

GEPHE SUMMARY

Gephebase Gene		GepheID
OsGA20ox1 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=^OsGA20ox1^#gephebase-summary-title)		Main curator
Entry Status		Martin
Published		

PHENOTYPIC CHANGE

Trait Category			
Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=^Physiology^#gephebase-summary-title)		Trait	
Seedling vigor (https://www.gephebase.org/search-criteria?/and+Trait=^Seedlingvigor^#gephebase-summary-title)		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 (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=^Domesticated^#gephebase-summary-title)			
Taxon A		Taxon B	
Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryzasativa^#gephebase-summary-title)		Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryzasativa^#gephebase-summary-title)	
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; 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	
Parent		Parent	
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)	
NCBI Taxonomy ID		NCBI Taxonomy ID	
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?	
Yes		Yes	
Taxon A Description		Taxon B Description	
Oryza sativa var. japonica Koshihikari		Oryza sativa var. japonica Dunghan Shali	

GENOTYPIC CHANGE

Generic Gene Name		UniProtKB Oryza sativa subsp. japonica	
GA20OX1		P93771 (http://www.uniprot.org/uniprot/P93771)	
Synonyms		GenebankID or UniProtKB	
20ox1; GA20ox-1; Os03g0856700; LOC_Os03g63970; OSJNBa0059G06.22		U50333 (https://www.ncbi.nlm.nih.gov/nuccore/U50333)	
String			
39947.LOC_Os03g63970.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=39947.LOC_Os03g63970.1)			
Sequence Similarities			
Belongs to the iron/ascorbate-dependent oxidoreductase family. GA20OX subfamily.			
GO - Molecular Function			
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)			
GO:0051213 : dioxygenase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0051213)			
GO:0045544 : gibberellin 20-oxidase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0045544)			
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

-	Presumptive Null
Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown~#gephebase-summary-title)	Molecular Type
Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Cis-regulatory~#gephebase-summary-title)	Aberration Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown~#gephebase-summary-title)	Molecular Details of the Mutation
unknown ; no coding variation	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title)	Main Reference
OsGA20ox1, a candidate gene for a major QTL controlling seedling vigor in rice. (2012) (https://pubmed.ncbi.nlm.nih.gov/22481119)	Authors
Abe A; Takagi H; Fujibe T; Aya K; Kojima M; Sakakibara H; Uemura A; Matsuoka M; Terauchi R	Abstract
Seedling vigor is among the major determinants of stable stand establishment in direct-seeded rice (<i>Oryza sativa</i> 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 lwatekko, 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 lwatekko. Concomitantly, the amount of endogenous active GA was higher in Dunghan Shali and the NILs compared to the level detected in lwatekko. These results indicate that OsGA20ox1 is a strong candidate gene for major QTL controlling seedling vigor in rice.	
	Additional References

RELATED GEPHE

No matches found.	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS