNTHETASE 1; GA REQUIRING 1; T5J8.9; T5J8_9; TPSGA1; At4g02780		U11034 (https://www.ncbi.nlm.nih.gov/nuccore/U11034)	
	String		
3702.AT4G02780.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G02780.1)			
	Sequence Similarities		
Belongs to the terpene synthase family. Tpsc subfamily.			
	GO - Molecular Function		

GO:0000287 : magnesium ion binding
(<https://www.ebi.ac.uk/QuickGO/term/GO:0000287>)
GO:0009905 : ent-copalyl diphosphate synthase activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009905>)
GO:0010333 : terpene synthase activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010333>)

GO - Biological Process

GO:0009740 : gibberellic acid mediated signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009740>)
GO:0009686 : gibberellin biosynthetic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009686>)
GO:0016102 : diterpenoid biosynthetic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016102>)

GO - Cellular Component

GO:0009507 : chloroplast (<https://www.ebi.ac.uk/QuickGO/term/GO:0009507>)

	Presumptive Null
Unknown (<a +unknown^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=">https://www.gephebase.org/search-criteria?/and+Presumptive Null="+Unknown^#gephebase-summary-title)	Molecular Type
Unknown (<a +unknown^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Molecular Type=">https://www.gephebase.org/search-criteria?/and+Molecular Type="+Unknown^#gephebase-summary-title)	Aberration Type
Unknown (<a +unknown^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Aberration Type=">https://www.gephebase.org/search-criteria?/and+Aberration Type="+Unknown^#gephebase-summary-title)	Molecular Details of the Mutation
unknown	Experimental Evidence
Linkage Mapping (<a +linkage="" href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=" mapping^#gephebase-summary-title"="">https://www.gephebase.org/search-criteria?/and+Experimental Evidence="+Linkage Mapping^#gephebase-summary-title)	Main Reference
Natural variation in GA1 associates with floral morphology in Arabidopsis thaliana. (2012) (https://pubmed.ncbi.nlm.nih.gov/22510148)	Authors
Brock MT; Kover PX; Weinig C	Abstract

Abstract The genetic architecture of floral traits is evolutionarily important due to the fitness consequences of quantitative variation in floral morphology. Yet, little is known about the genes underlying these traits in natural populations. Using Arabidopsis thaliana, we examine molecular variation at GIBBERELLIC ACID REQUIRING 1 (GA1) and test for associations with floral morphology. We examined full-length sequence in 32 accessions and describe two haplotypes (comprising four nonsynonymous polymorphisms) in GA1 that segregate at intermediate frequencies. In 133 A. thaliana accessions, we test for genotype-phenotype associations and corroborate these findings in segregating progenies. The two common GA1 haplotypes were associated with the length of petals, stamens, and to a lesser extent style-stigma length. Associations were confirmed in a segregating progeny developed from 19 accessions. We find analogous results in recombinant inbred lines of the Bayreuth – Shahdara cross, which differ only at one of 4 SNPs, suggesting that this SNP may contribute to the observed association. Assuming GA1 causally affects floral organ size, it is interesting that adjacent petal and stamen whorls are most strongly affected. This pattern suggests that GA1 could contribute to the greater strength of petal-stamen correlations relative to other floral-length correlations observed in some Brassicaceous species.

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Additional References

RELATED GEPHE

	Related Genes
1 (Cryptochrome 2 (CRY2) EDI allele) (<a +3702^="" and+grouphaplotypes='true#gephebase-summary-title"' and+trait="Flower" href="https://www.gephebase.org/search-criteria?/or+Taxon ID=" morphology="">https://www.gephebase.org/search-criteria?/or+Taxon ID="+3702^/and+Trait=Flower morphology/and+groupHaplotypes=true#gephebase-summary-title)	Related Haplotypes
No matches found.	

EXTERNAL LINKS

COMMENTS