

## GEPHE SUMMARY

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

## PHENOTYPIC CHANGE

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

## GENOTYPIC CHANGE

Rc	Generic Gene Name	UniProtKB Oryza sativa subsp. japonica
-	Synonyms	A7J5U6 ( <a href="http://www.uniprot.org/uniprot/A7J5U6">http://www.uniprot.org/uniprot/A7J5U6</a> )
-	String	GenebankID or UniProtKB
-	Sequence Similarities	AFl99125 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/AFl99125">https://www.ncbi.nlm.nih.gov/nuccore/AFl99125</a> )
-	GO - Molecular Function	
GO:0046983 : protein dimerization activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0046983">https://www.ebi.ac.uk/QuickGO/term/GO:0046983</a> )	GO - Biological Process	
-	GO - Cellular Component	
-		Presumptive Null
Yes ( <a href="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</a> )		Molecular Type

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%27Coding%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular%20Type=%27Coding%27#gephebase-summary-title))

Aberration Type

Deletion ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%27Deletion%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration%20Type=%27Deletion%27#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=%27Linkage Mapping%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental%20Evidence=%27Linkage%20Mapping%27#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 (*Oryza sativa*) 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 *O. sativa*.

Additional References

## RELATED GEPHE

Related Genes

1 (Bh4) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=%274529%27/and+Trait=Coloration/or+Taxon ID=%274530%27/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon%20ID=%274529%27/and+Trait=Coloration/or+Taxon%20ID=%274530%27/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS