

GEPHE SUMMARY

Xa21 (https://www.gephebase.org/search-criteria/?and+Gene Gephebase=Xa21#gephebase-summary-title)	Gephebase Gene	GP00001217	GepheID
	Entry Status	Martin	Main curator
Published			

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 - wild-type	Trait State in Taxon B
Oryza sativa- bacterial blight resistant strains	Ancestral State
Data not curated	Taxonomic Status
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic Status=Intraspecific#gephebase-summary-title)	

Taxon A	Latin Name	Taxon B	Latin Name
Oryza sativa (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Oryza+sativa #gephebase-summary-title)		Oryza sativa (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Oryza+sativa #gephebase-summary-title)	
rice	Common Name	rice	Common Name
rice; red rice; Oryza sativa L.	Synonyms	rice; red rice; Oryza sativa L.	Synonyms
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) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527)	NCBI Taxonomy ID	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)		4530 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530)	
No	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

Xa21	Generic Gene Name	UniProtKB Oryza sativa subsp. indica
-	Synonyms	GenebankID or UniProtKB
-	String	
-	Sequence Similarities	
-	GO - Molecular Function	
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)		
GO:0004672 : protein kinase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004672)		
-	GO - Biological Process	
GO:0016021 : integral component of membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0016021)		Presumptive Null
-	GO - Cellular Component	
Unknown (https://www.gephebase.org/search-criteria/?and+Presumptive+Null=^Unknown #gephebase-summary-title)		

Molecular Type

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%5BCoding%5D#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular%20Type=%5BCoding%5D#gephebase-summary-title))

Aberration Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%5BUnknown%5D#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration%20Type=%5BUnknown%5D#gephebase-summary-title))

Molecular Details of the Mutation

unknown

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%5BLinkage Mapping%5D#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental%20Evidence=%5BLinkage%20Mapping%5D#gephebase-summary-title))

Main Reference

A receptor kinase-like protein encoded by the rice disease resistance gene, Xa21. (1995) (<https://pubmed.ncbi.nlm.nih.gov/8525370>)

Authors

Song WY; Wang GL; Chen LL; Kim HS; Pi LY; Holsten T; Gardner J; Wang B; Zhai WX; Zhu LH; Fauquet C; Ronald P

Abstract

The rice Xa21 gene, which confers resistance to *Xanthomonas oryzae* pv. *oryzae* race 6, was isolated by positional cloning. Fifty transgenic rice plants carrying the cloned Xa21 gene display high levels of resistance to the pathogen. The sequence of the predicted protein, which carries both a leucine-rich repeat motif and a serine-threonine kinase-like domain, suggests a role in cell surface recognition of a pathogen ligand and subsequent activation of an intracellular defense response. Characterization of Xa21 should facilitate understanding of plant disease resistance and lead to engineered resistance in rice.

Additional References

RELATED GEPHE

Related Genes

15 (Pi-ta, Pi2 (Nbs4-Pi2), Pi36, Pi37, Pi5-1 + Pi5-2 cluster, Pi9 (= Nbs2-Pi9), Pib, Pid3, PigmR, Pikm1-TS + Pikm2-TS cluster, Pit, Piz-t, SLB1/2, Xa1, Xa26) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=%5B4530%5D/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon%20ID=%5B4530%5D/and+Trait=Pathogen%20resistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS