

GEPHE SUMMARY

Mla (=Sr33/AetRGA1e) (https://www.gephebase.org/search-criteria/?and+Gene	Gephebase Gene	GP00000667	GephelD
Gephebase=^Mla (=Sr33/AetRGA1e)^#gephebase-summary-title)			Main curator
Published	Entry Status	Martin	

PHENOTYPIC CHANGE

Trait Category			
Physiology (https://www.gephebase.org/search-criteria/?and+Trait	Trait		
Category=^Physiology^#gephebase-summary-title)			
Pathogen resistance (https://www.gephebase.org/search-criteria/?and+Trait=^Pathogen	Trait State in Taxon A		
resistance^#gephebase-summary-title)			
Triticum aestivum - susceptible	Trait State in Taxon B		
Aegilops tauschii and resistant strains of domesticated Triticum aestivum	Ancestral State		
Data not curated	Taxonomic Status		
Domesticated (https://www.gephebase.org/search-criteria/?and+Taxonomic			
Status=^Domesticated^#gephebase-summary-title)			
Taxon A	Latin Name	Taxon B	Latin Name
Triticum aestivum (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Triticum+aestivum^#gephebase-summary-title)	Common Name	Aegilops tauschii (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Aegilops+tauschii^#gephebase-summary-title)	Common Name
bread wheat	Synonyms	-	Synonyms
Triticum aestivum subsp. aestivum; Triticum vulgare; bread wheat; Canadian hard winter wheat; common wheat; wheat; Triticum aestivum L.; Triticum vulgare L.; Triticum vulgare Vill., nom. illeg.; Tricum aestivum; Triticum aestivam; Triticum aestivum8		Aegilops squarrosa; Aegilops squarrosa subsp. squarrosa; Patropyrum tauschii; Patropyrum tauschii subsp. tauschii; Triticum aegilops; Triticum tauschii; Aegilops squarrosa auct., non L., 1753; Aegilops tauschii Coss.; Patropyrum tauschii (Coss.) A.Love; Triticum aegilops P.Beauv. ex Roem. & Schult.; Triticum tauschii (Coss.) Schmalh.; Aegilopsm tauschii	
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosavidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Triticum	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosavidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Aegilops	Lineage
Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4564)	Parent	Aegilops () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4480)	Parent
4565 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4565)	NCBI Taxonomy ID	37682 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 37682)	NCBI Taxonomy ID
-	is Taxon A an Infraspecies?	-	is Taxon B an Infraspecies?
No		No	

GENOTYPIC CHANGE

Mla1	Generic Gene Name	UniProtKB Hordeum vulgare subsp. vulgare Q7EXP5 (http://www.uniprot.org/uniprot/Q7EXP5)
-	Synonyms	GenebankID or UniProtKB
-	String	AGQ17386 (https://www.ncbi.nlm.nih.gov/nuccore/AGQ17386)
Belongs to the disease resistance NB-LRR family.	Sequence Similarities	
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
		Presumptive Null

Unknown ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown)

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

Unknown

Experimental Evidence

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

Main Reference

The gene Sr33, an ortholog of barley Mla genes, encodes resistance to wheat stem rust race Ug99. (2013) (<https://pubmed.ncbi.nlm.nih.gov/23811228>)

Authors

Periyannan S; Moore J; Ayliffe M; Bansal U; Wang X; Huang L; Deal K; Luo M; Kong X; Bariana H; Mago R; McIntosh R; Dodds P; Dvorak J; Lagudah E

Abstract

Wheat stem rust, caused by the fungus *Puccinia graminis* f. sp. *tritici*, afflicts bread wheat (*Triticum aestivum*). New virulent races collectively referred to as "Ug99" have emerged, which threaten global wheat production. The wheat gene Sr33, introgressed from the wild relative *Aegilops tauschii* into bread wheat, confers resistance to diverse stem rust races, including the Ug99 race group. We cloned Sr33, which encodes a coiled-coil, nucleotide-binding, leucine-rich repeat protein. Sr33 is orthologous to the barley (*Hordeum vulgare*) Mla mildew resistance genes that confer resistance to *Blumeria graminis* f. sp. *hordei*. The wheat Sr33 gene functions independently of RAR1, SGT1, and HSP90 chaperones. Haplotype analysis from diverse collections of Ae. *tauschii* placed the origin of Sr33 resistance near the southern coast of the Caspian Sea.

Additional References

RELATED GEPHE

Related Genes

4 (Lr21, Lr67, Pm3, Pore-forming toxin-like (PFT)) ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/or+Taxon ID=^4565^/and+Trait=Pathogen resistance/or+Taxon ID=^37682^/and+Trait=Pathogen resistance/and+groupHaplotypes=true)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@Introgression