

GEPHE SUMMARY

	Gephebase Gene	GephelD
OsSPL14 / WFP (https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=^OsSPL14+WFP^#gephebase-summary-title)	GP00000813	
	Entry Status	Main curator
Published	Martin	

PHENOTYPIC CHANGE

	Trait Category	
Morphology (https://www.gephebase.org/search-criteria/?and+Trait+Category=Morphology^#gephebase-summary-title)	Trait	
Grain yield (https://www.gephebase.org/search-criteria/?and+Trait=^Grain+yield^#gephebase-summary-title)	Trait State in Taxon A	
Oryza sativa L. ssp. Japonica and Indica	Trait State in Taxon B	
Oryza sativa L. ssp. Japonica and Indica	Ancestral State	
Data not curated	Taxonomic Status	
Domesticated (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=^Domesticated^#gephebase-summary-title)		
Taxon A		Taxon B
Oryza sativa	Latin Name	Latin Name
(https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)		
rice	Common Name	Common Name
rice; red rice; Oryza sativa L.	Synonyms	Synonyms
species	Rank	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza	Lineage	Lineage
Oryza () - (Rank: genus)	Parent	Parent
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)	NCBI Taxonomy ID	NCBI Taxonomy ID
4530		
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4530)		
Yes	is Taxon A an Infraspecies?	is Taxon B an Infraspecies?
Oryza sativa L. ssp. Japonica and Indica	Taxon A Description	Taxon B Description
	Oryza sativa L. ssp. Japonica and Indica	

GENOTYPIC CHANGE

IPA1	Generic Gene Name	UniProtKB Oryza sativa
-	Synonyms	GenebankID or UniProtKB
-	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

No ([#gepheebase-summary-title](https://www.gepheebase.org/search-criteria/?and+Presumptive+Null=%No))

Molecular Type

Cis-regulatory ([#gepheebase-summary-title](https://www.gepheebase.org/search-criteria/?and+Molecular+Type=%Cis-regulatory))

Aberration Type

SNP ([#gepheebase-summary-title](https://www.gepheebase.org/search-criteria/?and+Aberration+Type=%SNP))

Molecular Details of the Mutation

Point mutation resulting in altered binding of a micro-RNA

Experimental Evidence

Linkage Mapping ([#gepheebase-summary-title](https://www.gepheebase.org/search-criteria/?and+Experimental+Evidence=%Linkage+Mapping))

Main Reference

Regulation of OsSPL14 by OsmiR156 defines ideal plant architecture in rice. (2010) (<https://pubmed.ncbi.nlm.nih.gov/20495565>)

Authors

Jiao Y; Wang Y; Xue D; Wang J; Yan M; Liu G; Dong G; Zeng D; Lu Z; Zhu X; Qian Q; Li J

Abstract

Increasing crop yield is a major challenge for modern agriculture. The development of new plant types, which is known as ideal plant architecture (IPA), has been proposed as a means to enhance rice yield potential over that of existing high-yield varieties. Here, we report the cloning and characterization of a semidominant quantitative trait locus, IPA1 (Ideal Plant Architecture 1), which profoundly changes rice plant architecture and substantially enhances rice grain yield. The IPA1 quantitative trait locus encodes OsSPL14 (SOUAMOSA PROMOTER BINDING PROTEIN-LIKE 14) and is regulated by microRNA (miRNA) OsmiR156 in vivo. We demonstrate that a point mutation in OsSPL14 perturbs OsmiR156-directed regulation of OsSPL14, generating an 'ideal' rice plant with a reduced tiller number, increased lodging resistance and enhanced grain yield. Our study suggests that OsSPL14 may help improve rice grain yield by facilitating the breeding of new elite rice varieties.

Additional References

OsSPL14 promotes panicle branching and higher grain productivity in rice. (2010) (<https://pubmed.ncbi.nlm.nih.gov/20495564>)

RELATED GEPHE

Related Genes

4 (Chalk5, DEP1, OsCKX2-Gn1a, THOUSAND-GRAIN WEIGHT 6 (TGW6)) ([#gepheebase-summary-title](https://www.gepheebase.org/search-criteria/?or+Taxon+ID=%4530^/and+Trait=Grain+yield/and+groupHaplotypes=true))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS