

GEPHE SUMMARY

	Gephebase Gene		GepheID
RPP8 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~RPP8^#gephebase-summary-title)		GP00001010	
	Entry Status	Courtier	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		
Arabidopsis thaliana- Colo		Trait State in Taxon B	
Arabidopsis thaliana- Ler0			
	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
Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+TaxonandSynonyms=~Arabidopsisthaliana^#gephebase-summary-title)		Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+TaxonandSynonyms=~Arabidopsisthaliana^#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- Colo		Arabidopsis thaliana- Ler0	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Arabidopsis thaliana
RPP8		Q8W4J9 (http://www.uniprot.org/uniprot/Q8W4J9)	
	Synonyms		GenebankID or UniProtKB
DISEASE RESISTANCE PROTEIN RPP8; HRT; HYPERSENSITIVE RESPONSE TO TCV; MWF20.19; MWF20_19; RCY1; RECOGNITION OF PERONOSPORA PARASITICA 8; RESISTANT TO CMV(Y) 1; At5g43470		AD089710 (https://www.ncbi.nlm.nih.gov/nuccore/AD089710)	
	String		
3702.AT5G43470.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G43470.1)			
	Sequence Similarities		
Belongs to the disease resistance NB-LRR family. RPP8/HRT subfamily.			
	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:0009637 : response to blue light (<https://www.ebi.ac.uk/QuickGO/term/GO:0009637>)
GO:0071446 : cellular response to salicylic acid stimulus (<https://www.ebi.ac.uk/QuickGO/term/GO:0071446>)
GO:0009416 : response to light stimulus (<https://www.ebi.ac.uk/QuickGO/term/GO:0009416>)
GO:0009751 : response to salicylic acid (<https://www.ebi.ac.uk/QuickGO/term/GO:0009751>)
GO:0051607 : defense response to virus (<https://www.ebi.ac.uk/QuickGO/term/GO:0051607>)
GO:0009646 : response to absence of light (<https://www.ebi.ac.uk/QuickGO/term/GO:0009646>)
GO:0009611 : response to wounding (<https://www.ebi.ac.uk/QuickGO/term/GO:0009611>)
GO:0002230 : positive regulation of defense response to virus by host (<https://www.ebi.ac.uk/QuickGO/term/GO:0002230>)
GO:0009626 : plant-type hypersensitive response (<https://www.ebi.ac.uk/QuickGO/term/GO:0009626>)
GO:0002239 : response to oomycetes (<https://www.ebi.ac.uk/QuickGO/term/GO:0002239>)
GO:0051707 : response to other organism (<https://www.ebi.ac.uk/QuickGO/term/GO:0051707>)

GO - Cellular Component
GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No~#gephebase-summary-title)	Presumptive Null
Coding (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding~#gephebase-summary-title)	Molecular Type
Complex Change (https://www.gephebase.org/search-criteria?/and+Aberration Type=~Complex Change~#gephebase-summary-title)	Aberration Type
Chimeric fusion of two paralogues followed by coding divergence	Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title)	Experimental Evidence
Intragenic recombination and diversifying selection contribute to the evolution of downy mildew resistance at the RPP8 locus of Arabidopsis. (1998) (https://pubmed.ncbi.nlm.nih.gov/9811794)	Main Reference
McDowell JM; Dhandaydham M; Long TA; Aarts MG; Goff S; Holub EB; Dangl JL	Authors

Pathogen resistance (R) genes of the NBS-LRR class (for nucleotide binding site and leucine-rich repeat) are found in many plant species and confer resistance to a diverse spectrum of pathogens. Little is known about the mechanisms that drive NBS-LRR gene evolution in the host-pathogen arms race. We cloned the RPP8 gene (for resistance to Peronospora parasitica) and compared the structure of alleles at this locus in resistant Landsberg erecta (Ler-0) and susceptible Columbia (Col-0) accessions. RPP8-Ler encodes an NBS-LRR protein with a putative N-terminal leucine zipper and is more closely related to previously cloned R genes that confer resistance to bacterial pathogens than it is to other known RPP genes. The RPP8 haplotype in Ler-0 contains the functional RPP8-Ler gene and a nonfunctional homolog, RPH8A. In contrast, the rpp8 locus in Col-0 contains a single chimeric gene, which was likely derived from unequal crossing over between RPP8-Ler and RPH8A ancestors within a Ler-like haplotype. Sequence divergence among RPP8 family members has been accelerated by positive selection on the putative ligand binding region in the LRRs. These observations indicate that NBS-LRR molecular evolution is driven by the same mechanisms that promote rapid sequence diversification among other genes involved in non-self-recognition.	Abstract
Genome-wide survey of Arabidopsis natural variation in downy mildew resistance using combined association and linkage mapping. (2010) (https://pubmed.ncbi.nlm.nih.gov/20479233)	Additional References

RELATED GEPHE

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, RPP5, 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 Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

@ChimericGene

