

GEPHE SUMMARY

<p>CYP(T) (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=CYP(T)^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001395</p> <p>Prigent</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

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

<p>CYP734A1</p> <p>CYP72B1; CYP734A1; F18A8.8; F18A8_8; PHYB ACTIVATION TAGGED SUPPRESSOR 1; BAS1; At2g26710</p> <p>3702.AT2G26710.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT2G26710.1)</p> <p>Belongs to the cytochrome P450 family.</p> <p>GO - Molecular Function</p> <p>GO:0020037 : heme binding (https://www.ebi.ac.uk/QuickGO/term/GO:0020037)</p> <p>GO:0005506 : iron ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005506)</p> <p>GO:0004497 : monooxygenase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004497)</p> <p>GO:0016705 : oxidoreductase activity, acting on paired donors, with incorporation or reduction of molecular oxygen (https://www.ebi.ac.uk/QuickGO/term/GO:0016705)</p> <p>GO:0008395 : steroid hydroxylase activity</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p>	<p>O48786 (http://www.uniprot.org/uniprot/O48786)</p> <p>()</p>	<p>UniProtKB Arabidopsis thaliana</p> <p>GenebankID or UniProtKB</p>
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(<https://www.ebi.ac.uk/QuickGO/term/GO:0008395>)

GO - Biological Process

GO:0040008 : regulation of growth (<https://www.ebi.ac.uk/QuickGO/term/GO:0040008>)

GO:0010268 : brassinosteroid homeostasis

(<https://www.ebi.ac.uk/QuickGO/term/GO:0010268>)

GO:0016131 : brassinosteroid metabolic process

(<https://www.ebi.ac.uk/QuickGO/term/GO:0016131>)

GO:0009741 : response to brassinosteroid

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009741>)

GO - Cellular Component

GO:0016021 : integral component of membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

Presumptive Null

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null+No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null+No^#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

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

G>C p.Asp126His in exon 2

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))

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

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 (GLO(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

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=CYP\(T\)^/and+Taxon ID+175104^/or+Gene Gephebase=CYP\(T\)^/and+Taxon ID+175104^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase+CYP(T)^/and+Taxon+ID+175104^/or+Gene+Gephebase+CYP(T)^/and+Taxon+ID+175104^#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS

long homostyle are homozygous for the supergene S

