

## GEPHE SUMMARY

RLM3 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+RLM3+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+RLM3+gephebase-summary-title</a> )	Gephebase Gene	GP00000993	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+resistance+gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+resistance+gephebase-summary-title</a> )	Trait		
Arabidopsis thaliana- Col0 - resistant	Trait State in Taxon A		
Arabidopsis thaliana- An-1 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- An-1 sensitive	Taxon B Description

## GENOTYPIC CHANGE

RLM3	Generic Gene Name	Q9FT77 ( <a href="http://www.uniprot.org/uniprot/Q9FT77">http://www.uniprot.org/uniprot/Q9FT77</a> )	UniProtKB Arabidopsis thaliana
DL4525W; FCAALL.324; RESISTANCE TO LEPTOSPHAERIA MACULANS 3; At4g16990; dl4525w	Synonyms	AJ299417 ( <a href="https://www.ncbi.nlm.nih.gov/nucore/AJ299417">https://www.ncbi.nlm.nih.gov/nucore/AJ299417</a> )	GenebankID or UniProtKB
3702.AT4G16990.2 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G16990.2">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G16990.2</a> )	String		
-	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:0007165 : signal transduction (<https://www.ebi.ac.uk/QuickGO/term/GO:0007165>)  
GO:0009817 : defense response to fungus, incompatible interaction  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009817>)  
GO:2000071 : regulation of defense response by callose deposition  
(<https://www.ebi.ac.uk/QuickGO/term/GO:2000071>)

GO - Cellular Component

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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)) Presumptive Null

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

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

gene deletion Molecular Details of the Mutation

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)) Experimental Evidence

RLM3, a TIR domain encoding gene involved in broad-range immunity of Arabidopsis to necrotrophic fungal pathogens. (2008) (<https://pubmed.ncbi.nlm.nih.gov/18397376>) Main Reference

Staal J; Kaliff M; Dewaele E; Persson M; Dixelius C Authors

Abstract

Here, we describe the rapid cloning of a plant gene, *Leptosphaeria maculans* 3 (RLM3(Col)), which encodes a putative Toll interleukin-1 receptor-nucleotide binding (TIR-NB) class protein, which is involved in defence against the fungal pathogen *L. maculans* and against three other necrotrophic fungi. We have, through microarray-based case control bulk segregant comparisons of transcriptomes in pools of Col-0 x An-1 progeny, identified the absence of a locus that causes susceptibility in An-1. The significance of this locus on chromosome 4 for *L. maculans* resistance was supported by PCR-based mapping, and denoted resistance to RLM3(Col). Differential susceptible phenotypes in four independent T-DNA insertion lines support the hypothesis that At4g16990 is required for RLM3(Col) function. The mutants in RLM3(Col) also exhibited an enhanced susceptibility to *Botrytis cinerea*, *Alternaria brassicicola* and *Alternaria brassicae*. Complementation of An-1 and T-DNA mutants using overexpression of a short transcript lacking the NB-ARC domain, or a genomic clone, restored resistance to all necrotrophic fungi. The elevated expression of RLM3(Col) on *B. cinerea*-susceptible mutants further suggested convergence in signalling and gene regulation between defence against *B. cinerea* and *L. maculans*. In the case of *L. maculans*, RLM3(Col) is required for efficient callose deposition downstream of RLM1(Col).

Additional References

## RELATED GEPHE

20 (ACD6 = ACCELERATED CELL DEATH 6, ERECTA, RAC1, Resistance related Kinase 1 (RKS1), RLM1, RLM2 cluster, RPM1, RPP1-WsA, RPP1-WsB, RPP1-WsC, RPP13, RPP2A-RPP2B, RPP4, RPP5, RPP8, RPS2, 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 Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS