

GEPHE SUMMARY

RPS2 (https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=RPS2^#gephebase-summary-title)	Gephebase Gene	GP00001012	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria/?and+Trait+Category=Physiology^#gephebase-summary-title)	Trait Category
Pathogen resistance (https://www.gephebase.org/search-criteria/?and+Trait=^Pathogen+resistance^#gephebase-summary-title)	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 (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=Intraspecific^#gephebase-summary-title)	Taxonomic Status

Taxon A	Latin Name	Taxon B	Latin Name
Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title)	Common Name	Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title)	Common Name
thale cress	Synonyms	thale cress	Synonyms
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Rank	thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Rank
species	Lineage	species	Lineage
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	NCBI Taxonomy ID	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	NCBI Taxonomy ID
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)	is Taxon A an Infraspecies?	3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	is Taxon B an Infraspecies?
Yes	Taxon A Description	Yes	Taxon B Description
Arabidopsis thaliana- Col0 - resistant	Arabidopsis thaliana- Zu-0-7 and Zu-0-8- sensitive		

GENOTYPIC CHANGE

RPS2	Generic Gene Name	UniProtKB Arabidopsis thaliana
DISEASE RESISTANCE PROTEIN RPS2; F20B18.200; F20B18_200; RESISTANT TO P. SYRINGAE 2; At4g26090	Synonyms	GenebankID or UniProtKB
3702.AT4G26090.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT4G26090.1)	String	AF487806 (https://www.ncbi.nlm.nih.gov/nuccore/AF487806)
Belongs to the disease resistance NB-LRR family.	Sequence Similarities	
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)	GO - Molecular Function	
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: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 ([#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^Yes))

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsense

Molecular Details of the Mutation

W235* due to G704A

Experimental Evidence

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

	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) ([#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^3702^/and+Trait=Pathogen+resistance/and+groupHaplotypes=true))

Related Haplotypes

1 ([#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^))

EXTERNAL LINKS

COMMENTS