

GEPHE SUMMARY

	Gephebase Gene		GepheID
BOLTING TIME CONTROL 1 (BvBTC1) (<a +bolting+time+control+1+(bvbtc1)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+BOLTING+TIME+CONTROL+1+(BvBTC1)+"#gephebase-summary-title)		GP00000155	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (<a +physiology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology+"#gephebase-summary-title)			
	Trait		
Flowering time (<a +flowering+time+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Flowering+time+"#gephebase-summary-title)			
	Trait State in Taxon A		
Beta vulgaris - annual			
	Trait State in Taxon B		
Beta vulgaris - biennal			
	Ancestral State		
Data not curated			
	Taxonomic Status		
Domesticated (<a +domesticated+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated+"#gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Beta vulgaris (<a +beta+vulgaris+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Beta+vulgaris+"#gephebase-summary-title)		Beta vulgaris (<a +beta+vulgaris+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Beta+vulgaris+"#gephebase-summary-title)	
	Common Name		Common Name
-		-	
	Synonyms		Synonyms
Beta altissima; beet; Beta altissima Steud.; Beta vulgaris L.		Beta altissima; beet; Beta altissima Steud.; Beta vulgaris L.	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; Caryophyllales; Chenopodiaceae; Betoideae; Beta		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; Caryophyllales; Chenopodiaceae; Betoideae; Beta	
	Parent		Parent
Beta () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3554)		Beta () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3554)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
161934 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=161934)		161934 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=161934)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Beta vulgaris subsp. vulgaris
BTC1		I3NN18 (http://www.uniprot.org/uniprot/I3NN18)	
	Synonyms		GenebankID or UniProtKB
-		ADV58931 (https://www.ncbi.nlm.nih.gov/nuccore/ADV58931)	
	String		
-			
	Sequence Similarities		
-			
	GO - Molecular Function		
-			
	GO - Biological Process		
GO:0000160 : phosphorelay signal transduction system (https://www.ebi.ac.uk/QuickGO/term/GO:0000160)			
	GO - Cellular Component		
GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)			
			Presumptive Null
Unknown (<a +unknown+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=">https://www.gephebase.org/search-criteria?/and+Presumptive+Null="+Unknown+"#gephebase-summary-title)			

Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular+Type=Cis-regulatory#gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration+Type=Unknown#gephebase-summary-title)	Aberration Type
unknown	Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=Linkage+Mapping#gephebase-summary-title)	Experimental Evidence
The role of a pseudo-response regulator gene in life cycle adaptation and domestication of beet. (2012) (https://pubmed.ncbi.nlm.nih.gov/22608508)	Main Reference
Pin PA; Zhang W; Vogt SH; Dally N; B��ttner B; Schulze-Buxloh G; Jelly NS; Chia TY; Mutasa-G��ttgens ES; Dohm JC; Himmelbauer H; Weisshaar B; Kraus J; Gielen JJ; Lommel M; Weyens G; Wahl B; Schechert A; Nilsson O; Jung C; Kraft T; M��ller AE	Authors
Life cycle adaptation to latitudinal and seasonal variation in photoperiod and temperature is a major determinant of evolutionary success in flowering plants. Whereas the life cycle of the dicotyledonous model species <i>Arabidopsis thaliana</i> is controlled by two epistatic genes, FLOWERING LOCUS C and FRIGIDA, three unrelated loci (VERNALIZATION) determine the spring and winter habits of monocotyledonous plants such as temperate cereals. In the core eudicot species <i>Beta vulgaris</i> , whose lineage diverged from that leading to <i>Arabidopsis</i> shortly after the monocot-dicot split 140 million years ago, the bolting locus B is a master switch distinguishing annuals from biennials. Here, we isolated B and show that the pseudo-response regulator gene BOLTING TIME CONTROL 1 (BvBTC1), through regulation of the FLOWERING LOCUS T genes, is absolutely necessary for flowering and mediates the response to both long days and vernalization. Our results suggest that domestication of beets involved the selection of a rare partial loss-of-function BvBTC1 allele that imparts reduced sensitivity to photoperiod that is restored by vernalization, thus conferring bienniality, and illustrate how evolutionary plasticity at a key regulatory point can enable new life cycle strategies.	Abstract
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RELATED GEPHE

No matches found.	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

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