

## GEPHE SUMMARY

RPS2 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase~RPS2~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase~RPS2~#gephebase-summary-title</a> )	Gephebase Gene	GP00001012	GepheID
Published	Entry Status	Martin	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 - resistant	Trait State in Taxon A		
Arabidopsis thaliana- Zu-0-7 and Zu-0-8- sensitive	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
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> )	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> )	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; 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 - resistant	Taxon A Description	Arabidopsis thaliana- Zu-0-7 and Zu-0-8- sensitive	Taxon B Description

## GENOTYPIC CHANGE

RPS2	Generic Gene Name	Q42484 ( <a href="http://www.uniprot.org/uniprot/Q42484">http://www.uniprot.org/uniprot/Q42484</a> )	UniProtKB Arabidopsis thaliana
DISEASE RESISTANCE PROTEIN RPS2; F20B18.200; F20B18_200; RESISTANT TO P. SYRINGAE 2; At4g26090	Synonyms	AF487806 ( <a href="https://www.ncbi.nlm.nih.gov/nucore/AF487806">https://www.ncbi.nlm.nih.gov/nucore/AF487806</a> )	GenebankID or UniProtKB
3702.AT4G26090.1 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G26090.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G26090.1</a> )	String		
Belongs to the disease resistance NB-LRR family.	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 - Molecular Function		
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 - Biological Process		

GO:0006952 : defense response (<https://www.ebi.ac.uk/QuickGO/term/GO:0006952>)

GO:0042742 : defense response to bacterium  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042742>)

GO:0009626 : plant-type hypersensitive response  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009626>)

GO:0016045 : detection of bacterium  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016045>)

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

Yes ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Yes^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^Yes^#gephebase-summary-title))

Molecular Type

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Coding^#gephebase-summary-title))

Aberration Type

SNP ([https://www.gephebase.org/search-criteria?/and+Aberration Type=^SNP^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=^SNP^#gephebase-summary-title))

SNP Coding Change

Nonsense

Molecular Details of the Mutation

W235\* due to G704A

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Main Reference

Diversity and molecular evolution of the RPS2 resistance gene in *Arabidopsis thaliana*. (1999) (<https://pubmed.ncbi.nlm.nih.gov/9874813>)

Authors

Caicedo AL; Schaal BA; Kunkel BN

Abstract

The RPS2 gene in *Arabidopsis thaliana* governs resistance to strains of the bacterial pathogen, *Pseudomonas syringae* pv. tomato, that express the avrRpt2 gene. The two loci are involved in a gene-for-gene interaction. Seventeen accessions of *A. thaliana* were sequenced to explore the diversity present in the coding region of the RPS2 locus. An unusually high level of nucleotide polymorphisms was found (1.26%), with nearly half of the observed polymorphisms resulting in amino acid changes in the RPS2 protein. Seven haplotypes (alleles) were identified and their evolutionary relationships deduced. Several of the alleles conferring resistance were found to be closely related, whereas susceptibility to disease was conferred by widely divergent alleles. The possibility of selection at the RPS2 locus is discussed.

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, RPP5, RPP8, RPS4, RPS5, RRS1, WRR4) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=^3702^/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title](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=^RPS2^/and+Taxon ID=^3702^/or+Gene Gephebase=^RPS2^/and+Taxon ID=^3702^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=^RPS2^/and+Taxon+ID=^3702^/or+Gene+Gephebase=^RPS2^/and+Taxon+ID=^3702^#gephebase-summary-title))

## EXTERNAL LINKS

## COMMENTS