

GEPHE SUMMARY

Pore-forming toxin-like (PFT) (https://www.gephebase.org/search-criteria?/and+Gene	Gephebase Gene	GephelD
Gephebase=^Pore-forming toxin-like (PFT)^#gephebase-summary-title)	GP00001563	Main curator
Published	Entry Status	Prigent

PHENOTYPIC CHANGE

Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+Trait	Trait	
Category=^Physiology^#gephebase-summary-title)	Trait State in Taxon A	
Pathogen resistance (Fusarium) (https://www.gephebase.org/search-criteria?/and+Trait =^Pathogen resistance (Fusarium)^#gephebase-summary-title)	Trait State in Taxon B	
Chinese Spring (CS) wheat susceptible	Ancestral State	
Chinese wheat cultivar Sumai3 resistant	Taxonomic Status	
Unknown		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic		
Status=^Intraspecific^#gephebase-summary-title)		
Taxon A		Taxon B
	Latin Name	Latin Name
Triticum aestivum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Triticum+aestivum^#gephebase-summary-title)		Triticum aestivum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Triticum+aestivum^#gephebase-summary-title)
bread wheat	Common Name	
	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		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
	Rank	
species	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
Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4564)	Parent	
4565 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4565)	NCBI Taxonomy ID	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?
Yes	Taxon A Description	Taxon B Description
Chinese Spring (CS) wheat susceptible		Chinese wheat cultivar Sumai3 resistant

GENOTYPIC CHANGE

-	Generic Gene Name	UniProtKB Triticum aestivum
-	Synonyms	GenebankID or UniProtKB
-	String	
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	
GO:0009405 : pathogenesis (https://www.ebi.ac.uk/QuickGO/term/GO:0009405)		
GO - Cellular Component		
GO:0005576 : extracellular region (https://www.ebi.ac.uk/QuickGO/term/GO:0005576)		

Yes (#gephebase-summary-title)	Presumptive Null
Gene Loss (#gephebase-summary-title)	Molecular Type
Indel (#gephebase-summary-title)	Aberration Type
10-100 kb	Indel Size
PFT gene is present and constitutively expressed in resistant line and absent in susceptible line	Molecular Details of the Mutation
Linkage Mapping (#gephebase-summary-title)	Experimental Evidence
Wheat Fhb1 encodes a chimeric lectin with agglutinin domains and a pore-forming toxin-like domain conferring resistance to Fusarium head blight. (2016) (https://pubmed.ncbi.nlm.nih.gov/27776114/)	Main Reference
Rawat N; Pumphrey MO; Liu S; Zhang X; Tiwari VK; Ando K; Trick HN; Bockus WW; Akhunov E; Anderson JA; Gill BS	Authors
Fusarium head blight (FHB), caused by <i>Fusarium graminearum</i> , is a devastating disease of wheat and barley that leads to reduced yield and mycotoxin contamination of grain, making it unfit for human consumption. FHB is a global problem, with outbreaks in the United States, Canada, Europe, Asia and South America. In the United States alone, total direct and secondary economic losses from 1993 to 2001 owing to FHB were estimated at \$7.67 billion. Fhb1 is the most consistently reported quantitative trait locus (QTL) for FHB resistance breeding. Here we report the map-based cloning of Fhb1 from a Chinese wheat cultivar Sumai 3. By mutation analysis, gene silencing and transgenic overexpression, we show that a pore-forming toxin-like (PFT) gene at Fhb1 confers FHB resistance. PFT is predicted to encode a chimeric lectin with two agglutinin domains and an ETX/MTX2 toxin domain. Our discovery identifies a new type of durable plant resistance gene conferring quantitative disease resistance to plants against <i>Fusarium</i> species.	Abstract
	Additional References

RELATED GEPHE

4 (Lr21, Lr67, Pm3, Mla (=Sr33/AetRGA1e)) (<a)<="" a="" href="https://www.gephebase.org/search-criteria?/or+Taxon ID=^4565/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title">	Related Genes
	Related Haplotypes
No matches found.	

EXTERNAL LINKS

COMMENTS

Considered null mutation when absent. PFT is predicted to encode a chimeric lectin with two agglutinin domains and an ETX/MTX2 toxin domain. Demonstrated by mutation analysis; gene silencing and transgenic overexpression