

## GEPHE SUMMARY

Pi36 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase= <sup>^</sup> Pi36 <sup>#</sup> gephebase-summary-title)	Gephebase Gene	GP00000878	GepheID
Published	Entry Status	Martin	Main curator

## PHENOTYPIC CHANGE

Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category= <sup>^</sup> Physiology <sup>#</sup> gephebase-summary-title)	Trait Category		
Pathogen resistance ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> = <sup>^</sup> Pathogen resistance <sup>#</sup> gephebase-summary-title)	Trait		
Oryza sativa - blast susceptible Nipponbare	Trait State in Taxon A		
Oryza sativa - blast resistant Kasalath	Trait State in Taxon B		
Data not curated	Ancestral State		
Domesticated ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic">https://www.gephebase.org/search-criteria?/and+Taxonomic</a> Status= <sup>^</sup> Domesticated <sup>#</sup> gephebase-summary-title)	Taxonomic Status		

Taxon A		Taxon B	
	Latin Name		Latin Name
Oryza sativa ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms= <sup>^</sup> Oryza sativa <sup>#</sup> gephebase-summary-title)	Oryza sativa	Oryza sativa ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms= <sup>^</sup> Oryza sativa <sup>#</sup> gephebase-summary-title)	Oryza sativa
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) ( <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> )	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> )	Parent
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> )	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Oryza sativa - blast susceptible Nipponbare	Taxon A Description	Oryza sativa - blast resistant Kasalath	Taxon B Description

## GENOTYPIC CHANGE

Pi36	Generic Gene Name	UniProtKB Oryza sativa subsp. japonica D5J6W0 ( <a href="http://www.uniprot.org/uniprot/D5J6W0">http://www.uniprot.org/uniprot/D5J6W0</a> )
-	Synonyms	GenebankID or UniProtKB ADF29629 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/ADF29629">https://www.ncbi.nlm.nih.gov/nuccore/ADF29629</a> )
-	String	
Belongs to the disease resistance NB-LRR family.	Sequence Similarities	
GO:0043531 : ADP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0043531">https://www.ebi.ac.uk/QuickGO/term/GO:0043531</a> )	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive">https://www.gephebase.org/search-criteria?/and+Presumptive</a> Null= <sup>^</sup> No <sup>#</sup> gephebase-summary-title)		Presumptive Null

Coding (<https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Coding^#gephebase-summary-title>)

Molecular Type

SNP (<https://www.gephebase.org/search-criteria?/and+Aberration+Type=^SNP^#gephebase-summary-title>)

Aberration Type

Nonsynonymous

SNP Coding Change

Asp590Ser

Molecular Details of the Mutation

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

Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Main Reference

The in silico map-based cloning of Pi36, a rice coiled-coil nucleotide-binding site leucine-rich repeat gene that confers race-specific resistance to the blast fungus. (2007) (<https://pubmed.ncbi.nlm.nih.gov/17507669>)

Authors

Liu X; Lin F; Wang L; Pan Q

Abstract

The indica rice variety Kasalath carries Pi36, a gene that determines resistance to Chinese isolates of rice blast and that has been located to a 17-kb interval on chromosome 8. The genomic sequence of the reference japonica variety Nipponbare was used for an in silico prediction of the resistance (R) gene content of the interval and hence for the identification of candidate gene(s) for Pi36. Three such sequences, which all had both a nucleotide-binding site and a leucine-rich repeat motif, were present. The three candidate genes were amplified from the genomic DNA of a number of varieties by long-range PCR, and the resulting amplicons were inserted into pCAMBIA1300 and/or pYLAC27 vectors to determine sequence polymorphisms correlated to the resistance phenotype and to perform transgenic complementation tests. Constructs containing each candidate gene were transformed into the blast-susceptible variety Q1063, which allowed the identification of Pi36-3 as the functional gene, with the other two candidates being probable pseudogenes. The Pi36-encoded protein is composed of 1056 amino acids, with a single substitution event (Asp to Ser) at residue 590 associated with the resistant phenotype. Pi36 is a single-copy gene in rice and is more closely related to the barley powdery mildew resistance genes Mla1 and Mla6 than to the rice blast R genes Pita, Pib, Pi9, and Piz-t. An RT-PCR analysis showed that Pi36 is constitutively expressed in Kasalath.

Additional References

## RELATED GEPHE

15 (Pi-ta, Pi2 (Nbs4-Pi2), Pi37, Pi5-1 + Pi5-2 cluster, Pi9 (= Nbs2-Pi9), 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