

## GEPHE SUMMARY

	Gephebase Gene	GephelD
Shattering1 - Sh1 ( <a href="https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=^Shattering1 - Sh1^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=^Shattering1 - Sh1^#gephebase-summary-title</a> )	GP00001042	
	Entry Status	Main curator
Published	Martin	

## PHENOTYPIC CHANGE

	Trait Category	
Physiology ( <a href="https://www.gephebase.org/search-criteria/?and+Trait+Category=^Physiology^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Trait+Category=^Physiology^#gephebase-summary-title</a> )	Trait	
Seed shattering ( <a href="https://www.gephebase.org/search-criteria/?and+Trait=^Seed+shattering^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Trait=^Seed+shattering^#gephebase-summary-title</a> )	Trait State in Taxon A	
Sorghum virgatum - shattering	Trait State in Taxon B	
Sorghum bicolor; SC265-like non-shattering	Ancestral State	
Data not curated	Taxonomic Status	
Domesticated ( <a href="https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=^Domesticated^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=^Domesticated^#gephebase-summary-title</a> )		
Taxon A		Taxon B
Sorghum virgatum	Latin Name	Latin Name
( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Sorghum+virgatum^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Sorghum+virgatum^#gephebase-summary-title</a> )		
-	Common Name	Common Name
Sorghum bicolor var. virgatum; Sorghum bicolor var. virgatum (Hack.) de Wet & Huckabay, nom. inval.; Sorghum virgatum (Hack.) Stapf	Synonyms	Synonyms
species	Rank	Rank
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosavidae; commelinids; Poales; Poaceae; PACMAD clade; Panicoideae; Andropogonidae; Andropogoneae; Sorghinae; Sorghum	Lineage	Lineage
Sorghum () - (Rank: genus)	Parent	Parent
( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4557">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4557</a> )	NCBI Taxonomy ID	NCBI Taxonomy ID
1428165		
( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 1428165">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 1428165</a> )		
No	is Taxon A an Infraspecies?	is Taxon B an Infraspecies?
	Yes	Taxon B Description
		Sorghum bicolor; SC265-like non-shattering

## GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Oryza sativa subsp. japonica
YAB2		
FIL2; Os03g065000; LOC_Os03g44710	Synonyms	GenebankID or UniProtKB
39947.LOC_Os03g44710.1	0	
( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39947.LOC_Os03g44710.1">http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39947.LOC_Os03g44710.1</a> )	String	
Belongs to the YABBY family.	Sequence Similarities	
	GO - Molecular Function	
GO:0046872 : metal ion binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0046872">https://www.ebi.ac.uk/QuickGO/term/GO:0046872</a> )		
	GO - Biological Process	

GO:0007275 : multicellular organism development  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007275>)  
GO:0045165 : cell fate commitment (<https://www.ebi.ac.uk/QuickGO/term/GO:0045165>)  
GO:0010158 : abaxial cell fate specification  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010158>)

#### GO - Cellular Component

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^No^#gephebase-summary-title>)

Molecular Type

Coding (<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>)

SNP Coding Change

-

Molecular Details of the Mutation

GT-to-GG splice-site variant

Experimental Evidence

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

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

Parallel domestication of the Shattering1 genes in cereals. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22581231>)

Main Reference

Lin Z; Li X; Shannon LM; Yeh CT; Wang ML; Bai G; Peng Z; Li J; Trick HN; Clemente TE; Doebley J; Schnable PS; Tuinstra MR; Tesso TT; White F; Yu J

Authors

A key step during crop domestication is the loss of seed shattering. Here, we show that seed shattering in sorghum is controlled by a single gene, Shattering1 (Sh1), which encodes a YABBY transcription factor. Domesticated sorghums harbor three different mutations at the Sh1 locus. Variants at regulatory sites in the promoter and intronic regions lead to a low level of expression, a 2.2-kb deletion causes a truncated transcript that lacks exons 2 and 3, and a GT-to-GG splice-site variant in the intron 4 results in removal of the exon 4. The distributions of these non-shattering haplotypes among sorghum landraces suggest three independent origins. The function of the rice ortholog (OsSh1) was subsequently validated with a shattering-resistant mutant, and two maize orthologs (ZmSh1-1 and ZmSh1-5.1+ZmSh1-5.2) were verified with a large mapping population. Our results indicate that Sh1 genes for seed shattering were under parallel selection during sorghum, rice and maize domestication.

Abstract

Additional References

## RELATED GEPHE

### Related Genes

No matches found.

### Related Haplotypes

2 (<https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=^Shattering1-Sh1^/and+Taxon+ID=^1428165^/or+Gene+Gephebase=^Shattering1-Sh1^/and+Taxon+ID=^4558^#gephebase-summary-title>)

## EXTERNAL LINKS

## COMMENTS

@Splicing Verify Orthology