

GEPHE SUMMARY

Gephebase Gene  
 Sd1 (=GA20ox-2) ([https://www.gephebase.org/search-criteria?/and+Gene Gephebase= ^Sd1](https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=)  
 (=GA20ox-2)^#gephebase-summary-title) GP00001030 GepheID  
 Entry Status Martin Main curator  
 Published

PHENOTYPIC CHANGE

Trait Category  
 Morphology ([https://www.gephebase.org/search-criteria?/and+Trait Category= ^Morphology](https://www.gephebase.org/search-criteria?/and+Trait+Category=)^#gephebase-summary-title)  
 Trait  
 Plant size (dwarfism) ([https://www.gephebase.org/search-criteria?/and+Trait= ^Plant size](https://www.gephebase.org/search-criteria?/and+Trait=)  
 (dwarfism)^#gephebase-summary-title)  
 Trait State in Taxon A  
 Oryza sativa  
 Trait State in Taxon B  
 Oryza sativa Reimei  
 Ancestral State  
 Data not curated  
 Taxonomic Status  
 Domesticated ([https://www.gephebase.org/search-criteria?/and+Taxonomic Status= ^Domesticated](https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=)^#gephebase-summary-title)

Taxon A	Latin Name	Taxon B	Latin Name
Oryza sativa ( <a +oryza+sativa"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= ^Oryza sativa</a> ^#gephebase-summary-title)	Oryza sativa ( <a +oryza+sativa"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= ^Oryza sativa</a> ^#gephebase-summary-title)	Oryza sativa ( <a +oryza+sativa"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= ^Oryza sativa</a> ^#gephebase-summary-title)	Oryza sativa ( <a +oryza+sativa"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= ^Oryza sativa</a> ^#gephebase-summary-title)
Common Name	Common Name	Common Name	Common Name
rice	rice	rice	rice
Synonyms	Synonyms	Synonyms	Synonyms
rice; red rice; Oryza sativa L.	rice; red rice; Oryza sativa L.	rice; red rice; Oryza sativa L.	rice; red rice; Oryza sativa L.
Rank	Rank	Rank	Rank
species	species	species	species
Lineage	Lineage	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	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	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> )	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	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> )	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?	is Taxon B an Intraspecies?	is Taxon B an Intraspecies?
No	Yes	Yes	Yes
	Taxon B Description	Oryza sativa Reimei	

GENOTYPIC CHANGE

Generic Gene Name  
 GA20OX2 UniProtKB Oryza sativa subsp. japonica  
 Synonyms  
 sd1; GA20; Sd-1; 20ox2; C20ox2; SD1-2E; Os20ox2; osGA20ox2; SD1; Os01g0883800; AER45908 (<https://www.ncbi.nlm.nih.gov/nuccore/AER45908>)  
 LOC\_Os01g66100; B1065E10.46 GenebankID or UniProtKB  
 String  
 39947.LOC\_Os01g66100.1  
 ([http://string-db.org/newstring.cgi/show\\_network\\_section.pl?identifier=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  
 -

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No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^No^#gephebase-summary-title)) Presumptive Null

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Coding^#gephebase-summary-title)) Molecular Type

SNP ([https://www.gephebase.org/search-criteria?/and+Aberration Type=^SNP^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=^SNP^#gephebase-summary-title)) Aberration Type

Nonsynonymous SNP Coding Change

D349H Molecular Details of the Mutation

Candidate Gene ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=^Candidate+Gene^#gephebase-summary-title)) Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Green revolution: a mutant gibberellin-synthesis gene in rice. (2002) (<https://pubmed.ncbi.nlm.nih.gov/11961544>) Main Reference

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 Authors

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. Abstract

Additional References

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](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