

GEPHE SUMMARY

RPS5 (https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=RPS5^#gephebase-summary-title)	Gephebase Gene	GP00001014	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- Ler-0 sensitive	Ancestral State		
Data not curated	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title)			
Taxon A		Taxon B	
Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title)	Latin Name	Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title)	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; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; 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- Ler-0 sensitive	

GENOTYPIC CHANGE

RPS5	Generic Gene Name	UniProtKB Arabidopsis thaliana O64973 (http://www.uniprot.org/uniprot/O64973)
DISEASE RESISTANCE PROTEIN RPS5; RESISTANT TO P. SYRINGAE 5; T28K15.5; T28K15_5; At1g12220	Synonyms	GenebankID or UniProtKB U97221 (https://www.ncbi.nlm.nih.gov/nuccore/U97221)
3702.AT1G12220.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT1G12220.1)	String	
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:0042802 : identical protein binding (https://www.ebi.ac.uk/QuickGO/term/GO:0042802)		

GO:0000166 : nucleotide binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0000166>)
GO:0043531 : ADP binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0043531>)
GO:0038023 : signaling receptor activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0038023>)

GO - Biological Process

GO:0006952 : defense response (<https://www.ebi.ac.uk/QuickGO/term/GO:0006952>)
GO:0008219 : cell death (<https://www.ebi.ac.uk/QuickGO/term/GO:0008219>)
GO:0009816 : defense response to bacterium, incompatible interaction
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009816>)
GO:0009626 : plant-type hypersensitive response
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009626>)

GO - Cellular Component

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

Presumptive Null

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

Molecular Type

Gene Loss (<https://www.gephebase.org/search-criteria?/and+Molecular Type=^Gene Loss#gephebase-summary-title>)

Aberration Type

Complex Change (<https://www.gephebase.org/search-criteria?/and+Aberration Type=^Complex Change#gephebase-summary-title>)

Molecular Details of the Mutation

Deletion

Experimental Evidence

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

Main Reference

A new Ac-like transposon of Arabidopsis is associated with a deletion of the RPS5 disease resistance gene. (1999) (<https://pubmed.ncbi.nlm.nih.gov/10101179>)

Authors

Henk AD; Warren RF; Innes RW

Abstract

The RPS5 and RFL1 disease resistance genes of Arabidopsis ecotype Col-0 are oriented in tandem and are separated by 1.4 kb. The Ler-0 ecotype contains RFL1, but lacks RPS5. Sequence analysis of the RPS5 deletion region in Ler-0 revealed the presence of an Ac-like transposable element, which we have designated Tag2. Southern hybridization analysis of six Arabidopsis ecotypes revealed 4-11 Tag2-homologous sequences in each, indicating that this element is ubiquitous in Arabidopsis and has been active in recent evolutionary time. The Tag2 insertion adjacent to RFL1 was unique to the Ler-0 ecotype, however, and was not present in two other ecotypes that lack RPS5. DNA sequence from the latter ecotypes lacked a transposon footprint, suggesting that insertion of Tag2 occurred after the initial deletion of RPS5. The deletion breakpoint contained a 192-bp insertion that displayed hallmarks of a nonhomologous DNA end-joining event. We conclude that loss of RPS5 was caused by a double-strand break and subsequent repair, and cannot be attributed to unequal crossing over between resistance gene homologs.

Additional References

Genome-wide association study of 107 phenotypes in Arabidopsis thaliana inbred lines. (2010) (<https://pubmed.ncbi.nlm.nih.gov/20336072>)

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, RPS4, 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

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