

## GEPHE SUMMARY

<p>THOUSAND-GRAIN WEIGHT 6 (TGW6) (<a href="https://www.gepbase.org/search-criteria?/and+Gene+Gepbase=~THOUSAND-GRAIN+WEIGHT+6+(TGW6)^#gepbase-summary-title">https://www.gepbase.org/search-criteria?/and+Gene+Gepbase=~THOUSAND-GRAIN+WEIGHT+6+(TGW6)^#gepbase-summary-title</a>)</p> <p>Published</p>	<p>Gepbase Gene</p> <p>GP00001126</p> <p>Entry Status</p>	<p>GepID</p> <p>Main curator</p>
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## PHENOTYPIC CHANGE

<p>Morphology (<a href="https://www.gepbase.org/search-criteria?/and+Trait+Category=~Morphology^#gepbase-summary-title">https://www.gepbase.org/search-criteria?/and+Trait+Category=~Morphology^#gepbase-summary-title</a>)</p> <p>Grain yield (<a href="https://www.gepbase.org/search-criteria?/and+Trait=~Grain+yield^#gepbase-summary-title">https://www.gepbase.org/search-criteria?/and+Trait=~Grain+yield^#gepbase-summary-title</a>)</p> <p>Oryza sativa - var. japonica Nipponbare</p> <p>Oryza sativa - var. indica Kasalath</p> <p>Taxon A</p> <p>Domesticated (<a href="https://www.gepbase.org/search-criteria?/and+Taxonomic+Status=~Domesticated^#gepbase-summary-title">https://www.gepbase.org/search-criteria?/and+Taxonomic+Status=~Domesticated^#gepbase-summary-title</a>)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Oryza sativa (<a href="https://www.gepbase.org/search-criteria?/and+Taxon+and+Synonyms=~Oryza+sativa^#gepbase-summary-title">https://www.gepbase.org/search-criteria?/and+Taxon+and+Synonyms=~Oryza+sativa^#gepbase-summary-title</a>)</p> <p>rice</p> <p>rice; red rice; Oryza sativa L.</p> <p>species</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza</p> <p>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>)</p> <p>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>)</p> <p>is Taxon A an Intraspecies?</p> <p>Yes</p> <p>Oryza sativa - var. japonica Nipponbare</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p> <p>Taxon B Description</p>	<p>Taxon B</p> <p>Oryza sativa (<a href="https://www.gepbase.org/search-criteria?/and+Taxon+and+Synonyms=~Oryza+sativa^#gepbase-summary-title">https://www.gepbase.org/search-criteria?/and+Taxon+and+Synonyms=~Oryza+sativa^#gepbase-summary-title</a>)</p> <p>rice</p> <p>rice; red rice; Oryza sativa L.</p> <p>species</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza</p> <p>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>)</p> <p>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>)</p> <p>is Taxon B an Intraspecies?</p> <p>Yes</p> <p>Oryza sativa - var. indica Kasalath</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p> <p>Taxon B Description</p>
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## GENOTYPIC CHANGE

<p>TGW6</p> <p>Os06g0623700; OsJ_22021; OSJNBa0029G06.8; OSNPB_060623700</p> <p>39947.LOC_Os06g41850.1 (<a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=39947.LOC_Os06g41850.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=39947.LOC_Os06g41850.1</a>)</p> <p>-</p> <p>GO:0016844 : strictosidine synthase activity (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0016844">https://www.ebi.ac.uk/QuickGO/term/GO:0016844</a>)</p> <p>GO:0009058 : biosynthetic process (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0009058">https://www.ebi.ac.uk/QuickGO/term/GO:0009058</a>)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p>	<p>UniProtKB Oryza sativa subsp. japonica Q69U01 (<a href="http://www.uniprot.org/uniprot/Q69U01">http://www.uniprot.org/uniprot/Q69U01</a>)</p> <p>GenebankID or UniProtKB BAN15820 (<a href="https://www.ncbi.nlm.nih.gov/nuccore/BAN15820">https://www.ncbi.nlm.nih.gov/nuccore/BAN15820</a>)</p>
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GO:0016020 : membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0016020>)

GO:0005783 : endoplasmic reticulum

(<https://www.ebi.ac.uk/QuickGO/term/GO:0005783>)

Yes (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Yes^#gephebase-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

1-9 bp

Deletion Size

-1bp at +313 resulting in truncated protein

Molecular Details of the Mutation

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

Experimental Evidence

Loss of function of the IAA-glucose hydrolase gene TGW6 enhances rice grain weight and increases yield. (2013) (<https://pubmed.ncbi.nlm.nih.gov/23583977>)

Main Reference

Ishimaru K; Hirotsu N; Madoka Y; Murakami N; Hara N; Onodera H; Kashiwagi T; Ujiie K; Shimizu B; Onishi A; Miyagawa H; Katoh E

Authors

Increases in the yield of rice, a staple crop for more than half of the global population, are imperative to support rapid population growth. Grain weight is a major determining factor of yield. Here, we report the cloning and functional analysis of THOUSAND-GRAIN WEIGHT 6 (TGW6), a gene from the Indian landrace rice Kasalath. TGW6 encodes a novel protein with indole-3-acetic acid (IAA)-glucose hydrolase activity. In sink organs, the Nipponbare *tgw6* allele affects the timing of the transition from the syncytial to the cellular phase by controlling IAA supply and limiting cell number and grain length. Most notably, loss of function of the Kasalath allele enhances grain weight through pleiotropic effects on source organs and leads to significant yield increases. Our findings suggest that TGW6 may be useful for further improvements in yield characteristics in most cultivars.

Abstract

Additional References

## RELATED GEPHE

4 (Chalk5, DEP1, OsCKX2=Gn1a, OsSPL14 / WFP) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^4530^/and+Trait=Grain yield/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

@Pleiotropy