

GEPHE SUMMARY

	Gephebase Gene		GepheID
Xa1 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=Xa1#gephebase-summary-title)		GP00001216	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=Physiology#gephebase-summary-title)		Trait	
Pathogen resistance (https://www.gephebase.org/search-criteria?/and+Trait=Pathogenresistance#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+TaxonomicStatus=Intraspecific#gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Oryza sativa (https://www.gephebase.org/search-criteria?/and+TaxonandSynonyms=Oryzasativa#gephebase-summary-title)		Oryza sativa (https://www.gephebase.org/search-criteria?/and+TaxonandSynonyms=Oryzasativa#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?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Oryza sativa subsp. indica
XA1		A0A0H5AGW3 (http://www.uniprot.org/uniprot/A0A0H5AGW3)	
	Synonyms		GenebankID or UniProtKB
-		BAA25068 (https://www.ncbi.nlm.nih.gov/nuccore/BAA25068)	
	String		
-			
	Sequence Similarities		
Belongs to the disease resistance NB-LRR family.			
	GO - Molecular Function		
GO:0003677 : DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003677)			
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)			
	GO - Biological Process		
-			
	GO - Cellular Component		
-			
			Presumptive Null
Unknown (https://www.gephebase.org/search-criteria?/and+PresumptiveNull=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
Expression of Xa1, a bacterial blight-resistance gene in rice, is induced by bacterial inoculation. (1998) (https://pubmed.ncbi.nlm.nih.gov/9465073)	Authors
Yoshimura S; Yamanouchi U; Katayose Y; Toki S; Wang ZX; Kono I; Kurata N; Yano M; Iwata N; Sasaki T	Abstract
The Xa1 gene in rice confers resistance to Japanese race 1 of <i>Xanthomonas oryzae</i> pv. <i>oryzae</i>, the causal pathogen of bacterial blight (BB). We isolated the Xa1 gene by a map-based cloning strategy. The deduced amino acid sequence of the Xa1 gene product contains nucleotide binding sites (NBS) and a new type of leucine-rich repeats (LRR); thus, Xa1 is a member of the NBS-LRR class of plant disease-resistance genes, but quite different from Xa21, another BB-resistance gene isolated from rice. Interestingly, Xa1 gene expression was induced on inoculation with a bacterial pathogen and wound, unlike other isolated resistance genes in plants, which show constitutive expression. The induced expression may be involved in enhancement of resistance against the pathogen.	
	Additional References

RELATED GEPHE

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, 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