

GEPHE SUMMARY

	Gephebase Gene		GepheID
Rc (<a +rc+"#gepbase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene Gephebase="+Rc+"#gepbase-summary-title)		GP00000959	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

		Trait Category		
Morphology (<a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title)			Trait	
Coloration (seed) (<a +coloration+(seed)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Coloration+(seed)+"#gephebase-summary-title)				
Oryza rufipogon		Trait State in Taxon A		
Oryza sativa		Trait State in Taxon B		
Taxon A		Ancestral State		
Domesticated (<a +domesticated+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated+"#gephebase-summary-title)		Taxonomic Status		
Taxon A			Taxon B	
		Latin Name		Latin Name
Oryza rufipogon (<a +oryza+rufipogon+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Oryza+rufipogon+"#gephebase-summary-title)			Oryza sativa (<a +oryza+sativa+"#gephebase-summary-title"="" 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	
		Synonyms		Synonyms
red rice; common wild rice; Oryza rufipogon Griff.			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
4529 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4529)			4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4530)	
		is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No			No	

GENOTYPIC CHANGE

Rc	Generic Gene Name	UniProtKB <i>Oryza sativa</i> subsp. <i>japonica</i>
-	Synonyms	GenebankID or UniProtKB
-	String	
-	Sequence Similarities	
-	GO - Molecular Function	
GO:0046983 : protein dimerization activity (https://www.ebi.ac.uk/QuickGO/term/GO:0046983)	GO - Biological Process	
-	GO - Cellular Component	
-		
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes~#gephebase-summary-title)		Presumptive Null
		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
10-99 bp	Molecular Details of the Mutation
14bp deletion	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title)	Main Reference
Global dissemination of a single mutation conferring white pericarp in rice. (2007) (https://pubmed.ncbi.nlm.nih.gov/17696613)	Authors
Sweeney MT; Thomson MJ; Cho YG; Park YJ; Williamson SH; Bustamante CD; McCouch SR	Abstract
Here we report that the change from the red seeds of wild rice to the white seeds of cultivated rice (<i>Oryza sativa</i>) resulted from the strong selective sweep of a single mutation, a frame-shift deletion within the Rc gene that is found in 97.9% of white rice varieties today. A second mutation, also within Rc, is present in less than 3% of white accessions surveyed. Haplotype analysis revealed that the predominant mutation originated in the japonica subspecies and crossed both geographic and sterility barriers to move into the indica subspecies. A little less than one Mb of japonica DNA hitchhiked with the rc allele into most indica varieties, suggesting that other linked domestication alleles may have been transferred from japonica to indica along with white pericarp color. Our finding provides evidence of active cultural exchange among ancient farmers over the course of rice domestication coupled with very strong, positive selection for a single white allele in both subspecies of <i>O. sativa</i>.	
	Additional References

RELATED GEPHE

1 (Bh4) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~4529~/and+Trait=Coloration/or+Taxon ID=~4530~/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS