

GEPHE SUMMARY

	Gephebase Gene		GepheID
CNL9 (=Sr35) (<a +cnl9+(='Sr35)^#gephebase-summary-title"' href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+CNL9+(=Sr35)^#gephebase-summary-title)		GP00000189	
	Entry Status	Courtier	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category	
Physiology (<a +physiology^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology^#gephebase-summary-title)		
	Trait	
Pathogen resistance (<a +pathogen+resistance^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Pathogen+resistance^#gephebase-summary-title)		
	Trait State in Taxon A	
Triticum monococcum - susceptible		
	Trait State in Taxon B	
Triticum monococcum - resistant		
	Ancestral State	
Data not curated		
	Taxonomic Status	
Domesticated (<a +domesticated^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated^#gephebase-summary-title)		

Taxon A	Latin Name	Taxon B	Latin Name
Triticum monococcum (<a +triticum+monococcum^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Triticum+monococcum^#gephebase-summary-title)		Triticum monococcum (<a +triticum+monococcum^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Triticum+monococcum^#gephebase-summary-title)	
-	Common Name	-	Common Name
	Synonyms		Synonyms
Crithodium monococcum; einkorn wheat; one-grained wheat; small spelt; Crithodium monococcum (L.) A.Love; Triticum monococcum L.		Crithodium monococcum; einkorn wheat; one-grained wheat; small spelt; Crithodium monococcum (L.) A.Love; Triticum monococcum L.	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Triticum		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Triticinae; Triticum	
	Parent		Parent
Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4564)		Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4564)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
4568 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4568)		4568 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4568)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Triticum monococcum subsp. monococcum
Sr35		S5ABD6 (http://www.uniprot.org/uniprot/S5ABD6)
	Synonyms	GenebankID or UniProtKB
-		AGP75918 (https://www.ncbi.nlm.nih.gov/nucleotide/AGP75918)
	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	
-		
No (<a +no^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=">https://www.gephebase.org/search-criteria?/and+Presumptive+Null="+No^#gephebase-summary-title)		Presumptive Null
		Molecular Type

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

Coding variation in the LRR domain - a spontaneous gene conversion between CNL4 and CNL9 is the most parsimonious explanation for the three linked mutations in CNL9

Experimental Evidence

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

Main Reference

Identification of wheat gene Sr35 that confers resistance to Ug99 stem rust race group. (2013) (<https://pubmed.ncbi.nlm.nih.gov/23811222>)

Authors

Saintenac C; Zhang W; Salcedo A; Rouse MN; Trick HN; Akhunov E; Dubcovsky J

Abstract

Wheat stem rust, caused by *Puccinia graminis* f. sp. *tritici* (Pgt), is a devastating disease that can cause severe yield losses. A previously uncharacterized Pgt race, designated Ug99, has overcome most of the widely used resistance genes and is threatening major wheat production areas. Here, we demonstrate that the Sr35 gene from *Triticum monococcum* is a coiled-coil, nucleotide-binding, leucine-rich repeat gene that confers near immunity to Ug99 and related races. This gene is absent in the A-genome diploid donor and in polyploid wheat but is effective when transferred from *T. monococcum* to polyploid wheat. The cloning of Sr35 opens the door to the use of biotechnological approaches to control this devastating disease and to analyses of the molecular interactions that define the wheat-rust pathosystem.

Additional References

RELATED GEPHE

Related Genes

1 (Mla1) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=~4568^/and+Trait=Pathogen+resistance/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@GeneConversion