

GEPHE SUMMARY

	Gephebase Gene	GephelD
btr1 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=btr1^#gephebase-summary-title)	GP00001445	Main curator
Published	Entry Status	Prigent

PHENOTYPIC CHANGE

Trait Category	
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=Physiology^#gephebase-summary-title)	Trait
Seed shattering (grain dispersal ; retention) (https://www.gephebase.org/search-criteria?/and+Trait=^Seed shattering (grain dispersal ; retention)^#gephebase-summary-title)	
	Trait State in Taxon A
Wild barley with grain falling at maturity brittle form - cultivar Azumamugi (AZ) with wild type Brt1 allele	
	Trait State in Taxon B
barley with grain retained on the inflorescence at maturity non-brittle form - cultivar Kanto Nakate Gold (KNG)	
	Ancestral State
Taxon A	Taxonomic Status

Domesticated (<https://www.gephebase.org/search-criteria?/and+Taxonomic>
Status=Domesticated^#gephebase-summary-title)

Taxon A		Taxon B	
Latin Name		Latin Name	
Hordeum vulgare (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Hordeum vulgare^#gephebase-summary-title)		Hordeum vulgare subsp. vulgare (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Hordeum vulgare subsp. vulgare^#gephebase-summary-title)	
-	Common Name		
	Synonyms		
barley; Hordeum vulgare L.; Horedum vulgare		domesticated barley	
species	Rank		
	Lineage		
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Hordeinae; Hordeum		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Pooideae; Triticodae; Triticeae; Hordeinae; Hordeum; Hordeum vulgare	
	Parent		
Hordeum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4512)	NCBI Taxonomy ID	Hordeum vulgare () - (Rank: species) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4513)	NCBI Taxonomy ID
4513 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4513)		112509 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 112509)	
Yes	Taxon A Description		
Wild barley with grain falling at maturity brittle form - cultivar Azumamugi (AZ) with wild type Brt1 allele	is Taxon A an Infraspecies?		
		Yes	
			Taxon B Description
		Barley with grain retained on the inflorescence at maturity non-brittle form - cultivar Kanto Nakate Gold (KNG)	

GENOTYPIC CHANGE

BTR1	Generic Gene Name	UniProtKB Hordeum vulgare subsp. vulgare A0A0K1RJT0 (http://www.uniprot.org/uniprot/A0A0K1RJT0)
Btr1	Synonyms	GenebankID or UniProtKB KR813535 (https://www.ncbi.nlm.nih.gov/nuccore/KR813535)
-	String	
	Sequence Similarities	
	GO - Molecular Function	

GO - Biological Process

GO - Cellular Component

Yes (#gephebase-summary-title)	Presumptive Null
Coding (#gephebase-summary-title)	Molecular Type
Deletion (#gephebase-summary-title)	Aberration Type
1-9 bp	Deletion Size
1bp deletion at position 202 inducing a frameshift	Molecular Details of the Mutation
Linkage Mapping (#gephebase-summary-title)	Experimental Evidence
Evolution of the Grain Dispersal System in Barley. (2015) (https://pubmed.ncbi.nlm.nih.gov/26232223)	Main Reference
Pourkherandish M; Hensel G; Kilian B; Senthil N; Chen G; Sameri M; Azhagavel P; Sakuma S; Dhanagond S; Sharma R; Mascher M; Himmelbach A; Gottwald S; Nair SK; Tagiri A; Yukuihiro F; Nagamura Y; Kanamori H; Matsumoto T; Willcox G; Middleton CP; Wicker T; Walther A; Waugh R; Fincher GB; Stein N; Kumlehn J; Sato K; Komatsuda T	Authors
About 12,000 years ago in the Near East, humans began the transition from hunter-gathering to agriculture-based societies. Barley was a founder crop in this process, and the most important steps in its domestication were mutations in two adjacent, dominant, and complementary genes, through which grains were retained on the inflorescence at maturity, enabling effective harvesting. Independent recessive mutations in each of these genes caused cell wall thickening in a highly specific grain "disarticulation zone," converting the brittle floral axis (the rachis) of the wild-type into a tough, non-brittle form that promoted grain retention. By tracing the evolutionary history of allelic variation in both genes, we conclude that spatially and temporally independent selections of germplasm with a non-brittle rachis were made during the domestication of barley by farmers in the southern and northern regions of the Levant, actions that made a major contribution to the emergence of early agrarian societies.	Abstract

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Additional References

RELATED GEPHE

1 (btr2) ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/or+Taxon ID=^4513/and+Trait=Seed shattering/or+Taxon ID=^112509/and+Trait=Seed shattering/and+groupHaplotypes=true)

Related Genes

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS