

GEPHE SUMMARY

Mi1.2 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=*Mi1.2*#gephebase-summary-title)	Gephebase Gene	GP00000655	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (#gephebase-summary-title)		Trait Category	
Pathogen resistance (parasite) (#gephebase-summary-title)		Trait	
Lycopersicon peruvianum - resistant		Trait State in Taxon A	
Lycopersicon esculentum - sensitive		Trait State in Taxon B	
Data not curated		Ancestral State	
Intraspecific (#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Latin Name		Latin Name	
Solanum peruvianum (#gephebase-summary-title)		Solanum lycopersicum (#gephebase-summary-title)	
Common Name		Common Name	
-		tomato	
Synonyms		Synonyms	
Lycopersicon peruvianum; Solanum peruvianum var. dentatum; Peruvian tomato; Lycopersicon peruvianum (L.) Mill.; Solanum peruvianum L.		Lycopersicon esculentum var. esculentum; Solanum esculentum; Solanum lycopersicum var. humboldtii; tomato; Lycopersicon esculentum Mill.; Solanum esculentum Dunal; Solanum lycopersicum L.; Lycopersicon lycopersicum; Lycopersicum esculentum; Solanum lycopersicon	
Rank		Rank	
species		species	
Lineage		Lineage	
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon	
Parent		Parent	
Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)		Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)	
NCBI Taxonomy ID		NCBI Taxonomy ID	
4082 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4082)		4081 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4081)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No		No	

GENOTYPIC CHANGE

Mi-1.2	Generic Gene Name	O81137 (http://www.uniprot.org/uniprot/O81137)	UniProtKB Solanum lycopersicum
-	Synonyms	AF039682 (https://www.ncbi.nlm.nih.gov/nuccore/AF039682)	GenebankID or UniProtKB
-	String		
	Sequence Similarities		
Belongs to the disease resistance NB-LRR family.			
	GO - Molecular Function		
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)			
	GO - Biological Process		
-			
	GO - Cellular Component		
-			
			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
Not identified	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping^#gephebase-summary-title)	Main Reference
The nematode resistance gene Mi of tomato confers resistance against the potato aphid. (1998) (https://pubmed.ncbi.nlm.nih.gov/9707547)	Authors
Rossi M; Goggin FL; Milligan SB; Kaloshian I; Ullman DE; Williamson VM	Abstract
Resistance against the aphid <i>Macrosiphum euphorbiae</i> previously was observed in tomato and attributed to a novel gene, designated Meu-1, tightly linked to the nematode resistance gene, Mi. Recent cloning of Mi allowed us to determine whether Meu-1 and Mi are the same gene. We show that Mi is expressed in leaves, that aphid resistance is isolate-specific, and that susceptible tomato transformed with Mi is resistant to the same aphid isolates as the original resistant lines. We conclude that Mi and Meu-1 are the same gene and that Mi mediates resistance against both aphids and nematodes, organisms belonging to different phyla. Mi is the first example of a plant resistance gene active against two such distantly related organisms. Furthermore, it is the first isolate-specific insect resistance gene to be cloned and belongs to the nucleotide-binding, leucine-rich repeat family of resistance genes.	
Additional References	
The nematode-resistance gene, Mi-1, is associated with an inverted chromosomal segment in susceptible compared to resistant tomato. (2004) (https://pubmed.ncbi.nlm.nih.gov/14963654)	
The tomato Mi-1 gene confers resistance to both root-knot nematodes and potato aphids. (1998) (https://pubmed.ncbi.nlm.nih.gov/9853621)	

RELATED GEPHE

1 (RCR3) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~4082^/and+Trait=Pathogen resistance/or+Taxon ID=~4081^/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS