

GEPHE SUMMARY

SRF3 (https://www.gephebase.org/search-criteria/?and+Gene Gephebase=%SRF3%#gephebase-summary-title)	Gephebase Gene	GP00001073	GepheID
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category
Physiology (https://www.gephebase.org/search-criteria/?and+Trait+Category=%Physiology%#gephebase-summary-title)	Trait
Hybrid Incompatibility (https://www.gephebase.org/search-criteria/?and+Trait=%Hybrid+Incompatibility%#gephebase-summary-title)	Trait State in Taxon A
Arabidopsis thaliana - Ler and Col (Northern Europe) "compatible"	Trait State in Taxon B
Arabidopsis thaliana - Kond (Central Asia) "incompatible" [Hybrids with Ler show a stong growth defect at 14C]	Ancestral State
Unknown	Taxonomic Status
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=%Intraspecific%#gephebase-summary-title)	

Taxon A		Taxon B	
Latin Name		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; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viridiplantae; 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
Yes	is Taxon A an Infraspecies?	Yes	is Taxon B an Infraspecies?
Taxon A Description		Taxon B Description	
Arabidopsis thaliana - Ler and Col (Northern Europe) "compatible"		Arabidopsis thaliana - Kond (Central Asia) "incompatible" [Hybrids with Ler show a stong growth defect at 14C)	

GENOTYPIC CHANGE

SRF3	Generic Gene Name	UniProtKB Arabidopsis thaliana
F4C21.35; F4C21_35; STRUBBLE1G-receptor family 3; At4g03390	Synonyms	GenebankID or UniProtKB
3702.AT4G03390.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT4G03390.1)	String	0
	Sequence Similarities	
Belongs to the protein kinase superfamily. Ser/Thr protein kinase family.		
	GO - Molecular Function	
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)		
GO:0004675 : transmembrane receptor protein serine/threonine kinase activity		

(<https://www.ebi.ac.uk/QuickGO/term/GO:0004675>)

GO - Biological Process

GO:0006468 : protein phosphorylation

(<https://www.ebi.ac.uk/QuickGO/term/GO:0006468>)

GO:0007623 : circadian rhythm (<https://www.ebi.ac.uk/QuickGO/term/GO:0007623>)

GO - Cellular Component

GO:0016021 : integral component of membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

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

Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^No^#gephebase-summary-title>)

Molecular Type

Unknown (<https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Unknown^#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

Complex haplotype

Experimental Evidence

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

Main Reference

Natural variation at Strubbeg Receptor Kinase 3 drives immune-triggered incompatibilities between *Arabidopsis thaliana* accessions. (2010) (<https://pubmed.ncbi.nlm.nih.gov/21037570>)

Authors

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Abstract

Accumulation of genetic incompatibilities within species can lead to reproductive isolation and, potentially, speciation. In this study, we show that allelic variation at SRF3 (Strubbeg Receptor Family 3), encoding a receptor-like kinase, conditions the occurrence of incompatibility between *Arabidopsis thaliana* accessions. The geographical distribution of SRF3 alleles reveals that allelic forms causing epistatic incompatibility with a Landsberg erecta allele at the RPP1 resistance locus are present in *A. thaliana* accessions in central Asia. Incompatible SRF3 alleles condition for an enhanced early immune response to pathogens as compared to the resistance-dampening effect of compatible SRF3 forms in isogenic backgrounds. Variation in disease susceptibility suggests a basis for the molecular patterns of a recent selective sweep detected at the SRF3 locus in central Asian populations.

Additional References

Analysis of a plant complex resistance gene locus underlying immune-related hybrid incompatibility and its occurrence in nature. (2014) (<https://pubmed.ncbi.nlm.nih.gov/25503786>)

RELATED GEPHE

Related Genes

2 (AT5G41740/AT5G41750, RPP1) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=^3702^/and+Trait=Hybrid+Incompatibility/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

1 (<https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=^SRF3^/and+Taxon+ID=^3702^/or+Gene+Gephebase=^SRF3^/and+Taxon+ID=^3702^#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS

@Epistasis - Recessive incompatibility trait ; epistatic interaction with RPP1 resistance locus