

GEPHE SUMMARY

VRN2 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~VRN2^#gephebase-summary-title)	Gephebase Gene	GP00001187	GepheID
	Entry Status	Martin	Main curator
	Published		

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Physiology^#gephebase-summary-title)		Trait Category	
Flowering time (https://www.gephebase.org/search-criteria?/and+Trait=~Floweringtime^#gephebase-summary-title)		Trait	
Triticum monococum - winter cultivar		Trait State in Taxon A	
Triticum monococum DV92		Trait State in Taxon B	
Data not curated		Ancestral State	
Domesticated (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Domesticated^#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Triticum monococum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Triticummonococum^#gephebase-summary-title)		Triticum monococum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Triticummonococum^#gephebase-summary-title)	
-		-	
Crithodium monococum; einkorn wheat; one-grained wheat; small spelt; Crithodium monococum (L.) A.Love; Triticum monococum L.		Crithodium monococum; einkorn wheat; one-grained wheat; small spelt; Crithodium monococum (L.) A.Love; Triticum monococum L.	
species		species	
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Triticum		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Triticum	
Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4564)		Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4564)	
4568 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4568)		4568 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4568)	
No		Yes	
		Taxon B Description	
		Triticum monococum DV92	

GENOTYPIC CHANGE

VRN2		Generic Gene Name		UniProtKB Arabidopsis thaliana
REDUCED VERNALIZATION RESPONSE 2; At4g16845; dL4450w; FCAALL.23		Synonyms		GenebankID or UniProtKB
3702.AT4G16845.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G16845.1)		String		AAS58481 (https://www.ncbi.nlm.nih.gov/nuccore/AAS58481)
Belongs to the VEFS (VRN2-EMF2-FIS2-SU(Z)12) family.		Sequence Similarities		
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)		GO - Molecular Function		
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)				
GO:0031490 : chromatin DNA binding				

(<https://www.ebi.ac.uk/QuickGO/term/GO:0031490>)

GO - Biological Process

GO:0009409 : response to cold (<https://www.ebi.ac.uk/QuickGO/term/GO:0009409>)

GO:0010048 : vernalization response

(<https://www.ebi.ac.uk/QuickGO/term/GO:0010048>)

GO:0006349 : regulation of gene expression by genetic imprinting

(<https://www.ebi.ac.uk/QuickGO/term/GO:0006349>)

GO - Cellular Component

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

GO:0005677 : chromatin silencing complex

(<https://www.ebi.ac.uk/QuickGO/term/GO:0005677>)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

R35W; R is conserved in all of the ZCCT proteins and in all of the CO-like proteins from Arabidopsis; rice; and barley

Experimental Evidence

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

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

Main Reference

The wheat VRN2 gene is a flowering repressor down-regulated by vernalization. (2004) (<https://pubmed.ncbi.nlm.nih.gov/15016992>)

Authors

Yan L; Loukoianov A; Blechl A; Tranquilli G; Ramakrishna W; SanMiguel P; Bennetzen JL; Echenique V; Dubcovsky J

Abstract

Plants with a winter growth habit flower earlier when exposed for several weeks to cold temperatures, a process called vernalization. We report here the positional cloning of the wheat vernalization gene VRN2, a dominant repressor of flowering that is down-regulated by vernalization. Loss of function of VRN2, whether by natural mutations or deletions, resulted in spring lines, which do not require vernalization to flower. Reduction of the RNA level of VRN2 by RNA interference accelerated the flowering time of transgenic winter-wheat plants by more than a month.

Additional References

RELATED GEPHE

Related Genes

1 (VRN1) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~4568^/and+Trait=Flowering time/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

1 (<https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~VRN2^/and+Taxon ID=~4568^/or+Gene Gephebase=~VRN2^/and+Taxon ID=~4568^#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS