

## GEPHE SUMMARY

OsGA20ox1 ( <a href="https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=%OsGA20ox1%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Gene Gephebase=%OsGA20ox1%#gephebase-summary-title</a> )	Gephebase Gene	GP00000810	GepheID
	Entry Status	Martin	Main curator
Published			

## PHENOTYPIC CHANGE

	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> )	Trait
Seedling vigor ( <a href="https://www.gephebase.org/search-criteria/?and+Trait=%Seedling+vigor%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Trait=%Seedling+vigor%#gephebase-summary-title</a> )	Trait State in Taxon A
Oryza sativa var. japonica Koshihikari	Trait State in Taxon B
Oryza sativa var. japonica Dunghan Shali	Ancestral State
Data not curated	Taxonomic Status
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> )	

Taxon A	Latin Name	Taxon B	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> )	
rice	Common Name	rice	Common Name
rice; red rice; Oryza sativa L.	Synonyms	rice; red rice; Oryza sativa L.	Synonyms
species	Rank	species	Rank
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza	
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> )	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> )	Parent
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> )	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> )	NCBI Taxonomy ID
Yes	is Taxon A an Infraspecies?	Yes	is Taxon B an Infraspecies?
Oryza sativa var. japonica Koshihikari	Taxon A Description	Oryza sativa var. japonica Dunghan Shali	Taxon B Description

## GENOTYPIC CHANGE

GA20OX1	Generic Gene Name	UniProtKB Oryza sativa subsp. japonica P93771 ( <a href="http://www.uniprot.org/uniprot/P93771">http://www.uniprot.org/uniprot/P93771</a> )
20ox1; GA20ox-1; Os03g0856700; LOC_Os03g63970; OSJNBA0059G06.22	Synonyms	GenebankID or UniProtKB U50333 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/U50333">https://www.ncbi.nlm.nih.gov/nuccore/U50333</a> )
39947.LOC_Os03g63970.1 ( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39947.LOC_Os03g63970.1">http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39947.LOC_Os03g63970.1</a> )	String	
	Sequence Similarities	
Belongs to the iron/ascorbate-dependent oxidoreductase family, GA20OX subfamily.		
GO - Molecular Function		
GO:0046872 : metal ion binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0046872">https://www.ebi.ac.uk/QuickGO/term/GO:0046872</a> )		
GO:0051213 : dioxygenase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0051213">https://www.ebi.ac.uk/QuickGO/term/GO:0051213</a> )		
GO:0045544 : gibberellin 20-oxidase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0045544">https://www.ebi.ac.uk/QuickGO/term/GO:0045544</a> )		
	GO - Biological Process	

GO:0009908 : flower development (<https://www.ebi.ac.uk/QuickGO/term/GO:0009908>)

GO:0009686 : gibberellin biosynthetic process

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009686>)

GO:0009826 : unidimensional cell growth

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009826>)

GO - Cellular Component

- Unknown (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#gephebase-summary-title>) Presumptive Null

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

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

unknown ; no coding variation Molecular Details of the Mutation

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

OsGA20ox1, a candidate gene for a major QTL controlling seedling vigor in rice. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22481119>) Main Reference

Abe A; Takagi H; Fujibe T; Aya K; Kojima M; Sakakibara H; Uemura A; Matsuoka M; Terauchi R Authors

Seedling vigor is among the major determinants of stable stand establishment in direct-seeded rice (*Oryza sativa* L.) in temperate regions. Quantitative trait loci (QTL) for seedling vigor were identified using 250 recombinant inbred lines (RILs) derived from a cross between two japonica rice cultivars Kakehashi and Dunghan Shali. Seedling heights measured at 14 days after sowing were 20.3 and 29.4 cm for Kakehashi and Dunghan Shali, respectively. For the RILs, the height ranged from 14.1 to 31.7 cm. Four putative QTLs associated with seedling height were detected. qPHS3-2, the major QTL that was located on the long arm of chromosome 3, accounted for 26.2 % of the phenotypic variance. Using progeny of the near isogenic lines (NILs) produced by the backcross introduction of a chromosome segment carrying this major QTL into an elite cultivar Iwatekko, we fine-mapped qPHS3-2 to a 81-kb interval between two markers, ID\_CAPS\_01 and RM16227. Within this mapped region, we identified the gene OsGA20ox1, which is related to gibberellin (GA) biosynthesis. The relative expression levels of GA20ox1 in seedlings of Dunghan Shali and NILs were higher than that of Iwatekko. Concomitantly, the amount of endogenous active GA was higher in Dunghan Shali and the NILs compared to the level detected in Iwatekko. These results indicate that OsGA20ox1 is a strong candidate gene for major QTL controlling seedling vigor in rice.

Abstract Additional References

## RELATED GEPHE

No matches found. Related Genes

No matches found. Related Haplotypes

## EXTERNAL LINKS

## COMMENTS