

GEPHE SUMMARY

Gephebase Gene		GepheID
Pi9 (= Nbs2-Pi9) (<a +pi9"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+Pi9 (= Nbs2-Pi9)^#gephebase-summary-title)	GP00000881	
Entry Status		Main curator
Published		

PHENOTYPIC CHANGE

Trait Category			
Physiology (<a +physiology^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology^#gephebase-summary-title)		Trait	
Pathogen resistance (<a +pathogen+resistance^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Pathogen+resistance^#gephebase-summary-title)		Trait State in Taxon A	
Oryza sativa - blast susceptible CO39		Trait State in Taxon B	
Oryza sativa - blast resistant indica		Ancestral State	
Data not curated		Taxonomic Status	
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)			
Taxon A		Taxon B	
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)		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		rice	
Synonyms		Synonyms	
rice; red rice; Oryza sativa L.		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	
4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)		4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
Yes		Yes	
Taxon A Description		Taxon B Description	
Oryza sativa - blast susceptible CO39		Oryza sativa - blast resistant indica	

GENOTYPIC CHANGE

Generic Gene Name		UniProtKB Oryza sativa subsp. indica
Pi9	Q1WGB0 (http://www.uniprot.org/uniprot/Q1WGB0)	
Synonyms		GenebankID or UniProtKB
Pi9	AGL96782 (https://www.ncbi.nlm.nih.gov/nuccore/AGL96782)	
String		
-		
Sequence Similarities		
Belongs to the disease resistance NB-LRR family.		
GO - Molecular Function		
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)		
GO - Biological Process		
-		
GO - Cellular Component		
-		
Presumptive Null		
No (<a +no^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=">https://www.gephebase.org/search-criteria?/and+Presumptive+Null="+No^#gephebase-summary-title)		

Coding (https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Coding~#gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Unknown~#gephebase-summary-title)	Aberration Type
Coding variation; necessary for resistance in completementation assay	Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping~#gephebase-summary-title)	Experimental Evidence
The broad-spectrum blast resistance gene Pi9 encodes a nucleotide-binding site-leucine-rich repeat protein and is a member of a multigene family in rice. (2006) (https://pubmed.ncbi.nlm.nih.gov/16387888)	Main Reference
Qu S; Liu G; Zhou B; Bellizzi M; Zeng L; Dai L; Han B; Wang GL	Authors
The broad-spectrum rice blast resistance gene Pi9 was cloned using a map-based cloning strategy. Sequencing of a 76-kb bacterial artificial chromosome (BAC) contig spanning the Pi9 locus led to identification of six tandemly arranged resistance-like genes with a nucleotide-binding site (NBS) and leucine-rich repeats (LRRs) (Nbs1-Pi9-Nbs6-Pi9). Analysis of selected Pi9 deletion mutants and transformation of a 45-kb fragment from the BAC contig into the susceptible rice cultivar TP309 narrowed down Pi9 to the candidate genes Nbs2-Pi9 and Nbs3-Pi9. Disease evaluation of the transgenic lines carrying the individual candidate genes confirmed that Nbs2-Pi9 is the Pi9 gene. Sequence comparison analysis revealed that the six paralogs at the Pi9 locus belong to four classes and gene duplication might be one of the major evolutionary forces contributing to the formation of the NBS-LRR gene cluster. Semiquantitative reverse transcriptase (RT)-PCR analysis showed that Pi9 was constitutively expressed in the Pi9-resistant plants and was not induced by blast infection. The cloned Pi9 gene provides a starting point to elucidate the molecular basis of the broad-spectrum disease resistance and the evolutionary mechanisms of blast resistance gene clusters in rice.	Abstract
	Additional References

RELATED GEPHE

15 (Pi-ta, Pi2 (Nbs4-Pi2), Pi36, Pi37, Pi5-1 + Pi5-2 cluster, Pib, Pid3, PigmR, Pikm1-TS + Pikm2-TS cluster, Pit, Piz-t, SLB1/2, Xa1, Xa21, Xa26) (https://www.gephebase.org/search-criteria?/or+Taxon+ID=~4530~/and+Trait=Pathogen+resistance/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS