GEPHE SUMMARY

Gephebase Gene
FASCIATED EAR2 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^FASCIATED EAR2^#gephebase-summary-title)

GepheID
GP00000306

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
Grain yield (kernel row number) (https://www.gephebase.org/search-criteria?/and+Trait=^Grain yield (kernel row number)^#gephebase-summary-title)

Trait State in Taxon A
Zea mays ssp. mays - B73

Trait State in Taxon B
Zea mays ssp. mays - Mo17

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?
Yes

Taxon A Description
Zea mays ssp. mays - B73

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?
Yes

Taxon B Description
Zea mays ssp. mays - Mo17

GENOTYPIC CHANGE

Generic Gene Name
FEA2

Synonyms
GRMZM2G104925; ZEAMMB73_546581

String
4577.GRMZM2G104925_P01 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=4577.GRMZM2G104925_P01)

Sequence Similarities
-

GO - Molecular Function
GO:0004672 : protein kinase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004672)

GO - Biological Process
GO:0030154 : cell differentiation (https://www.ebi.ac.uk/QuickGO/term/GO:0030154)
GO:0009908 : flower development (https://www.ebi.ac.uk/QuickGO/term/GO:0009908)
GO:0010075 : regulation of meristem growth

UniProtKB Zea mays
Q940E8 (http://www.uniprot.org/uniprot/Q940E8)

GenebankID or UniProtKB
BT042749 (https://www.ncbi.nlm.nih.gov/nuccore/BT042749)

(https://www.ebi.ac.uk/QuickGO/term/GO:0010075)
GO:0046777 : protein autophosphorylation
(https://www.ebi.ac.uk/QuickGO/term/GO:0046777)
GO:0048509 : regulation of meristem development
(https://www.ebi.ac.uk/QuickGO/term/GO:0048509)

GO - Cellular Component

GO:0016021 : integral component of membrane
(https://www.ebi.ac.uk/QuickGO/term/GO:0016021)
GO:0005886 : plasma membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005886)
GO:0009506 : plasmodesma (https://www.ebi.ac.uk/QuickGO/term/GO:0009506)
GO:0005789 : endoplasmic reticulum membrane
(https://www.ebi.ac.uk/QuickGO/term/GO:0005789)

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

Not identified

Experimental Evidence

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

Main Reference

Quantitative variation in maize kernel row number is controlled by the FASCIATED EAR2 locus. (2013) (https://pubmed.ncbi.nlm.nih.gov/23377180)

Authors

Bommert P; Nagasawa NS; Jackson D

Abstract

Domestication of cereal crops, such as maize, wheat and rice, had a profound influence on agriculture and the establishment of human civilizations. One major improvement was an increase in seed number per inflorescence, which enhanced yield and simplified harvesting and storage. The ancestor of maize, teosinte, makes 2 rows of kernels, and modern varieties make â^¼8-20 rows. Kernel rows are initiated by the inflorescence shoot meristem, and shoot meristem size is controlled by a feedback loop involving the CLAVATA signaling proteins and the WUSCHEL transcription factor. We present a hypothesis that variation in inflorescence meristem size affects kernel row number (KRN), with the potential to increase yield. We also show that variation in the CLAVATA receptor-like protein FASCIATED EAR2 leads to increased inflorescence meristem size and KRN. These findings indicate that modulation of fundamental stem cell proliferation control pathways has the potential to enhance crop yields.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS