GEPHE SUMMARY

Gephebase Gene
Pib (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Pib^#gephebase-summary-title)

GepheID
GP00000882

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

Trait Category
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)

Trait
Pathogen resistance (https://www.gephebase.org/search-criteria?/and+Trait=^Pathogen resistance^#gephebase-summary-title)

Trait State in Taxon A
Oryza sativa - blast susceptible Nipponbare

Trait State in Taxon B
Oryza sativa - blast resistant Gumei2

Ancestral State
Data not curated

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; Oryzeae; 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)

is Taxon A an Infraspecies?
Yes

Taxon A Description
Oryza sativa - blast susceptible Nipponbare

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; Oryzeae; 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)

is Taxon B an Infraspecies?
Yes

Taxon B Description
Oryza sativa - blast resistant Gumei2

GENOTYPIC CHANGE

Generic Gene Name
Pi-b

Synonyms
Pib

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
-

UniProtKB Oryza sativa
Q9SSY0 (http://www.uniprot.org/uniprot/Q9SSY0)

GenebankID or UniProtKB
BAA76282 (https://www.ncbi.nlm.nih.gov/nuccore/BAA76282)

Presumptive Null
Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#gephebase-summary-title)

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

unknown

Experimental Evidence

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

Main Reference

The Pib gene for rice blast resistance belongs to the nucleotide binding and leucine-rich repeat class of plant disease resistance genes. (1999) (https://pubmed.ncbi.nlm.nih.gov/10417726)

Authors

Wang ZX; Yano M; Yamanouchi U; Iwamoto M; Monna L; Hayasaka H; Katayose Y; Sasaki T

Abstract

Rice blast, caused by the fungal pathogen Magnaporthe grisea, is one of the most serious diseases of rice. Here we describe the isolation and characterization of Pib, one of the rice blast resistance genes. The Pib gene was isolated by a map-based cloning strategy. The deduced amino acid sequence of the Pib gene product contains a nucleotide binding site (NBS) and leucine-rich repeats (LRRs); thus, Pib is a member of the NBS-LRR class of plant disease resistance genes. Interestingly, a duplication of the kinase 1a, 2 and 3a motifs of the NBS region was found in the N-terminal half of the Pib protein. In addition, eight cysteine residues are clustered in the middle of the LRRs, a feature which has not been reported for other R genes. Pib gene expression was induced upon altered environmental conditions, such as altered temperatures and darkness.

Additional References

RELATED GEPHE

Related Genes

15 (Pi-ta, Pi2 (Nbs4-Pi2), Pi36, Pi37, Pi5-1 + Pi5-2 cluster, Pi9 (= Nbs2-Pi9), 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 Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@GxE