

|                                                                                                                                                                                                                |                |            |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|--------------|
| RAC1 ( <a href="https://www.gephebase.org/search-criteria?/and+GeneGephebase=~RAC1~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+GeneGephebase=~RAC1~#gephebase-summary-title</a> ) | Gephebase Gene | GP00000949 | GepheID      |
| Published                                                                                                                                                                                                      | Entry Status   | Martin     | Main curator |

|                                                                                                                                                                                                                                                                                    |                             |                                                                                                                                                                                                                                                                                    |                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Physiology ( <a href="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=~Pathogen+resistance">#gephebase-summary-title</a> )                                                                                                                                           |                             | Trait                                                                                                                                                                                                                                                                              |                             |
| Arabidopsis thaliana- Col0 - sensitive                                                                                                                                                                                                                                             |                             | Trait State in Taxon A                                                                                                                                                                                                                                                             |                             |
| Arabidopsis thaliana- Ksk-1 - resistant                                                                                                                                                                                                                                            |                             | 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</a> )                                                                                                                                            |                             | Taxonomic Status                                                                                                                                                                                                                                                                   |                             |
| Taxon A                                                                                                                                                                                                                                                                            |                             | Taxon B                                                                                                                                                                                                                                                                            |                             |
| Arabidopsis thaliana<br>( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana">#gephebase-summary-title</a> )                                                                                                                         | Latin Name                  | Arabidopsis thaliana<br>( <a href="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)<br>( <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)<br>( <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<br>( <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<br>( <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 - sensitive                                                                                                                                                                                                                                             | Taxon A Description         | Arabidopsis thaliana- Ksk-1 - resistant                                                                                                                                                                                                                                            | Taxon B Description         |

| ARAC3                                                                                                                                                                                                                | Generic Gene Name     | UniProtKB Arabidopsis thaliana                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                      | Synonyms              | Q38912 ( <a href="http://www.uniprot.org/uniprot/Q38912">http://www.uniprot.org/uniprot/Q38912</a> )                   |
| ARAC3; ATROP6; M4E13.80; M4E13_80; RAC-like 3; RHO-RELATED PROTEIN FROM PLANTS 6; RHO1P5; ROP6; RAC1; At4g35020                                                                                                      |                       | GenebankID or UniProtKB                                                                                                |
|                                                                                                                                                                                                                      | String                | AF031427 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/AF031427">https://www.ncbi.nlm.nih.gov/nuccore/AF031427</a> ) |
| 3702.AT4G35020.1<br>( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT4G35020.1">http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT4G35020.1</a> ) |                       |                                                                                                                        |
|                                                                                                                                                                                                                      | Sequence Similarities |                                                                                                                        |
| Belongs to the small GTPase superfamily. Rho family.                                                                                                                                                                 |                       |                                                                                                                        |
| GO - Molecular Function                                                                                                                                                                                              |                       |                                                                                                                        |
| GO:0019901 : protein kinase binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0019901">https://www.ebi.ac.uk/QuickGO/term/GO:0019901</a> )                                                                    |                       |                                                                                                                        |
| GO:0005525 : GTP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005525">https://www.ebi.ac.uk/QuickGO/term/GO:0005525</a> )                                                                               |                       |                                                                                                                        |
| GO:0003924 : GTPase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0003924">https://www.ebi.ac.uk/QuickGO/term/GO:0003924</a> )                                                                           |                       |                                                                                                                        |

GO:0019003 : GDP binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0019003>)  
GO - Biological Process

GO:0009734 : auxin-activated signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009734>)  
GO:0009958 : positive gravitropism (<https://www.ebi.ac.uk/QuickGO/term/GO:0009958>)  
GO:0007015 : actin filament organization  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007015>)  
GO:0000902 : cell morphogenesis (<https://www.ebi.ac.uk/QuickGO/term/GO:0000902>)  
GO:0031532 : actin cytoskeleton reorganization  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0031532>)  
GO:0030036 : actin cytoskeleton organization  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0030036>)  
GO:0016477 : cell migration (<https://www.ebi.ac.uk/QuickGO/term/GO:0016477>)  
GO:0030838 : positive regulation of actin filament polymerization  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0030838>)  
GO:0010928 : regulation of auxin mediated signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010928>)  
GO:0007266 : Rho protein signal transduction  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007266>)

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>)  
GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)  
GO:0005730 : nucleolus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005730>)  
GO:0005819 : spindle (<https://www.ebi.ac.uk/QuickGO/term/GO:0005819>)  
GO:0030427 : site of polarized growth  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0030427>)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown~#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Presumptive Null                  |
| Coding ( <a href="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</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Molecular Type                    |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown~#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Aberration Type                   |
| unknown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Molecular Details of the Mutation |
| Linkage Mapping ( <a href="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</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Experimental Evidence             |
| The arabidopsis TIR-NB-LRR gene RAC1 confers resistance to Albugo candida (white rust) and is dependent on EDS1 but not PAD4. (2004) ( <a href="https://pubmed.ncbi.nlm.nih.gov/15242165">https://pubmed.ncbi.nlm.nih.gov/15242165</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Main Reference                    |
| Borhan MH; Holub EB; Beynon JL; Rozwadowski K; Rimmer SR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Authors                           |
| Resistance to Albugo candida isolate Acem1 is conferred by a dominant gene, RAC1, in accession Ksk-1 of Arabidopsis thaliana. This gene was isolated by positional cloning and is a member of the Drosophila toll and mammalian interleukin-1 receptor (TIR) nucleotide-binding site leucine-rich repeat (NB-LRR) class of plant resistance genes. Strong identity of the TIR and NB domains was observed between the predicted proteins encoded by the Ksk-1 allele and the allele from an Acem1-susceptible accession Columbia (Col) (99 and 98%, respectively). However, major differences between the two predicted proteins occur within the LRR domain and mainly are confined to the beta-strand/beta-turn structure of the LRR. Both proteins contain 14 imperfect repeats. RAC1-mediated resistance was analyzed further using mutations in defense regulation, including: pad4-1, eds1-1, and NahG, in the presence of the RAC1 allele from Ksk-1. White rust resistance was completely abolished by eds1-1 but was not affected by either pad4-1 or NahG. | Abstract                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Additional References             |

RELATED GEPHE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 20 (ACD6 = ACCELERATED CELL DEATH 6, ERECTA, Resistance related Kinase 1 (RKS1), RLM1, RLM2 cluster, RLM3, RPM1, RPP1-WsA, RPP1-WsB, RPP1-WsC, RPP13, RPP2A-RPP2B, RPP4, RPP5, RPP8, RPS2, RPS4, RPS5, RRS1, WRR4) ( <a href="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</a> ) | Related Genes      |
| No matches found.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Related Haplotypes |

EXTERNAL LINKS

COMMENTS

