

# GEPHE SUMMARY

TZP ( <a href="https://www.gephebase.org/search-criteria/?and+GeneGephebase=%TZP%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+GeneGephebase=%TZP%#gephebase-summary-title</a> )	Gephebase Gene	GP00001269	GepheID
Published	Entry Status	Arnoult	Main curator

## PHENOTYPIC CHANGE

	Trait Category
Morphology ( <a href="https://www.gephebase.org/search-criteria/?and+TraitCategory=%Morphology%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+TraitCategory=%Morphology%#gephebase-summary-title</a> )	Trait
Plant growth (hypocotyl growth - light and temperature dependant) ( <a href="https://www.gephebase.org/search-criteria/?and+Trait=%Plant+growth+(hypocotyl+growth+-+light+and+temperature+dependant)%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Trait=%Plant+growth+(hypocotyl+growth+-+light+and+temperature+dependant)%#gephebase-summary-title</a> )	Trait State in Taxon A
Arabidopsis thaliana- Shahdara	Trait State in Taxon B
Arabidopsis thaliana- Bay0	Ancestral State
Unknown	Taxonomic Status
Intraspecific ( <a href="https://www.gephebase.org/search-criteria/?and+TaxonomicStatus=%Intraspecific%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+TaxonomicStatus=%Intraspecific%#gephebase-summary-title</a> )	

Taxon A		Taxon B	
	Latin Name		Latin Name
Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title</a> )		Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title</a> )	
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; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage
Arabidopsis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701</a> )	Parent	Arabidopsis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701</a> )	Parent
3702 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702</a> )	NCBI Taxonomy ID	3702 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702</a> )	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Arabidopsis thaliana- Shahdara		Arabidopsis thaliana- Bay0	

## GENOTYPIC CHANGE

TZP	Generic Gene Name	UniProtKB Arabidopsis thaliana
K9D7.13; K9D7_13; At5g43630	Synonyms	GenebankID or UniProtKB
3702.AT5G43630.1 ( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT5G43630.1">http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT5G43630.1</a> )	String	834383 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/834383">https://www.ncbi.nlm.nih.gov/nuccore/834383</a> )
-	Sequence Similarities	
GO:0008134 : transcription factor binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0008134">https://www.ebi.ac.uk/QuickGO/term/GO:0008134</a> )	GO - Molecular Function	
GO:0008270 : zinc ion binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0008270">https://www.ebi.ac.uk/QuickGO/term/GO:0008270</a> )		

GO:0003677 : DNA binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0003677>)

GO:1990269 : RNA polymerase II C-terminal domain phosphoserine binding  
(<https://www.ebi.ac.uk/QuickGO/term/GO:1990269>)

GO - Biological Process

GO:0009637 : response to blue light (<https://www.ebi.ac.uk/QuickGO/term/GO:0009637>)

GO:0006355 : regulation of transcription, DNA-templated  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006355>)

GO:0009785 : blue light signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009785>)

GO:0006368 : transcription elongation from RNA polymerase II promoter  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006368>)

GO:0001173 : DNA-templated transcriptional start site selection  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001173>)

GO:0016570 : histone modification (<https://www.ebi.ac.uk/QuickGO/term/GO:0016570>)

GO - Cellular Component

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

GO:0016593 : Cdc73/Paf1 complex (<https://www.ebi.ac.uk/QuickGO/term/GO:0016593>)

Presumptive Null

Yes ([https://www.gephbase.org/search-criteria?/and+Presumptive Null=%27Yes%27#gephbase-summary-title](https://www.gephbase.org/search-criteria?/and+Presumptive%20Null=%27Yes%27#gephbase-summary-title))

Molecular Type

Coding ([https://www.gephbase.org/search-criteria?/and+Molecular Type=%27Coding%27#gephbase-summary-title](https://www.gephbase.org/search-criteria?/and+Molecular%20Type=%27Coding%27#gephbase-summary-title))

Aberration Type

Insertion ([https://www.gephbase.org/search-criteria?/and+Aberration Type=%27Insertion%27#gephbase-summary-title](https://www.gephbase.org/search-criteria?/and+Aberration%20Type=%27Insertion%27#gephbase-summary-title))

Insertion Size

1-9 bp

Molecular Details of the Mutation

8bp insertion causing premature stop

Experimental Evidence

Linkage Mapping ([https://www.gephbase.org/search-criteria?/and+Experimental Evidence=%27Linkage Mapping%27#gephbase-summary-title](https://www.gephbase.org/search-criteria?/and+Experimental%20Evidence=%27Linkage%20Mapping%27#gephbase-summary-title))

Main Reference

A zinc knuckle protein that negatively controls morning-specific growth in *Arabidopsis thaliana*. (2008) (<https://pubmed.ncbi.nlm.nih.gov/18971337>)

Authors

Loudet O; Michael TP; Burger BT; Le MettÃ© C; Mockler TC; Weigel D; Chory J

Abstract

Growth in plants is modulated by a complex interplay between internal signals and external cues. Although traditional mutagenesis has been a successful approach for the identification of growth regulatory genes, it is likely that many genes involved in growth control remain to be discovered. In this study, we used the phenotypic variation between Bay-0 and Shahdara, two natural strains (accessions) of *Arabidopsis thaliana*, to map quantitative trait loci (QTL) affecting light- and temperature-regulated growth of the embryonic stem (hypocotyl). Using heterogeneous inbred families (HIFs), the gene underlying one QTL, LIGHT5, was identified as a tandem zinc knuckle/PLU3 domain encoding gene (At5g43630; TZP), which carries a premature stop codon in Bay-0. Hypocotyl growth assays in monochromatic light and microarray analysis demonstrate that TZP controls blue light associated growth in a time-of-day fashion by regulating genes involved in growth, such as peroxidase and cell wall synthesis genes. TZP expression is phased by the circadian clock and light/dark cycles to the beginning of the day, the time of maximal growth in *A. thaliana* in short-day conditions. Based on its domain structure and localization in the nucleus, we propose that TZP acts downstream of the circadian clock and photoreceptor signaling pathways to directly control genes responsible for growth. The identification of TZP thus provides new insight into how daily synchronization of growth pathways plays a critical role in growth regulation.

Additional References

## RELATED GEPHE

Related Genes

5 (EARLY FLOWERING 3(ELF3) [possible pseudo-replicate], Enhanced shoot growth under mannitol stress 2 (EGM2), IIL1, FUMARASE 2, ICARUS1)  
([https://www.gephbase.org/search-criteria?/or+Taxon ID=%273702%27/and+Trait=Plant growth/and+groupHaplotypes=true#gephbase-summary-title](https://www.gephbase.org/search-criteria?/or+Taxon%20ID=%273702%27/and+Trait=Plant%20growth/and+groupHaplotypes=true#gephbase-summary-title))

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS

Bay-0 has a null allele AND a "positive" phenotype: hypocotyl elongation at T