

GEPHE SUMMARY

RPP5 (https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=%RPP5%#gephebase-summary-title)	Gephebase Gene	GP00001008	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		
Arabidopsis thaliana- Col0 - sensitive	Trait State in Taxon B		
Arabidopsis thaliana- Ler0 - resistant	Ancestral State		
Data not curated	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=%Intraspecific%#gephebase-summary-title)			
Taxon A		Taxon B	
Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title)	Latin Name	Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title)	Latin Name
thale cress	Common Name	thale cress	Common Name
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms	thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage
Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701)	Parent	Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701)	Parent
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702)	NCBI Taxonomy ID	3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702)	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Arabidopsis thaliana- Col0 - sensitive		Arabidopsis thaliana- Ler0 - resistant	

GENOTYPIC CHANGE

RPP5	Generic Gene Name	UniProtKB Arabidopsis thaliana
	Synonyms	GenebankID or UniProtKB
DISEASE RESISTANCE PROTEIN RPP5; DL4505C; FCAALL.315; RECOGNITION OF PERONOSPORA PARASITICA 5; At4g16950; dl4505c		Z97342 (https://www.ncbi.nlm.nih.gov/nuccore/Z97342)
3702.AT4G16950.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT4G16950.1)	String	
-	Sequence Similarities	
	GO - Molecular Function	
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)		
GO:0000166 : nucleotide binding (https://www.ebi.ac.uk/QuickGO/term/GO:0000166)		
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)		

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

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

unknown Molecular Details of the Mutation

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

van der Biezen EA; Freddie CT; Kahn K; Parker JE; Jones JD Authors

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. AbstractGenome-wide survey of Arabidopsis natural variation in downy mildew resistance using combined association and linkage mapping. (2010) (<https://pubmed.ncbi.nlm.nih.gov/20479235>) 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, RPP4, 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

1 (<https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=^RPP5^/and+Taxon+ID=^3702^/or+Gene+Gephebase=^RPP5^/and+Taxon+ID=^3702^#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS