

GEPHE SUMMARY

	Gephebase Gene	GephelD
AT5G41740/AT5G41750 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^AT5G41740/AT5G41750^#gephebase-summary-title)	GP00000105	Main curator
	Entry Status	Martin
Published		

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)	Trait		
Hybrid incompatibility (auto-immune necrosis) (https://www.gephebase.org/search-criteria?/and+Trait=^Hybrid+incompatibility+(auto-immune+necrosis)^#gephebase-summary-title)	Trait State in Taxon A		
Arabidopsis thaliana- Uk1	Trait State in Taxon B		
Arabidopsis thaliana- Uk3	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; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; 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?
Arabidopsis thaliana- Uk1	Taxon A Description	Arabidopsis thaliana- Uk3	Taxon B Description

GENOTYPIC CHANGE

MUF8.2	Generic Gene Name	UniProtKB Arabidopsis thaliana
MUF8.2; MUF8_2; At5g41740	Synonyms	GenebankID or UniProtKB
3702.AT5G41740.2 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT5G41740.2)	String	834177 (https://www.ncbi.nlm.nih.gov/nuccore/834177)
-	Sequence Similarities	
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531) GO - Biological Process	GO - Molecular Function	
GO:0007165 : signal transduction (https://www.ebi.ac.uk/QuickGO/term/GO:0007165)		

	Presumptive Null
Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^Unknown^#gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Unknown^#gephebase-summary-title)	Aberration Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration+Type=^Unknown^#gephebase-summary-title)	Molecular Details of the Mutation
unknown	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=^Linkage+Mapping^#gephebase-summary-title)	Main Reference
Autoimmune response as a mechanism for a Dobzhansky-Muller-type incompatibility syndrome in plants. (2007) (https://pubmed.ncbi.nlm.nih.gov/17803357)	Authors
Bomblies K; Lempe J; Epple P; Warthmann N; Lanz C; Dangl JL; Weigel D	Abstract
Epistatic interactions between genes are a major factor in evolution. Hybrid necrosis is an example of a deleterious phenotype caused by epistatic interactions that is observed in many intra- and interspecific plant hybrids. A large number of hybrid necrosis cases share phenotypic similarities, suggesting a common underlying mechanism across a wide range of plant species. Here, we report that approximately 2% of intraspecific crosses in <i>Arabidopsis thaliana</i> yield F1 progeny that express necrosis when grown under conditions typical of their natural habitats. We show that several independent cases result from epistatic interactions that trigger autoimmune-like responses. In at least one case, an allele of an NB-LRR disease resistance gene homolog is both necessary and sufficient for the induction of hybrid necrosis, when combined with a specific allele at a second locus. The <i>A. thaliana</i> cases provide insights into the molecular causes of hybrid necrosis, and serve as a model for further investigation of intra- and interspecific incompatibilities caused by a simple epistatic interaction. Moreover, our finding that plant immune-system genes are involved in hybrid necrosis suggests that selective pressures related to host-pathogen conflict might cause the evolution of gene flow barriers in plants.	Additional References

RELATED GEPHE

2 (RPP1, SRF3) (https://www.gephebase.org/search-criteria?/or+Taxon+ID=^3702^/and+Trait=Hybrid+incompatibility/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
	Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@Epistasis - Cluster of paralogous genes