

# GEPHE SUMMARY

RPP13 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase="RPP13" #gephebase-summary-title)	Gephebase Gene GP00001005	GepheID Main curator
Published	Entry Status Martin	

## PHENOTYPIC CHANGE

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

Taxon A	Latin Name	Taxon B	Latin Name
Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana</a> #gephebase-summary-title)		Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana</a> #gephebase-summary-title)	
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
	Lineage		Lineage
cellular organisms; Eukaryota; Viriplantae; Streptophytina; Streptophytina; Embryophytina; Tracheophytina; Euphylophyta; Spermatophytina; Magnoliophytina; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis		cellular organisms; Eukaryota; Viriplantae; Streptophytina; Streptophytina; Embryophytina; Tracheophytina; Euphylophyta; Spermatophytina; Magnoliophytina; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	
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
	is Taxon A an Infraspecies?		is Taxon B an Infraspecies?
No		No	

## GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Arabidopsis thaliana
RPP13	Synonyms RECOGNITION OF PERONOSPORA PARASITICA 13; At3g46530; F12A12.50	Q9M667 ( <a href="http://www.uniprot.org/uniprot/Q9M667">http://www.uniprot.org/uniprot/Q9M667</a> ) GenebankID or UniProtKB
3702.AT3G46530.1 ( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT3G46530.1">http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT3G46530.1</a> )	String	AF209730 ( <a href="https://www.ncbi.nlm.nih.gov/nucleotide/AF209730">https://www.ncbi.nlm.nih.gov/nucleotide/AF209730</a> )
Belongs to the disease resistance NB-LRR family. RPP13 subfamily.	Sequence Similarities	
GO:0005524 : ATP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005524">https://www.ebi.ac.uk/QuickGO/term/GO:0005524</a> ) GO:0043531 : ADP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0043531">https://www.ebi.ac.uk/QuickGO/term/GO:0043531</a> )	GO - Molecular Function	
GO:0009626 : plant-type hypersensitive response ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0009626">https://www.ebi.ac.uk/QuickGO/term/GO:0009626</a> ) GO:0009814 : defense response, incompatible interaction	GO - Biological Process	

GO - Cellular Component

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

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)

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

Various haplotypes

Experimental Evidence

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

Main Reference

The maintenance of extreme amino acid diversity at the disease resistance gene, RPP13, in *Arabidopsis thaliana*. (2004) (<https://pubmed.ncbi.nlm.nih.gov/15082565>)

Authors

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Abstract

We have used the naturally occurring plant-parasite system of *Arabidopsis thaliana* and its common parasite *Peronospora parasitica* (downy mildew) to study the evolution of resistance specificity in the host population. DNA sequence of the resistance gene, RPP13, from 24 accessions, including 20 from the United Kingdom, revealed amino acid sequence diversity higher than that of any protein coding gene reported so far in *A. thaliana*. A significant excess of amino acid polymorphism segregating within this species is localized within the leucine-rich repeat (LRR) domain of RPP13. These results indicate that single alleles of the gene have not swept through the population, but instead, a diverse collection of alleles have been maintained.

Transgenic complementation experiments demonstrate functional differences among alleles in their resistance to various pathogen isolates, suggesting that the extreme amino acid polymorphism in RPP13 is maintained through continual reciprocal selection between host and pathogen.

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, RPP2A-RPP2B, RPP4, 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