

GEPHE SUMMARY

TaPHS1 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~TaPHS1~#gephebase-summary-title)		Gephebase Gene	GP00001104	GepheID
Published		Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Physiology~#gephebase-summary-title)		Trait Category	
Seed dormancy (https://www.gephebase.org/search-criteria?/and+Trait=~Seeddormancy~#gephebase-summary-title)		Trait	
Triticum aestivum Rio Blanco RIL		Trait State in Taxon A	
Triticum aestivum Rio Blanco RIL		Trait State in Taxon B	
Data not curated		Ancestral State	
Domesticated (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Domesticated~#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Triticum aestivum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Triticumaestivum~#gephebase-summary-title)		Triticum aestivum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Triticumaestivum~#gephebase-summary-title)	
bread wheat		bread wheat	
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	
species		species	
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)		Triticum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4564)	
4565 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4565)		4565 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4565)	
Yes		Yes	
Triticum aestivum Rio Blanco RIL		Triticum aestivum Rio Blanco RIL	

GENOTYPIC CHANGE

PHS1		Generic Gene Name	UniProtKB Triticum aestivum
-		Synonyms	D2J2Y0 (http://www.uniprot.org/uniprot/D2J2Y0)
-		String	GenebankID or UniProtKB
-			GQ851928 (https://www.ncbi.nlm.nih.gov/nuccore/GQ851928)
-		Sequence Similarities	
-		GO - Molecular Function	
-		GO - Biological Process	
-		GO - Cellular Component	

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

-

Molecular Details of the Mutation

GT-to-AT transition at the 5_ donor splice site (position +646) of intron 3 AND Premature Stop Codon (position +666)

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Cloning and characterization of a critical regulator for preharvest sprouting in wheat. (2013) (<https://pubmed.ncbi.nlm.nih.gov/23821595>)

Main Reference

Liu S; Sehgal SK; Li J; Lin M; Trick HN; Yu J; Gill BS; Bai G

Authors

Sprouting of grains in mature spikes before harvest is a major problem in wheat (*Triticum aestivum*) production worldwide. We cloned and characterized a gene underlying a wheat quantitative trait locus (QTL) on the short arm of chromosome 3A for preharvest sprouting (PHS) resistance in white wheat using comparative mapping and map-based cloning. This gene, designated TaPHS1, is a wheat homolog of a MOTHER OF FLOWERING TIME (TaMFT)-like gene. RNA interference-mediated knockdown of the gene confirmed that TaPHS1 positively regulates PHS resistance. We discovered two causal mutations in TaPHS1 that jointly altered PHS resistance in wheat. One GT-to-AT mutation generates a mis-splicing site, and the other A-to-T mutation creates a premature stop codon that results in a truncated nonfunctional transcript. Association analysis of a set of wheat cultivars validated the role of the two mutations on PHS resistance. The molecular characterization of TaPHS1 is significant for expediting breeding for PHS resistance to protect grain yield and quality in wheat production.

Abstract

Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

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