GEPHE SUMMARY

Gephebase Gene
VRN2 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^VRN2^#gephebase-summary-title)

GepheID
GP00001186

Entry Status
Published

Main curator
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
Hordeum vulgare - winter cultivar

Trait State in Taxon B
Hordeum vulgare - spring cultivar

Ancestral State
Data not curated

Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)

Taxon A

Latin Name
Hordeum vulgare (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Hordeum vulgare^#gephebase-summary-title)

Common Name
-

Synonyms
barley; Hordeum vulgare L.; Horedum vulgare

Rank
species

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

Parent
Hordeum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4512)

NCBI Taxonomy ID
4513 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4513)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Hordeum vulgare (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Hordeum vulgare^#gephebase-summary-title)

Common Name
-

Synonyms
barley; Hordeum vulgare L.; Horedum vulgare

Rank
species

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

Parent
Hordeum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4512)

NCBI Taxonomy ID
4513 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4513)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
VRN2

Synonyms
REDUCED VERNALIZATION RESPONSE 2; At4g16845; dl4450w; FCAALL.23

String
3702.AT4G16845.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT4G16845.1)

Sequence Similarities
Belongs to the VEFS (VRN2-EMF2-FIS2-SU(Z)12) family.

GO - Molecular Function
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)
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)

UniProtKB Arabidopsis thaliana
Q8W5B1 (http://www.uniprot.org/uniprot/Q8W5B1)

GenebankID or UniProtKB
AAS60250 (https://www.ncbi.nlm.nih.gov/nuccore/AAS60250)

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

Experimental Evidence

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

6 (CENTRORADIALIS (HvCEN), EARLY FLOWERING 3 (here = Mat-a), EARLY FLOWERING 3/ EARLY MATURITY 8, EARLY FLOWERING 3/ EARLYMATURITY8, Flowering locus T (=HvFT=VRN3), PRR37-like Photoperiod-H1 (Ppd-H1)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^4513^/and+Trait=Flowering time/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS