## GEPHE SUMMARY

Gephebase Gene
OsSPL16 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^OsSPL16^#gephebase-summary-title)

GepheID
GP00000814

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

Trait State in Taxon A
Oryza sativa L. ssp. indica - HJX74

Trait State in Taxon B
Oryza sativa L. ssp. indica - Basmati385

Trait #2

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

Trait
Grain shape (https://www.gephebase.org/search-criteria?/and+Trait=^Grain shape^#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
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 A an Infraspecies?
Yes

Taxon A Description
Oryza sativa L. ssp. indica - HJX74

### 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?
Yes

Taxon B Description
Oryza sativa L. ssp. indica - Basmati385

## GENOTYPIC CHANGE

Generic Gene Name

SPL16

Synonyms

-

String

-

Sequence Similarities

-

UniProtKB Oryza sativa subsp. indica

L0AP48 (http://www.uniprot.org/uniprot/L0AP48)

GenebankID or UniProtKB

ADP20398 (https://www.ncbi.nlm.nih.gov/nuccore/ADP20398)

GO - Molecular Function

GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)
GO:0003677 : DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003677)

GO - Biological Process

-

GO - Cellular Component

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

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

Aberration Type

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

Molecular Details of the Mutation

Promoter variation

Experimental Evidence

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

Main Reference

Control of grain size, shape and quality by OsSPL16 in rice. (2012) (https://pubmed.ncbi.nlm.nih.gov/22729225)

Authors

Wang S; Wu K; Yuan Q; Liu X; Liu Z; Lin X; Zeng R; Zhu H; Dong G; Qian Q; Zhang G; Fu X

Abstract

Grain size and shape are important components of grain yield and quality and have been under selection since cereals were first domesticated. Here, we show that a quantitative trait locus GW8 is synonymous with OsSPL16, which encodes a protein that is a positive regulator of cell proliferation. Higher expression of this gene promotes cell division and grain filling, with positive consequences for grain width and yield in rice. Conversely, a loss-of-function mutation in Basmati rice is associated with the formation of a more slender grain and better quality of appearance. The correlation between grain size and allelic variation at the GW8 locus suggests that mutations within the promoter region were likely selected in rice breeding programs. We also show that a marker-assisted strategy targeted at elite alleles of GS3 and OsSPL16 underlying grain size and shape can be effectively used to simultaneously improve grain quality and yield.

Additional References

The OsSPL16-GW7 regulatory module determines grain shape and simultaneously improves rice yield and grain quality. (2015) (https://pubmed.ncbi.nlm.nih.gov/26147620)

## RELATED GEPHE

Related Genes

10 (GL3.1, GS3, GS5, GW2, OsPPKL1/qGL3, qSW5, OsSPL13, GL7, Os07g0603400, GW7) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^4530^/and+Trait=Grain size/or+Taxon ID=^4530^/and+Trait=Grain shape/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS