

GEPHE SUMMARY

se5 (#se5 #gephebase-summary-title)	Gephebase Gene	GP00001034	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (#Physiology #gephebase-summary-title)	Trait Category		
Flowering time (#Flowering time #gephebase-summary-title)	Trait		
Oryza sativa	Trait State in Taxon A		
Oryza sativa se5	Trait State in Taxon B		
Taxon A	Ancestral State		
Domesticated (#Domesticated #gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
Oryza sativa (#Oryza sativa #gephebase-summary-title)	Latin Name	Oryza sativa (#Oryza sativa #gephebase-summary-title)	Latin Name
rice	Common Name	rice	Common Name
rice; red rice; Oryza sativa L.	Synonyms	rice; red rice; Oryza sativa L.	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	Lineage
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	Parent	Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	Parent
4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	NCBI Taxonomy ID	4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
		Oryza sativa se5	Taxon B Description

GENOTYPIC CHANGE

HO1	Generic Gene Name	UniProtKB Oryza sativa subsp. japonica Q69XJ4 (http://www.uniprot.org/uniprot/Q69XJ4)	
HO1; HY1; SE5; Os_J21897; Os06g0603000; LOC_Os06g40080; P0486H12.31	Synonyms		GenebankID or UniProtKB
39947.LOC_Os06g40080.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39947.LOC_Os06g40080.1)	String	0	
Belongs to the heme oxygenase family.	Sequence Similarities		
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)	GO - Molecular Function		
GO:0004392 : heme oxygenase (decyclizing) activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004392)			
GO:0048573 : photoperiodism, flowering	GO - Biological Process		

(<https://www.ebi.ac.uk/QuickGO/term/GO:0048573>)
GO:0010229 : inflorescence development
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010229>)
GO:0009648 : photoperiodism (<https://www.ebi.ac.uk/QuickGO/term/GO:0009648>)
GO:0015979 : photosynthesis (<https://www.ebi.ac.uk/QuickGO/term/GO:0015979>)
GO:0006788 : heme oxidation (<https://www.ebi.ac.uk/QuickGO/term/GO:0006788>)
GO - Cellular Component
GO:0009507 : chloroplast (<https://www.ebi.ac.uk/QuickGO/term/GO:0009507>)

Presumptive Null

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

Deletion Size

1-9 bp

Molecular Details of the Mutation

1bp deletion in exon 1; causes a frameshift and a premature stop codon

Experimental Evidence

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

Main Reference

Phytochromes confer the photoperiodic control of flowering in rice (a short-day plant). (2000) (<https://pubmed.ncbi.nlm.nih.gov/10849355>)

Authors

Izawa T; Oikawa T; Tokutomi S; Okuno K; Shimamoto K

Abstract

The photoperiodic sensitivity 5 (se5) mutant of rice, a short-day plant, has a very early flowering phenotype and is completely deficient in photoperiodic response. We have cloned the SE5 gene by candidate cloning and demonstrated that it encodes a putative heme oxygenase. Lack of responses of coleoptile elongation by light pulses and photoreversible phytochromes in crude extracts of se5 indicate that SE5 may function in phytochrome chromophore biosynthesis. Ectopic expression of SE5 cDNA by the CaMV 35S promoter restored the photoperiodic response in the se5 mutant. Our results indicate that phytochromes confer the photoperiodic control of flowering in rice. Comparison of se5 with hy1, a counterpart mutant of Arabidopsis, suggests distinct roles of phytochromes in the photoperiodic control of flowering in these two species.

Additional References

RELATED GEPHE

Related Genes

9 (DTH2, EARLY FLOWERING 3/Hd17, Hd1, Hd6a, PRR37 pseudoresponse regulator protein 37, Early flowering1 (EL1), HEADING DATE 1, Ehd1 (Response regulator), Ghd7) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=^4530^ /and+Trait=Flowering time/and+groupHaplotypes=true #gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^4530^/and+Trait=Flowering+time/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS