

Gephebase Gene		GepheID
Bravis radix (BRX) (https://www.gephebase.org/search-criteria?/and+Gene)	GP00000157	
Gephebase="Bravis radix (BRX)"#gephebase-summary-title		Main curator
Published	Entry Status	Martin

Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology~#gephebase-summary-title)		Trait Category	
Root size (shorter) (https://www.gephebase.org/search-criteria?/and+Trait=~Root size (shorter)~#gephebase-summary-title)		Trait	
Arabidopsis thaliana - Slavice-0		Trait State in Taxon A	
Arabidopsis thaliana- Umkirch-1		Trait State in Taxon B	
Data not curated		Ancestral State	
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific~#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Arabidopsis thaliana~#gephebase-summary-title)	Latin Name	Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Arabidopsis thaliana~#gephebase-summary-title)	Latin Name
thale cress	Common Name	thale cress	Common Name
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms	thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	Lineage
Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)	Parent	Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)	Parent
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	NCBI Taxonomy ID	3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702)	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Arabidopsis thaliana - Slavice-0	Taxon A Description	Arabidopsis thaliana- Umkirch-1	Taxon B Description

BRX	Generic Gene Name	UniProtKB Arabidopsis thaliana
	Synonyms	GenebankID or UniProtKB
BREVIS RADIX; F5M6.11; F5M6_11; NIP3;1; NLM9; NOD26-like intrinsic protein 3;1; At1g31880		Q17TI5 (http://www.uniprot.org/uniprot/Q17TI5) AY702649 (https://www.ncbi.nlm.nih.gov/nuccore/AY702649)
3702.AT1G31880.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier= 3702.AT1G31880.1)	String	
Belongs to the BRX family.	Sequence Similarities	
-	GO - Molecular Function	
GO:0009734 : auxin-activated signaling pathway	GO - Biological Process	

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009734>)
GO:0030154 : cell differentiation (<https://www.ebi.ac.uk/QuickGO/term/GO:0030154>)
GO:0048364 : root development (<https://www.ebi.ac.uk/QuickGO/term/GO:0048364>)
GO:0009736 : cytokinin-activated signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009736>)
GO:0048527 : lateral root development
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048527>)
GO:0010088 : phloem development (<https://www.ebi.ac.uk/QuickGO/term/GO:0010088>)
GO:2000280 : regulation of root development
(<https://www.ebi.ac.uk/QuickGO/term/GO:2000280>)
GO:0009737 : response to abscisic acid
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009737>)

GO - Cellular Component

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)
GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

Presumptive Null

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

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=))

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 Coding Change

Nonsense

Molecular Details of the Mutation

premature stop codon in exon 4; TGG>TGA; truncated protein missing approximately two-thirds of the C terminus

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=))

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

Main Reference

Natural genetic variation in Arabidopsis identifies BREVIS RADIX, a novel regulator of cell proliferation and elongation in the root. (2004) (<https://pubmed.ncbi.nlm.nih.gov/15031265>)

Authors

Mouchel CF; Briggs GC; Hardtke CS

Abstract

Mutant analysis has been tremendously successful in deciphering the genetics of plant development. However, less is known about the molecular basis of morphological variation within species, which is caused by naturally occurring alleles. In this study, we succeeded in isolating a novel regulator of root growth by exploiting natural genetic variation in the model plant Arabidopsis. Quantitative trait locus analysis of a cross between isogenized accessions revealed that a single locus is responsible for approximately 80% of the variance of the observed difference in root length. This gene, named BREVIS RADIX (BRX), controls the extent of cell proliferation and elongation in the growth zone of the root tip. We isolated BRX by positional cloning. BRX is a member of a small group of highly conserved genes, the BRX gene family, which is only found in multicellular plants. Analyses of Arabidopsis single and double mutants suggest that BRX is the only gene of this family with a role in root development. The BRX protein is nuclear localized and activates transcription in a heterologous yeast system, indicating that BRX family proteins represent a novel class of transcription factors. Thus, we have identified a novel regulatory factor controlling quantitative aspects of root growth.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

2 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase="+Brevis radix \(BRX\)^/and+Taxon ID="+3702^/or+Gene Gephebase="+Brevis radix \(BRX\)^/and+Taxon ID="+3702^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=))

EXTERNAL LINKS

COMMENTS

