

GEPHE SUMMARY

	Gephebase Gene	GepheID
qPE9-1 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~qPE9-1~#gephebase-summary-title)	GP00000941	Main curator
	Entry Status	Martin
Published		

PHENOTYPIC CHANGE

Trait #1	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology~#gephebase-summary-title)	
	Trait
Plant architecture (https://www.gephebase.org/search-criteria?/and+Trait=~Plant+architecture~#gephebase-summary-title)	
	Trait State in Taxon A
Oryza sativa	
	Trait State in Taxon B
Oryza sativa japonica	

Trait #2	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology~#gephebase-summary-title)	
	Trait
Inflorescence architecture (https://www.gephebase.org/search-criteria?/and+Trait=~Inflorescence+architecture~#gephebase-summary-title)	
	Trait State in Taxon A
-	
	Trait State in Taxon B
-	

	Ancestral State
Taxon A	
	Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Domesticated~#gephebase-summary-title)	

Taxon A	Latin Name
Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Oryza+sativa~#gephebase-summary-title)	
	Common Name
rice	
	Synonyms
rice; red rice; Oryza sativa L.	
	Rank
species	
	Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	
	Parent
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	
	NCBI Taxonomy ID
4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	
No	is Taxon A an Intraspecies?

Taxon B	Latin Name
Oryza sativa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Oryza+sativa~#gephebase-summary-title)	
	Common Name
rice	
	Synonyms
rice; red rice; Oryza sativa L.	
	Rank
species	
	Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza	
	Parent
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	
	NCBI Taxonomy ID
4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	
Yes	is Taxon B an Intraspecies?
	Taxon B Description
Oryza sativa japonica	

GENOTYPIC CHANGE

PAY1	Generic Gene Name	B8Y995 (http://www.uniprot.org/uniprot/B8Y995)	UniProtKB Oryza sativa subsp. indica
-	Synonyms	0	GenebankID or UniProtKB
-	String		
-	Sequence Similarities		
-	GO - Molecular Function		
-	GO - Biological Process		
	GO:0007186 : G protein-coupled receptor signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0007186)		
	GO - Cellular Component		
	GO:0005882 : intermediate filament (https://www.ebi.ac.uk/QuickGO/term/GO:0005882)		
Yes (#gephebase-summary-title)			Presumptive Null
Coding (#gephebase-summary-title)			Molecular Type
Indel (#gephebase-summary-title)			Aberration Type
100-999 bp			Indel Size
637-bp deletion and 12-bp insertion resulting in truncated protein			Molecular Details of the Mutation
Linkage Mapping (#gephebase-summary-title)			Experimental Evidence
Deletion in a quantitative trait gene qPE9-1 associated with panicle erectness improves plant architecture during rice domestication. (2009) (https://pubmed.ncbi.nlm.nih.gov/19546322)			Main Reference
Zhou Y; Zhu J; Li Z; Yi C; Liu J; Zhang H; Tang S; Gu M; Liang G			Authors
Rice plant architecture is an important agronomic trait and a major determinant in high productivity. Panicle erectness is the preferred plant architecture in japonica rice, but the molecular mechanism underlying domestication of the erect panicle remains elusive. Here we report the map-based cloning of a major quantitative trait locus, qPE9-1, which plays an integral role in regulation of rice plant architecture including panicle erectness. The R6547 qPE9-1 gene encodes a 426-amino-acid protein, homologous to the keratin-associated protein 5-4 family. The gene is composed of three Von Willebrand factor type C domains, one transmembrane domain, and one 4-disulfide-core domain. Phenotypic comparisons of a set of near-isogenic lines and transgenic lines reveal that the functional allele (qPE9-1) results in drooping panicles, and the loss-of-function mutation (qpe9-1) leads to more erect panicles. In addition, the qPE9-1 locus regulates panicle and grain length, grain weight, and consequently grain yield. We propose that the panicle erectness trait resulted from a natural random loss-of-function mutation for the qPE9-1 gene and has subsequently been the target of artificial selection during japonica rice breeding.			Abstract
			Additional References

RELATED GEPHE

1 (PROG1) (https://www.gephebase.org/search-criteria?/or+Taxon+ID=~4530^/and+Trait=Plant+architecture/or+Taxon+ID=~4530^/and+Trait=Inflorescence+architecture/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS