GEPHE SUMMARY

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

GepheID
GP00000488

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Morphology^#gephebase-summary-title)

Trait
Flower morphology (https://www.gephebase.org/search-criteria?/and+Trait=^Flower morphology^#gephebase-summary-title)

Trait State in Taxon A
Hordeum vulgare

Trait State in Taxon B
Hordeum vulgare - Hooded

Ancestral State
Taxon A

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?
Yes

Taxon B Description
Hordeum vulgare - Hooded

GENOTYPIC CHANGE

Generic Gene Name
KNOX3

Synonyms
K

String
-

Sequence Similarities
Belongs to the TALE/KNOX homeobox family.

GO - Molecular Function
GO:0043565 : sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043565)

GO - Biological Process
GO:0006355 : regulation of transcription, DNA-templated (https://www.ebi.ac.uk/QuickGO/term/GO:0006355)

GO - Cellular Component
GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)

UniProtKB Hordeum vulgare
Q43484 (http://www.uniprot.org/uniprot/Q43484)

GenebankID or UniProtKB
X83518 (https://www.ncbi.nlm.nih.gov/nuccore/X83518)

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

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

Insertion Size

100-999 bp

Molecular Details of the Mutation

305bp duplication in intron 4

Experimental Evidence

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

Main Reference

The barley Hooded mutation caused by a duplication in a homeobox gene intron. (1995) (https://pubmed.ncbi.nlm.nih.gov/7715728)

Authors

MÃ¼ller KJ; Romano N; Gerstner O; Garcia-Maroto F; Pozzi C; Salamini F; Rohde W

Abstract

In barley (Hordeum vulgare L.) the unit of inflorescence is the spikelet, which bears a fertile bract, the lemma, and the floret consisting of palea, two lodicules, three stamens and the pistil. The Hooded mutation causes the appearance of an extra flower of inverse polarity on the lemma. This phenotype is governed by the single dominant genetic locus K3. Here we show that the homeobox gene Knox3 represents this locus. Ectopic Knox3 gene expression in the primordium of the extra floret is caused by a 305-base pair duplication in intron 4, and phenocopies of the mutation are obtained in the heterologous tobacco system by Knox3 overexpression. It is concluded that homeotic genes of the Knox gene family are involved in floral evocation. Furthermore, the study of polarity of reproductive organs in K and related mutants can now focus on homeobox genes.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS