

GEPHE SUMMARY

VRN2 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~VRN2~#gephebase-summary-title)	Gephebase Gene	GP00001188	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 -several spring varieties		Trait State in Taxon B	
Taxon A		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=~Triticum monococum~#gephebase-summary-title)		Triticum monococum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Triticum monococum~#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 is Taxon A an Intraspecies?		No is Taxon B an Intraspecies?	

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		
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
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes~#gephebase-summary-title)	
	Molecular Type
Gene Loss (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Gene Loss~#gephebase-summary-title)	
	Aberration Type
Deletion (https://www.gephebase.org/search-criteria?/and+Aberration Type=~Deletion~#gephebase-summary-title)	
	Deletion Size
unknown	
	Molecular Details of the Mutation
Large deletion; complete deletion of ZCCT1 and ZCCT2=VRN2 genes	
	Experimental Evidence
Candidate Gene (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene~#gephebase-summary-title)	
	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