

GEPHE SUMMARY

	Gephebase Gene	GepheID
cly1 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~cly1^#gephebase-summary-title)	GP00001316	
	Entry Status	Main curator
Published	Arnoult	

PHENOTYPIC CHANGE

	Trait Category		
Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology^#gephebase-summary-title)		Trait	
Pollen shedding (Cleistogamy; lodicule size) (https://www.gephebase.org/search-criteria?/and+Trait=~Pollen+shedding+(Cleistogamy;lodicule+size)^#gephebase-summary-title)			
	Trait State in Taxon A		
Hordeum vulgare - Barley AZ (noncleistogamous)		Trait State in Taxon B	
Hordeum vulgare - Barley SV235 (cleistogamous)			
	Ancestral State		
Taxon A		Taxonomic Status	
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Domesticated^#gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Hordeum vulgare (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Hordeum+vulgare^#gephebase-summary-title)		Hordeum vulgare (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Hordeum+vulgare^#gephebase-summary-title)	
	Common Name		Common Name
-		-	
	Synonyms		Synonyms
barley; Hordeum vulgare L.; Horedum vulgare		barley; Hordeum vulgare L.; Horedum vulgare	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Hordeinae; Hordeum		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Hordeinae; Hordeum	
	Parent		Parent
Hordeum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4512)		Hordeum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4512)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
4513 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4513)		4513 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4513)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
Yes		Yes	
	Taxon A Description		Taxon B Description
Hordeum vulgare - Barley AZ (noncleistogamous)		Hordeum vulgare - Barley SV235 (cleistogamous)	

GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Arabidopsis thaliana
AP2		P47927 (http://www.uniprot.org/uniprot/P47927)
	Synonyms	GenebankID or UniProtKB
FLO2; AP22.49; AP22_49; APETALA 2; AtAP2; FL1; FLORAL HOMEOTIC PROTEIN APETALA 2; FLORAL MUTANT 2; FLOWER 1; At4g36920; C7A10.440		KF261342.1 (https://www.ncbi.nlm.nih.gov/nuccore/KF261342.1)
	String	
3702.AT4G36920.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G36920.1)		
	Sequence Similarities	
Belongs to the AP2/ERF transcription factor family. AP2 subfamily.		
	GO - Molecular Function	
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)		
GO:0003677 : DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003677)		

GO - Biological Process

GO:0030154 : cell differentiation (<https://www.ebi.ac.uk/QuickGO/term/GO:0030154>)
GO:0048481 : plant ovule development
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048481>)
GO:0009908 : flower development (<https://www.ebi.ac.uk/QuickGO/term/GO:0009908>)
GO:0010073 : meristem maintenance
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010073>)
GO:0048316 : seed development (<https://www.ebi.ac.uk/QuickGO/term/GO:0048316>)
GO:0010093 : specification of floral organ identity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010093>)

GO - Cellular Component

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title>)

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

T>C @position -245; creating differential methylation

Experimental Evidence

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

Main Reference

An epiallele at cly1 affects the expression of floret closing (cleistogamy) in barley. (2015) (<https://pubmed.ncbi.nlm.nih.gov/25398791>)

Authors

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Abstract

The swelling of the lodicule is responsible for floret opening in many grass species, allowing for pollen dispersal and cross-pollination. In barley, the closed floret habit (cleistogamy) is under the control of cly1, a gene that operates by inhibiting the development of the lodicule. In non-cleistogamous cultivars, cly1 mRNA is degraded by miR172-directed cleavage, allowing the lodicules to swell; however, in cultivars carrying the recessive allele cly1.b, a single-nucleotide substitution destroys the miR172 target site preventing mRNA cleavage. Barley cv. SV235 is cleistogamous; its cly1 coding sequence is identical to that of cly1.b, but its lodicules do develop, although insufficiently to produce a non-cleistogamous flower. In this cultivar, the downregulation of cly1 is unrelated to miR172-directed mRNA degradation, but rather is caused by an epiallele that represses transcription. Allelic relationships between known cly1 alleles were explored by the quantification of lodicule vascularization and an assessment of the response of the spike to the supply of exogenous auxin. The SV235 phenotype can be manipulated by a pre-anthesis application of 2,4-d, a feature that could be of interest in the context of hybrid barley grain production based on cleistogamy.

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Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

2 (<https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^cly1^/and+Taxon ID=^4513^/or+Gene Gephebase=^cly1^/and+Taxon ID=^4513^#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS

Not very strong empirical evidence