

GEPHE SUMMARY

RPS2 (https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=RPS2^#gephebase-summary-title)	Gephebase Gene	GP00001011	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Trait Category			
Physiology (https://www.gephebase.org/search-criteria/?and+Trait+Category=Physiology^#gephebase-summary-title)	Trait		
Pathogen resistance (https://www.gephebase.org/search-criteria/?and+Trait=^Pathogen+resistance^#gephebase-summary-title)	Trait State in Taxon A		
Arabidopsis thaliana- Col0 - resistant	Trait State in Taxon B		
Arabidopsis thaliana (sensitive)	Ancestral State		
Taxon A	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title)			
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)		Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#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
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage
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)	NCBI Taxonomy ID	3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Arabidopsis thaliana- Col0 - resistant		Arabidopsis thaliana (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/nucore/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 ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=%5EYes%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive%20Null=%5EYes%5E#gephebase-summary-title))

Molecular Type

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%5ECoding%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular%20Type=%5ECoding%5E#gephebase-summary-title))

Aberration Type

Insertion ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%5CInsertion%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration%20Type=%5CInsertion%5E#gephebase-summary-title))

Insertion Size

10-99 bp

Molecular Details of the Mutation

10bp insertion close to the 5' end causing a frameshift

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%5CLinkage%20Mapping%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental%20Evidence=%5CLinkage%20Mapping%5E#gephebase-summary-title))

Main Reference

The *A. thaliana* disease resistance gene RPS2 encodes a protein containing a nucleotide-binding site and leucine-rich repeats. (1994) (<https://pubmed.ncbi.nlm.nih.gov/7923358>)

Authors

Mindrinos M; Katagiri F; Yu GL; Ausubel FM

Abstract

In plants, resistance to a pathogen is frequently correlated with a genetically defined interaction between a plant resistance gene and a corresponding pathogen avirulence gene. A simple model explains these gene-for-gene interactions: avirulence gene products generate signals (ligands), and resistance genes encode cognate receptors. The *A. thaliana* RPS2 gene confers resistance to the bacterial pathogen *P. syringae* carrying the avirulence gene *avrRpt2*. A map-based positional cloning strategy was used to identify RPS2. The identification of RPS2 was verified using a newly developed transient assay for RPS2 function and by genetic complementation in transgenic plants. RPS2 encodes a novel 105 kDa protein containing a leucine zipper, a nucleotide-binding site, and 14 imperfect leucine-rich repeats.

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=%5E3702%5E/and+Trait=Pathogen%5Eresistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon%20ID=%5E3702%5E/and+Trait=Pathogen%5Eresistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=%5CRPS2%5E/and+Taxon ID=%5E3702%5E/or+Gene Gephebase=%5CRPS2%5E/and+Taxon ID=%5E3702%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene%20Gephebase=%5CRPS2%5E/and+Taxon%20ID=%5E3702%5E/or+Gene%20Gephebase=%5CRPS2%5E/and+Taxon%20ID=%5E3702%5E#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS