

GEPHE SUMMARY

<p>RPS4 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase~RPS4~#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001013</p> <p>Martin</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

<p>Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category~Physiology~#gephebase-summary-title)</p> <p>Pathogen resistance (https://www.gephebase.org/search-criteria?/and+Trait~Pathogen+resistance~#gephebase-summary-title)</p> <p>Arabidopsis thaliana</p> <p>Arabidopsis thaliana</p> <p>Taxon A</p> <p>Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status~Intraspecific~#gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Arabidopsis thaliana</p> <p>Arabidopsis thaliana</p> <p>Taxon B</p> <p>Arabidopsis thaliana</p> <p>thale cress</p> <p>thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress</p> <p>species</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis</p> <p>Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)</p> <p>3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)</p> <p>is Taxon A an Infrappecies?</p> <p>No</p>	<p>Latin Name</p> <p>Latin Name</p> <p>Common Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Synonyms</p> <p>Rank</p> <p>Rank</p> <p>Lineage</p> <p>Lineage</p> <p>Parent</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Infrappecies?</p> <p>No</p>
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GENOTYPIC CHANGE

<p>RPS4</p> <p>DISEASE RESISTANCE PROTEIN RPS4; K9E15.1; K9E15_1; RESISTANT TO P. SYRINGAE 4; At5g45250</p> <p>3702.AT5G45250.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G45250.1)</p> <p>Belongs to the disease resistance TIR-NB-LRR family.</p> <p>GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)</p> <p>GO:0042802 : identical protein binding (https://www.ebi.ac.uk/QuickGO/term/GO:0042802)</p> <p>GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p>	<p>UniProtKB Arabidopsis thaliana</p> <p>Q9XGM3 (http://www.uniprot.org/uniprot/Q9XGM3)</p> <p>GenebankID or UniProtKB</p> <p>AB020744 (https://www.ncbi.nlm.nih.gov/nucleotide/AB020744)</p>
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GO:0042742 : defense response to bacterium
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042742>)
GO:0009870 : defense response signaling pathway, resistance gene-dependent
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009870>)
GO:0009626 : plant-type hypersensitive response
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009626>)

GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)
GO:0016020 : membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0016020>)
GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)
GO:0012505 : endomembrane system
(<https://www.ebi.ac.uk/QuickGO/term/GO:0012505>)

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
Deletion ([https://www.gephebase.org/search-criteria?/and+Aberration Type=~Deletion^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Deletion^#gephebase-summary-title))
Deletion Size
1-9 bp
Molecular Details of the Mutation
5bp deletion resulting in frameshift
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))
Main Reference
RRS1 and RPS4 provide a dual Resistance-gene system against fungal and bacterial pathogens. (2009) (<https://pubmed.ncbi.nlm.nih.gov/19519800>)
Authors
Narusaka M; Shirasu K; Noutoshi Y; Kubo Y; Shiraiishi T; Iwabuchi M; Narusaka Y
Abstract
Colletotrichum higginsianum is a fungal pathogen that infects a wide variety of cruciferous plants, causing important crop losses. We have used map-based cloning and natural variation analysis of 19 Arabidopsis ecotypes to identify a dominant resistance locus against C. higginsianum. This locus named RCH2 (for recognition of C. higginsianum) maps in an extensive cluster of disease-resistance loci known as MRC-J in the Arabidopsis ecotype Ws-0. By analyzing natural variations within the MRC-J region, we found that alleles of RRS1 (resistance to Ralstonia solanacearum 1) from susceptible ecotypes contain single nucleotide polymorphisms that may affect the encoded protein. Consistent with this finding, two susceptible mutants, rrs1-1 and rrs1-2, were identified by screening a T-DNA-tagged mutant library for the loss of resistance to C. higginsianum. The screening identified an additional susceptible mutant (rps4-21) that has a 5-bp deletion in the neighboring gene, RPS4-Ws, which is a well-characterized R gene that provides resistance to Pseudomonas syringae pv. tomato strain DC3000 expressing avrRps4 (Pst-avrRps4). The rps4-21/rrs1-1 double mutant exhibited similar levels of susceptibility to C. higginsianum as the single mutants. We also found that both RRS1 and RPS4 are required for resistance to R. solanacearum and Pst-avrRps4. Thus, RPS4-Ws and RRS1-Ws function as a dual resistance gene system that prevents infection by three distinct pathogens.
Additional References
RRS1 and RPS4 provide a dual Resistance-gene system against fungal and bacterial pathogens. (2009) (<https://pubmed.ncbi.nlm.nih.gov/19519800>)

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, RPS2, 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
No matches found.

EXTERNAL LINKS

COMMENTS