GEPHE SUMMARY

Gephebase Gene
PROG1 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^PROG1^#gephebase-summary-title)

GepheID
GP00000925

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

Trait State in Taxon A
Oryza rufipogon

Trait State in Taxon B
Oryza sativa

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

Common Name
-

Synonyms
red rice; common wild rice; Oryza rufipogon Griff.

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza

Parent
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)

NCBI Taxonomy ID
4529 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4529)

is Taxon A an Infraspecies?
No

Taxon B

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

Common Name
rice

Synonyms
rice; red rice; Oryza sativa L.

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza

Parent
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)

NCBI Taxonomy ID
4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4530)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
PROG1

Synonyms
PROG1; Os07g0153600; OsJ_23131; OSJNBb0050B07.12; OSNPB_070153600

String
39947.LOC_Os07g05900.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39947.LOC_Os07g05900.1)

Sequence Similarities
-

GO - Molecular Function
GO:0003676 : nucleic acid binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003676)

GO - Biological Process
-

GO - Cellular Component
-

UniProtKB Oryza sativa subsp. japonica
Q69NY0 (http://www.uniprot.org/uniprot/Q69NY0)

GenebankID or UniProtKB
ACE06780 (https://www.ncbi.nlm.nih.gov/nuccore/ACE06780)

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

Various

Experimental Evidence

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

Main Reference

Control of a key transition from prostrate to erect growth in rice domestication. (2008) (https://pubmed.ncbi.nlm.nih.gov/18820699)

Authors

Tan L; Li X; Liu F; Sun X; Li C; Zhu Z; Fu Y; Cai H; Wang X; Xie D; Sun C

Abstract

The transition from the prostrate growth of ancestral wild rice (O. rufipogon Griff.) to the erect growth of Oryza sativa cultivars was one of the most critical events in rice domestication. This evolutionary step importantly improved plant architecture and increased grain yield. Here we find that prostrate growth of wild rice from Yuanjiang County in China is controlled by a semi-dominant gene, PROG1 (PROSTRATE GROWTH 1), on chromosome 7 that encodes a single Cys(2)-His(2) zinc-finger protein. prog1 variants identified in O. sativa disrupt the prog1 function and inactivate prog1 expression, leading to erect growth, greater grain number and higher grain yield in cultivated rice. Sequence comparison shows that 182 varieties of cultivated rice, including 87 indica and 95 japonica cultivars from 17 countries, carry identical mutations in the prog1 coding region that may have become fixed during rice domestication.

Additional References

A map of rice genome variation reveals the origin of cultivated rice. (2012) (https://pubmed.ncbi.nlm.nih.gov/23034647)
Genetic control of rice plant architecture under domestication. (2008) (https://pubmed.ncbi.nlm.nih.gov/18820696)

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS