

GEPHE SUMMARY

	Gephebase Gene		GepheID
Sd1 (=GA20ox-2) (<a +sd1"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+Sd1 (=GA20ox-2)^#gephebase-summary-title)		GP00001028	Main curator
Published	Entry Status	Martin	

PHENOTYPIC CHANGE

	Trait Category		
Morphology (<a +morphology"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology (=GA20ox-2)^#gephebase-summary-title)			
	Trait		
Plant size (dwarfism) (<a +plant+size"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Plant+size (dwarfism)^#gephebase-summary-title)			
	Trait State in Taxon A		
Oryza sativa var. Koshihikari			
	Trait State in Taxon B		
Oryza sativa var. Habataki and IR8			
	Ancestral State		
Taxon A			
	Taxonomic Status		
Domesticated (<a +domesticated"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated (=GA20ox-2)^#gephebase-summary-title)			
Taxon A		Taxon B	
	Latin Name		Latin Name
Oryza sativa (<a +oryza"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Oryza sativa^#gephebase-summary-title)		Oryza sativa (<a +oryza"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Oryza sativa^#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; 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) (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. Koshihikari		Oryza sativa var. Habataki and IR8	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Oryza sativa subsp. japonica
GA20OX2		Q0JH50 (http://www.uniprot.org/uniprot/Q0JH50)	GenebankID or UniProtKB
	Synonyms		
sd1; GA20; Sd-1; 20ox2; C20ox2; SD1-2E; Os20ox2; osGA20ox2; SD1; Os01g0883800; LOC_Os01g66100; B1065E10.46		AER45908 (https://www.ncbi.nlm.nih.gov/nuccore/AER45908)	
	String		
39947.LOC_Os01g66100.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=39947.LOC_Os01g66100.1)			
	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 - Biological Process		
-			

-	Presumptive Null
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes^#gephebase-summary-title)	Molecular Type
Coding (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding^#gephebase-summary-title)	Aberration Type
Deletion (https://www.gephebase.org/search-criteria?/and+Aberration Type=~Deletion^#gephebase-summary-title)	Deletion Size
100-999 bp	Molecular Details of the Mutation
383bp deletion introducing premature stop codon	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping^#gephebase-summary-title)	Main Reference
Green revolution: a mutant gibberellin-synthesis gene in rice. (2002) (https://pubmed.ncbi.nlm.nih.gov/11961544)	Authors
Sasaki A; Ashikari M; Ueguchi-Tanaka M; Itoh H; Nishimura A; Swapan D; Ishiyama K; Saito T; Kobayashi M; Khush GS; Kitano H; Matsuoka M	Abstract
The chronic food shortage that was feared after the rapid expansion of the world population in the 1960s was averted largely by the development of a high-yielding semi-dwarf variety of rice known as IR8, the so-called rice 'green revolution'. The short stature of IR8 is due to a mutation in the plant's sd1 gene, and here we identify this gene as encoding an oxidase enzyme involved in the biosynthesis of gibberellin, a plant growth hormone. Gibberellin is also implicated in green-revolution varieties of wheat, but the reduced height of those crops is conferred by defects in the hormone's signalling pathway.	Additional References
Cytokinin oxidase regulates rice grain production. (2005) (https://pubmed.ncbi.nlm.nih.gov/15976269)	
Positional cloning of rice semidwarfing gene, sd-1: rice "green revolution gene" encodes a mutant enzyme involved in gibberellin synthesis. (2002) (https://pubmed.ncbi.nlm.nih.gov/11939564)	
Semidwarf (sd-1), "green revolution" rice, contains a defective gibberellin 20-oxidase gene. (2002) (https://pubmed.ncbi.nlm.nih.gov/12077303)	

RELATED GEPHE

No matches found.	Related Genes
4 (https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~Sd1 (=GA20ox-2)^/and+Taxon ID=~4530^/or+Gene Gephebase=~Sd1 (=GA20ox-2)^/and+Taxon ID=~4530^#gephebase-summary-title)	Related Haplotypes

EXTERNAL LINKS

COMMENTS