

GEPHE SUMMARY

	Gephebase Gene	GepheID
VRN2 (https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^VRN2^#gephebase-summary-title)	GP00001188	
	Entry Status	Main curator
Published	Martin	

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria/?and+Trait Category=^Physiology^#gephebase-summary-title)	Trait		
Flowering time (https://www.gephebase.org/search-criteria/?and+Trait=^Flowering time^#gephebase-summary-title)	Trait State in Taxon A		
Triticum monococcum - winter cultivar	Trait State in Taxon B		
Triticum monococcum -several spring varieties	Ancestral State		
Taxon A	Taxonomic Status		
Domesticated (https://www.gephebase.org/search-criteria/?and+Taxonomic Status=^Domesticated^#gephebase-summary-title)			
Taxon A	Latin Name	Taxon B	Latin Name
Triticum monococcum (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Triticum+monococcum^#gephebase-summary-title)		Triticum monococcum (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Triticum+monococcum^#gephebase-summary-title)	
-	Common Name	-	Common Name
Crithodium monococcum; einkorn wheat; one-grained wheat; small spelt; Crithodium monococcum (L.) A.Love; Triticum monococcum L.	Synonyms	Crithodium monococcum; einkorn wheat; one-grained wheat; small spelt; Crithodium monococcum (L.) A.Love; Triticum monococcum L.	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Triticum	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Triticum	Lineage
Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4564)	Parent	Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4564)	Parent
4568 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4568)	NCBI Taxonomy ID	4568 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4568)	NCBI Taxonomy ID
No	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

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/nucleotide/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

Yes ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=%27Yes%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive%20Null=%27Yes%27#gephebase-summary-title))

Molecular Type

Gene Loss ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%27Gene Loss%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular%20Type=%27Gene%20Loss%27#gephebase-summary-title))

Aberration Type

Deletion ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%27Deletion%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration%20Type=%27Deletion%27#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=%27Candidate Gene%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental%20Evidence=%27Candidate%20Gene%27#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=%274568%27/and+Trait=Flowering time/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon%20ID=%274568%27/and+Trait=Flowering%20time/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=%27VRN2%27/and+Taxon ID=%274568%27/or+Gene Gephebase=%27VRN2%27/and+Taxon ID=%274568%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene%20Gephebase=%27VRN2%27/and+Taxon%20ID=%274568%27/or+Gene%20Gephebase=%27VRN2%27/and+Taxon%20ID=%274568%27#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS