

GEPHE SUMMARY

OsSPL16 (https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^OsSPL16^#gephebase-summary-title)	Gephebase Gene	GP00000814	GephelD
Published	Entry Status	Martin	Main curator

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	Taxon B
Oryza sativa (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)	Latin Name
rice	Common Name
rice; red rice; Oryza sativa L.	Synonyms
species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllphyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza	Lineage
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)	Parent
4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4530)	NCBI Taxonomy ID
Yes	is Taxon A an Infraspecies?
Oryza sativa L. ssp. indica - HJX74	Taxon A Description
	Taxon B Description
	Oryza sativa L. ssp. indica - Basmati385

GENOTYPIC CHANGE

SPL16	Generic Gene Name	UniProtKB <i>Oryza sativa</i> subsp. <i>indica</i>
-	Synonyms	LoAP48 (http://www.uniprot.org/uniprot/LoAP48)
-		GenebankID or UniProtKB ADP20398 (https://www.ncbi.nlm.nih.gov/nuccore/ADP20398)
-	String	
-	Sequence Similarities	
-	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 (#gephebase-summary-title)		Molecular Type
Cis-regulatory (#gephebase-summary-title)		Aberration Type
Unknown (#gephebase-summary-title)		Molecular Details of the Mutation
Promoter variation		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

10 (GL3.1, GS3, GS5, GW2, OsPPKL1/qGL3, qSW5, OsSPL13, GL7, Os07g0603400, GW7) (#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS