

## GEPHE SUMMARY

RPP8 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase~RPP8~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase~RPP8~#gephebase-summary-title</a> )	Gephebase Gene	GP00001010	GepheID
Published	Entry Status	Courtier	Main curator

## PHENOTYPIC CHANGE

Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology~#gephebase-summary-title</a> )	Trait Category		
Pathogen resistance ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=~Pathogen+resistance~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=~Pathogen+resistance~#gephebase-summary-title</a> )	Trait		
Arabidopsis thaliana- Col0	Trait State in Taxon A		
Arabidopsis thaliana- Ler0	Trait State in Taxon B		
Data not curated	Ancestral State		
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific~#gephebase-summary-title</a> )	Taxonomic Status		

Taxon A		Taxon B	
	Latin Name		Latin Name
Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title</a> )	Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title</a> )	Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title</a> )	Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title</a> )
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; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	Lineage
Arabidopsis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a> )	Parent	Arabidopsis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a> )	Parent
3702 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a> )	NCBI Taxonomy ID	3702 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a> )	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Arabidopsis thaliana- Col0	Taxon A Description	Arabidopsis thaliana- Ler0	Taxon B Description

## GENOTYPIC CHANGE

RPP8	Generic Gene Name	Q8W4J9 ( <a href="http://www.uniprot.org/uniprot/Q8W4J9">http://www.uniprot.org/uniprot/Q8W4J9</a> )	UniProtKB Arabidopsis thaliana
DISEASE RESISTANCE PROTEIN RPP8; HRT; HYPERSENSITIVE RESPONSE TO TCY; MWF20.19; MWF20_19; RCY1; RECOGNITION OF PERONOSPORA PARASITICA 8; RESISTANT TO CMV(Y) 1; At5g43470	Synonyms	AD089710 ( <a href="https://www.ncbi.nlm.nih.gov/nucore/AD089710">https://www.ncbi.nlm.nih.gov/nucore/AD089710</a> )	GenebankID or UniProtKB
3702.AT5G43470.1 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G43470.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G43470.1</a> )	String		
Belongs to the disease resistance NB-LRR family. RPP8/HRT subfamily.	Sequence Similarities		
GO:000524 : ATP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:000524">https://www.ebi.ac.uk/QuickGO/term/GO:000524</a> )	GO - Molecular Function		
GO:0000166 : nucleotide binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0000166">https://www.ebi.ac.uk/QuickGO/term/GO:0000166</a> )			

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

Abstract  
 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.

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

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