

GEPHE SUMMARY

GW7 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^GW7^#gephebase-summary-title)	Gephebase Gene	GP00001540	GepheID
Published	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

Trait #1	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
Indica variety HJX74 with shorter and wider grains of lower quality (?)	Trait State in Taxon B
line TaifengA (TFA) derived from japonica variety Mi31 with slender grains and better grain quality	

Trait #2	Trait Category
Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)	Trait
Grain quality (https://www.gephebase.org/search-criteria?/and+Trait=^Grain+quality^#gephebase-summary-title)	Trait State in Taxon A
-	Trait State in Taxon B
-	

Unknown	Ancestral State
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Domesticated^#gephebase-summary-title)	Taxonomic Status

	Taxon A	Latin Name		Taxon B	Latin Name
	Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)	Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)		Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)	
	rice	rice		rice	
	rice; red rice; Oryza sativa L.	rice; red rice; Oryza sativa L.		rice; red rice; Oryza sativa L.	
	species	species		species	
	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	
	Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)		Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	
	4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)		4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	
	is Taxon A an Intraspecies?	is Taxon B an Intraspecies?		is Taxon B an Intraspecies?	
	Yes	Yes		Yes	
	Indica variety HJX74 with shorter and wider grains of lower quality (?)	Rice line TaifengA (TFA) derived from japonica variety Mi31 with slender grains and better grain quality		Rice line TaifengA (TFA) derived from japonica variety Mi31 with slender grains and better grain quality	

	Taxon B	Latin Name
	Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)	Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title)
	rice	rice
	rice; red rice; Oryza sativa L.	rice; red rice; Oryza sativa L.
	species	species
	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza
	Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)
	4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)
	is Taxon B an Intraspecies?	is Taxon B an Intraspecies?
	Yes	Yes
	Rice line TaifengA (TFA) derived from japonica variety Mi31 with slender grains and better grain quality	Rice line TaifengA (TFA) derived from japonica variety Mi31 with slender grains and better grain quality

GENOTYPIC CHANGE

TON1A	Generic Gene Name	Q9FQZ5 (http://www.uniprot.org/uniprot/Q9FQZ5)	UniProtKB Arabidopsis thaliana
T15C9.7; TON1; TONNEAU 1; TONNEAU 1A; At3g55000; F28P10	Synonyms	()	GenebankID or UniProtKB
3702.AT3G55000.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT3G55000.1)	String		
-	Sequence Similarities		
-	GO - Molecular Function		
	GO - Biological Process		
GO:0030865 : cortical cytoskeleton organization (https://www.ebi.ac.uk/QuickGO/term/GO:0030865)			
GO:0000226 : microtubule cytoskeleton organization (https://www.ebi.ac.uk/QuickGO/term/GO:0000226)			
GO:0000913 : preprophase band assembly (https://www.ebi.ac.uk/QuickGO/term/GO:0000913)			
	GO - Cellular Component		
GO:0005886 : plasma membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005886)			
GO:0005737 : cytoplasm (https://www.ebi.ac.uk/QuickGO/term/GO:0005737)			
GO:0005938 : cell cortex (https://www.ebi.ac.uk/QuickGO/term/GO:0005938)			
GO:0030863 : cortical cytoskeleton (https://www.ebi.ac.uk/QuickGO/term/GO:0030863)			
GO:0030981 : cortical microtubule cytoskeleton (https://www.ebi.ac.uk/QuickGO/term/GO:0030981)			
GO:0009574 : preprophase band (https://www.ebi.ac.uk/QuickGO/term/GO:0009574)			
No (<a +no+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=">https://www.gephebase.org/search-criteria?/and+Presumptive+Null="+No+"#gephebase-summary-title)			Presumptive Null
Cis-regulatory (<a +cis-regulatory+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Molecular+Type=">https://www.gephebase.org/search-criteria?/and+Molecular+Type="+Cis-regulatory+"#gephebase-summary-title)			Molecular Type
Unknown (<a +unknown+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Aberration+Type=">https://www.gephebase.org/search-criteria?/and+Aberration+Type="+Unknown+"#gephebase-summary-title)			Aberration Type
18 SNPs and 9 indels observed in the promoter region and exon 1 and in particular an 11-bp deletion and 18-bp insertion near GTAC motifs which are normally binded by OsSPL16 repressor (reduced binding increasing transcription)			Molecular Details of the Mutation
Linkage Mapping (<a +linkage+mapping+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=">https://www.gephebase.org/search-criteria?/and+Experimental+Evidence="+Linkage+Mapping+"#gephebase-summary-title)			Experimental Evidence
The OsSPL16-GW7 regulatory module determines grain shape and simultaneously improves rice yield and grain quality. (2015) (https://pubmed.ncbi.nlm.nih.gov/26147620)			Main Reference
Wang S; Li S; Liu Q; Wu K; Zhang J; Wang S; Wang Y; Chen X; Zhang Y; Gao C; Wang F; Huang H; Fu X			Authors
The deployment of heterosis in the form of hybrid rice varieties has boosted grain yield, but grain quality improvement still remains a challenge. Here we show that a quantitative trait locus for rice grain quality, qGW7, reflects allelic variation of GW7, a gene encoding a TONNEAU1-recruiting motif protein with similarity to C-terminal motifs of the human centrosomal protein CAP350. Upregulation of GW7 expression was correlated with the production of more slender grains, as a result of increased cell division in the longitudinal direction and decreased cell division in the transverse direction. OsSPL16 (GW8), an SBP-domain transcription factor that regulates grain width, bound directly to the GW7 promoter and repressed its expression. The presence of a semidominant GW7(TFA) allele from tropical japonica rice was associated with higher grain quality without the yield penalty imposed by the Basmati gw8 allele. Manipulation of the OsSPL16-GW7 module thus represents a new strategy to simultaneously improve rice yield and grain quality.			Abstract
			Additional References

RELATED GEPHE

3 (GL7, Os07g0603400, OsSPL16) (<a +4530+"="" and+trait='Grain+shape/or+Taxon+ID="+4530+"/and+Trait=Grain+quality/and+groupHaplotypes=true#gephebase-summary-title"' href="https://www.gephebase.org/search-criteria?/or+Taxon+ID=">https://www.gephebase.org/search-criteria?/or+Taxon+ID="+4530+"/and+Trait=Grain+shape/or+Taxon+ID="+4530+"/and+Trait=Grain+quality/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

