

GEPHE SUMMARY

qSW5 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+qSW5+ghepbase-summary-title)	Gephebase Gene	GP00000944	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category+Morphology+ghepbase-summary-title)	Trait Category		
Grain size (https://www.gephebase.org/search-criteria?/and+Trait+Grain+size+ghepbase-summary-title)	Trait		
Oryza sativa indica - Kasalath	Trait State in Taxon A		
Oryza sativa japonica- Nipponbare	Trait State in Taxon B		
Taxon A	Ancestral State		
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Domesticated+ghepbase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Oryza+sativa+ghepbase-summary-title)	Latin Name	Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Oryza+sativa+ghepbase-summary-title)	Latin Name
rice	Common Name	rice	Common Name
rice; red rice; Oryza sativa L.	Synonyms	rice; red rice; Oryza sativa L.	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	Lineage
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	Parent	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	4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Oryza sativa indica - Kasalath	Taxon A Description	Oryza sativa japonica- Nipponbare	Taxon B Description

GENOTYPIC CHANGE

qSW5	Generic Gene Name	UniProtKB Oryza sativa subsp. japonica
-	Synonyms	F8SPD1 (http://www.uniprot.org/uniprot/F8SPD1) GenebankID or UniProtKB AEI87386 (https://www.ncbi.nlm.nih.gov/nucleotide/AEI87386)
-	String	
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive+Null+Yes+ghepbase-summary-title)		Presumptive Null

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

Molecular Type

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

Aberration Type

1-10 kb

Deletion Size

1212bp deletion

Molecular Details of the Mutation

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

Experimental Evidence

Deletion in a gene associated with grain size increased yields during rice domestication. (2008) (<https://pubmed.ncbi.nlm.nih.gov/18604208>)

Main Reference

Shomura A; Izawa T; Eban K; Ebitani T; Kanegae H; Konishi S; Yano M

Authors

The domestication of crops involves a complex process of selection in plant evolution and is associated with changes in the DNA regulating agronomically important traits. Here we report the cloning of a newly identified QTL, qSW5 (QTL for seed width on chromosome 5), involved in the determination of grain width in rice. Through fine mapping, complementation testing and association analysis, we found that a deletion in qSW5 resulted in a significant increase in sink size owing to an increase in cell number in the outer glume of the rice flower; this trait might have been selected by ancient humans to increase yield of rice grains. In addition, we mapped two other defective functional nucleotide polymorphisms of rice domestication-related genes with genome-wide RFLP polymorphisms of various rice landraces. These analyses show that the qSW5 deletion had an important historical role in artificial selection, propagation of cultivation and natural crossings in rice domestication, and shed light on how the rice genome was domesticated.

Abstract

Genome-wide association studies of 14 agronomic traits in rice landraces. (2010) (<https://pubmed.ncbi.nlm.nih.gov/20972439>)

Additional References

RELATED GEPHE

9 (GL3.1, GS3, GS5, GW2, OsPPKL1/qGL3, OsSPL13, GL7, Os07g0603400, OsSPL16) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=^4530^/and+Trait=Grain+size/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS