GEPHE SUMMARY

Gephebase Gene
Barren inflorescence2 (BIF2) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Barren inflorescence2 (BIF2)^#gephebase-summary-title)

GepheID
GP00000135

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

Trait #1

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

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

Trait State in Taxon A
Zea mays

Trait State in Taxon B
Zea mays

Trait #2

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

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

Trait State in Taxon A
-

Trait State in Taxon B
-

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
Zea mays (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Zea mays^#gephebase-summary-title)

Common Name
-

Synonyms
Zea mays var. japonica; maize; Zea mays L.; Zea mays mays

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; PACMAD clade; Panicoideae; Andropogonodae; Andropogoneae; Tripsacinae; Zea

Parent
Zea () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575)

NCBI Taxonomy ID
4577 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577)

is Taxon A an Infraspecies?
No

Taxon B

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

Common Name
-

Synonyms
Zea mays var. japonica; maize; Zea mays L.; Zea mays mays

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; PACMAD clade; Panicoideae; Andropogonodae; Andropogoneae; Tripsacinae; Zea

Parent
Zea () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575)

NCBI Taxonomy ID
4577 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name

bif2

UniProtKB Zea mays

A6MW92 (http://www.uniprot.org/uniprot/A6MW92)

Synonyms

GRMZM2G171822; 100125650; ZEAMMB73_Zm00001d031068

GenebankID or UniProtKB

EF532402 (https://www.ncbi.nlm.nih.gov/nuccore/EF532402)

String

-

Sequence Similarities

-

GO - Molecular Function

GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)
GO:0004674 : protein serine/threonine kinase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004674)

GO - Biological Process

GO:0009908 : flower development (https://www.ebi.ac.uk/QuickGO/term/GO:0009908)
GO:0006468 : protein phosphorylation (https://www.ebi.ac.uk/QuickGO/term/GO:0006468)
GO:0048364 : root development (https://www.ebi.ac.uk/QuickGO/term/GO:0048364)

GO - Cellular Component

GO:0005886 : plasma membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005886)
GO:0005737 : cytoplasm (https://www.ebi.ac.uk/QuickGO/term/GO:0005737)
GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)

Presumptive Null

Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#gephebase-summary-title)

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

unknown

Experimental Evidence

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

Main Reference

Natural variation in maize architecture is mediated by allelic differences at the PINOID co-ortholog barren inflorescence2. (2009) (https://pubmed.ncbi.nlm.nih.gov/19154226)

Authors

Pressoir G; Brown PJ; Zhu W; Upadyayula N; Rocheford T; Buckler ES; Kresovich S

Abstract

We characterized allelic variation at barren inflorescence2 (bif2), a maize co-ortholog of the Arabidopsis PINOID protein kinase (PID), and tested for trait associations with bif2 in both an association mapping population of 277 diverse maize inbreds and in the inter-mated B73 x Mo17 (IBM) linkage population. Results from the quantitative analyses were compared with previous reports of bif2 phenotypes in mutagenesis studies. All three approaches (association, linkage, and mutagenesis) detect a significant effect of bif2 on tassel architecture. Association mapping implicates bif2 in an unexpectedly wide range of traits including plant height, node number, leaf length, and flowering time. Linkage mapping finds a significant interaction effect for node number between bif2 and other loci, in keeping with previous reports that bif2;spi1 and Bif2;Bif1 double mutants produce fewer phytomers. The Mo17 allele is associated with a reduced tassel branch zone and shows lower expression than the B73 allele in hybrid B73-Mo17 F(1) inflorescences, consistent with the complete absence of tassel branches in the bif2 knockout mutant. Overall, these data suggest that allelic variation at bif2 affects maize architecture by modulating auxin transport during vegetative and inflorescence development.

Additional References

The genetic architecture of maize flowering time. (2009) (https://pubmed.ncbi.nlm.nih.gov/19661422)

RELATED GEPHE

Related Genes

2 (teosinte branched 1 (tb1), grassy tillers1) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^4577^/and+Trait=Plant architecture/or+Taxon ID=^4577^/and+Trait=Inflorescence architecture/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS