

GEPHE SUMMARY

<p>GW7 (<a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^GW7^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^GW7^#gephebase-summary-title</a>)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001540</p> <p>Courtier</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

Trait #1	Trait Category
Morphology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=^Morphology^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=^Morphology^#gephebase-summary-title</a> )	
Grain shape ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=^Grain+shape^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=^Grain+shape^#gephebase-summary-title</a> )	Trait
Indica variety HJX74 with shorter and wider grains of lower quality (?)	Trait State in Taxon A
line TaifengA (TFA) derived from japonica variety Mi31 with slender grains and better grain quality	Trait State in Taxon B

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

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

Taxon A	
Latin Name	Latin Name
Oryza sativa ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title</a> )	Oryza sativa ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title</a> )
Common Name	Common Name
rice	rice
Synonyms	Synonyms
rice; red rice; Oryza sativa L.	rice; red rice; Oryza sativa L.
Rank	Rank
species	species
Lineage	Lineage
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
Parent	Parent
Oryza () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527</a> )	Oryza () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527</a> )
NCBI Taxonomy ID	NCBI Taxonomy ID
4530 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530</a> )	4530 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530</a> )
is Taxon A an Intraspecies?	is Taxon B an Intraspecies?
Yes	Yes
Taxon A Description	Taxon B Description
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

	Taxon B
Latin Name	Latin Name
Oryza sativa ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title</a> )	Oryza sativa ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title</a> )
Common Name	Common Name
rice	rice
Synonyms	Synonyms
rice; red rice; Oryza sativa L.	rice; red rice; Oryza sativa L.
Rank	Rank
species	species
Lineage	Lineage
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
Parent	Parent
Oryza () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527</a> )	Oryza () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527</a> )
NCBI Taxonomy ID	NCBI Taxonomy ID
4530 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530</a> )	4530 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530</a> )
is Taxon B an Intraspecies?	is Taxon B an Intraspecies?
Yes	Yes
Taxon B Description	Taxon B Description
	Rice line TaifengA (TFA) derived from japonica variety Mi31 with slender grains and better grain quality

GENOTYPIC CHANGE

TON1A	Generic Gene Name	Q9FQZ5 ( <a href="http://www.uniprot.org/uniprot/Q9FQZ5">http://www.uniprot.org/uniprot/Q9FQZ5</a> )	UniProtKB Arabidopsis thaliana
T15C9.7; TON1; TONNEAU 1; TONNEAU 1A; At3g55000; F28P10	Synonyms	()	GenebankID or UniProtKB
3702.AT3G55000.1 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT3G55000.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT3G55000.1</a> )	String		
-	Sequence Similarities		
-	GO - Molecular Function		
	GO - Biological Process		
GO:0030865 : cortical cytoskeleton organization ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030865">https://www.ebi.ac.uk/QuickGO/term/GO:0030865</a> )			
GO:0000226 : microtubule cytoskeleton organization ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0000226">https://www.ebi.ac.uk/QuickGO/term/GO:0000226</a> )			
GO:0000913 : preprophase band assembly ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0000913">https://www.ebi.ac.uk/QuickGO/term/GO:0000913</a> )			
	GO - Cellular Component		
GO:0005886 : plasma membrane ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005886">https://www.ebi.ac.uk/QuickGO/term/GO:0005886</a> )			
GO:0005737 : cytoplasm ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005737">https://www.ebi.ac.uk/QuickGO/term/GO:0005737</a> )			
GO:0005938 : cell cortex ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005938">https://www.ebi.ac.uk/QuickGO/term/GO:0005938</a> )			
GO:0030863 : cortical cytoskeleton ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030863">https://www.ebi.ac.uk/QuickGO/term/GO:0030863</a> )			
GO:0030981 : cortical microtubule cytoskeleton ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030981">https://www.ebi.ac.uk/QuickGO/term/GO:0030981</a> )			
GO:0009574 : preprophase band ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0009574">https://www.ebi.ac.uk/QuickGO/term/GO:0009574</a> )			
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</a> )			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</a> )			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</a> )			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</a> )			Experimental Evidence
The OsSPL16-GW7 regulatory module determines grain shape and simultaneously improves rice yield and grain quality. (2015) ( <a href="https://pubmed.ncbi.nlm.nih.gov/26147620">https://pubmed.ncbi.nlm.nih.gov/26147620</a> )			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</a> )	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

