

GEPHE SUMMARY

GLO(T) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase= [^] GLO(T) [^] #gephebase-summary-title)	Gephebase Gene	GP00001393	GepheID
Published	Entry Status	Prigent	Main curator

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category= [^] Morphology [^] #gephebase-summary-title)	Trait Category		
Flower morphology (anther elevation) (<a href="https://www.gephebase.org/search-criteria?/and+Trait=<sup>^</sup>Flower morphology (anther elevation)<sup>^</sup>#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=[^]Flower morphology (anther elevation)[^]#gephebase-summary-title)	Trait		
Primula vulgaris	Trait State in Taxon A		
Primula vulgaris	Trait State in Taxon B		
Taxon A	Ancestral State		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status= [^] Intraspecific [^] #gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
Primula vulgaris (<a href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=<sup>^</sup>Primula vulgaris<sup>^</sup>#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=[^]Primula vulgaris[^]#gephebase-summary-title)	Latin Name	Primula vulgaris (<a href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=<sup>^</sup>Primula vulgaris<sup>^</sup>#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=[^]Primula vulgaris[^]#gephebase-summary-title)	Latin Name
-	Common Name	-	Common Name
Primula acaulis; Primula acaulis (L.) Hill; Primula vulgaris Huds.	Synonyms	Primula acaulis; Primula acaulis (L.) Hill; Primula vulgaris Huds.	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; Ericales; Primulaceae; Primula	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; Ericales; Primulaceae; Primula	Lineage
Primula (primroses) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=49647)	Parent	Primula (primroses) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=49647)	Parent
175104 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=175104)	NCBI Taxonomy ID	175104 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=175104)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

GLO	Generic Gene Name	Q03378 (http://www.uniprot.org/uniprot/Q03378)	UniProtKB Antirrhinum majus
-	Synonyms	0	GenebankID or UniProtKB
-	String		
-	Sequence Similarities		
-	GO - Molecular Function		
GO:0046983 : protein dimerization activity (https://www.ebi.ac.uk/QuickGO/term/GO:0046983)			
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)			
GO:0000977 : RNA polymerase II regulatory region sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0000977)			
GO:0007275 : multicellular organism development (https://www.ebi.ac.uk/QuickGO/term/GO:0007275)	GO - Biological Process		
GO:0045944 : positive regulation of transcription by RNA polymerase II			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0045944>)

GO - Cellular Component

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=~Yes^#gephebase-summary-title))

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=~Coding^#gephebase-summary-title))

Aberration Type

Insertion ([https://www.gephebase.org/search-criteria?/and+Aberration Type=~Insertion^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Insertion^#gephebase-summary-title))

Insertion Size

1-10 kb

Molecular Details of the Mutation

A 2.5 kb retrotransposon in exon 2 severely truncates the protein

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=~Linkage+Mapping^#gephebase-summary-title))

Main Reference

Genetic architecture and evolution of the S locus supergene in *Primula vulgaris*. (2016) (<https://pubmed.ncbi.nlm.nih.gov/27909301>)

Authors

Li J; Cocker JM; Wright J; Webster MA; McMullan M; Dyer S; Swarbreck D; Caccamo M; Oosterhout CV; Gilmartin PM

Abstract

Darwin's studies on heterostyly in *Primula* described two floral morphs, pin and thrum, with reciprocal anther and stigma heights that promote insect-mediated cross-pollination. This key innovation evolved independently in several angiosperm families. Subsequent studies on heterostyly in *Primula* contributed to the foundation of modern genetic theory and the neo-Darwinian synthesis. The established genetic model for *Primula* heterostyly involves a diallelic S locus comprising several genes, with rare recombination events that result in self-fertile homostyle flowers with anthers and stigma at the same height. Here we reveal the S locus supergene as a tightly linked cluster of thrum-specific genes that are absent in pins. We show that thrums are hemizygous not heterozygous for the S locus, which suggests that homostyles do not arise by recombination between S locus haplotypes as previously proposed. Duplication of a floral homeotic gene 51.7 million years (Myr) ago, followed by its neofunctionalization, created the current S locus assemblage which led to floral heteromorphy in *Primula*. Our findings provide new insights into the structure, function and evolution of this archetypal supergene.

Additional References

RELATED GEPHE

Related Genes

2 (CYP(T), S locus supergene (GLO/CFB Cluster)) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=~175104^/and+Trait=Flower morphology/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~175104^/and+Trait=Flower+morphology/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@TE; both taxa are hemizygous for the supergene S