

## GEPHE SUMMARY

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

<p>Physiology (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Category+Physiology">#Gephebase=Physiology</a> #gephebase-summary-title)</p> <p>Seed shattering (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Seed+shattering">#Gephebase=Seed shattering</a> #gephebase-summary-title)</p> <p>Sorghum virgatum - shattering</p> <p>Sorghum bicolor; SC265-like non-shattering</p> <p>Data not curated</p> <p>Domesticated (<a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Domesticated">#Gephebase=Domesticated</a> #gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Latin Name</p> <p>Sorghum virgatum (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Sorghum+virgatum">#Gephebase=Taxon and Synonyms=Sorghum virgatum</a> #gephebase-summary-title)</p> <p>-</p> <p>Synonyms</p> <p>Sorghum bicolor var. virgatum; Sorghum bicolor var. virgatum (Hack.) de Wet &amp; Huckabay, nom. inval.; Sorghum virgatum (Hack.) Stapf</p> <p>Rank</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; PACMAD clade; Panicoideae; Andropogonodae; Andropogoneae; Sorghinae; Sorghum</p> <p>Parent</p> <p>Sorghum () - (Rank: genus) (<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>)</p> <p>NCBI Taxonomy ID</p> <p>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>)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Sorghum bicolor (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Sorghum+bicolor">#Gephebase=Taxon and Synonyms=Sorghum bicolor</a> #gephebase-summary-title)</p> <p>Common Name</p> <p>sorghum</p> <p>Synonyms</p> <p>Andropogon sorghum; Sorghum bicolor subsp. bicolor; Sorghum nervosum; Sorghum saccharatum; Sorghum vulgare; sorghum; broomcorn; milo; Andropogon sorghum (L.) Brot.; Sorghum bicolor (L.) Moench; Sorghum nervosum Besser ex Schult.; Sorghum saccharatum (L.) Moench; Sorghum vulgare Pers.; Sorghum bicolor milo; Sorghum_bicolor</p> <p>Rank</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliopsida; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; PACMAD clade; Panicoideae; Andropogonodae; Andropogoneae; Sorghinae; Sorghum</p> <p>Parent</p> <p>Sorghum () - (Rank: genus) (<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>)</p> <p>NCBI Taxonomy ID</p> <p>4558 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4558">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4558</a>)</p> <p>is Taxon B an Intraspecies?</p> <p>Yes</p> <p>Taxon B Description</p> <p>Sorghum bicolor; SC265-like non-shattering</p>
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## GENOTYPIC CHANGE

<p>YAB2</p> <p>FIL2; Os03g0650000; LOC_Os03g44710</p> <p>39947.LOC_Os03g44710.1 (<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>)</p> <p>Sequence Similarities</p> <p>Belongs to the YABBY family.</p> <p>GO - Molecular Function</p> <p>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>)</p> <p>GO - Biological Process</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p>	<p>UniProtKB Oryza sativa subsp. japonica</p> <p>Q10FZ7 (<a href="http://www.uniprot.org/uniprot/Q10FZ7">http://www.uniprot.org/uniprot/Q10FZ7</a>)</p> <p>GenebankID or UniProtKB</p> <p>()</p>
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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

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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	-	-	-

Main Reference

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

Authors

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

Abstract

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.

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