

GEPHE SUMMARY

	Gephebase Gene		GepheID
RPP4 (<a +rpp4+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+RPP4+"#gephebase-summary-title)		GP00001007	
	Entry Status	Martin	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		
Arabidopsis thaliana- Col0 - resistant		Trait State in Taxon B	
Arabidopsis thaliana- Ws0 - sensitive			
	Ancestral State		
Data not curated		Taxonomic Status	
Intraspecific (<a +intraspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific+"#gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Arabidopsis thaliana (<a +arabidopsis+thaliana+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Arabidopsis+thaliana+"#gephebase-summary-title)		Arabidopsis thaliana (<a +arabidopsis+thaliana+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Arabidopsis+thaliana+"#gephebase-summary-title)	
	Common Name		Common Name
thale cress		thale cress	
	Synonyms		Synonyms
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress		thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	
	Parent		Parent
Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)		Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)		3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
Yes		Yes	
	Taxon A Description		Taxon B Description
Arabidopsis thaliana- Col0 - resistant		Arabidopsis thaliana- Ws0 - sensitive	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Arabidopsis thaliana
RPP4		F4JNA9 (http://www.uniprot.org/uniprot/F4JNA9)	
	Synonyms		GenebankID or UniProtKB
DL4460C; FCAALL.47; recognition of peronospora parasitica 4; CHS2; At4g16860; dl4460c		AF440696 (https://www.ncbi.nlm.nih.gov/nucleotide/AF440696)	
	String		
3702.AT4G16860.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G16860.1)			
	Sequence Similarities		
-			
	GO - Molecular Function		
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)			
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)			
GO:0030275 : LRR domain binding (https://www.ebi.ac.uk/QuickGO/term/GO:0030275)			

GO - Biological Process

GO:0006952 : defense response (<https://www.ebi.ac.uk/QuickGO/term/GO:0006952>)
GO:0007165 : signal transduction (<https://www.ebi.ac.uk/QuickGO/term/GO:0007165>)
GO:0009817 : defense response to fungus, incompatible interaction
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009817>)

GO - Cellular Component

-

	Presumptive Null
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=~Coding~#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
Arabidopsis RPP4 is a member of the RPP5 multigene family of TIR-NB-LRR genes and confers downy mildew resistance through multiple signalling components. (2002) (https://pubmed.ncbi.nlm.nih.gov/11846877)	
	Authors
van der Biezen EA; Freddie CT; Kahn K; Parker JE; Jones JD	

Abstract

In Arabidopsis, RPP4 confers resistance to *Peronospora parasitica* (P.p.) races Emoy2 and Emwa1 (downy mildew). We identified RPP4 in Col-0 as a member of the clustered RPP5 multigene family encoding nucleotide-binding leucine-rich repeat proteins with Toll/interleukin-1 receptor domains. RPP4 is the orthologue of RPP5 which, in addition to recognizing P.p. race Noco2, also mediates resistance to Emoy2 and Emwa1. Most differences between RPP4 and RPP5 occur in residues that constitute the TIR domain and in LRR residues that are predicted to confer recognition specificity. RPP4 requires the action of at least 12 defence components, including DTH9, EDS1, PAD4, PAL, PBS2, PBS3, SID1, SID2 and salicylic acid. The ndr1, npr1 and rps5-1 mutations partially compromise RPP4 function in cotyledons but not in true leaves. The identification of RPP4 as a TIR-NB-LRR protein, coupled with its dependence on certain signalling components in true leaves, is consistent with the hypothesis that distinct NB-LRR protein classes differentially signal through EDS1 and NDR1. Our results suggest that RPP4-mediated resistance is developmentally regulated and that in cotyledons there is cross-talk between EDS1 and NDR1 signalling and processes regulating systemic acquired resistance.

Additional References

RELATED GEPHE

	Related Genes
20 (ACD6 = ACCELERATED CELL DEATH 6, ERECTA, RAC1, Resistance related Kinase 1 (RKS1), RLM1, RLM2 cluster, RLM3, RPM1, RPP1-WsA, RPP1-WsB, RPP1-WsC, RPP13, RPP2A-RPP2B, RPP5, RPP8, RPS2, RPS4, RPS5, RRS1, WRR4) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~3702~/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title)	
	Related Haplotypes
No matches found.	

EXTERNAL LINKS

COMMENTS