

GEPHE SUMMARY

	Gephebase Gene		GepheID
ROSE INTENSITY1 (RO1t) (https://www.gephebase.org/search-criteria?/and+GeneGephebase=^ROSE INTENSITY1 (RO1t)^#gephebase-summary-title)	GP00000996		
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=^Morphology^#gephebase-summary-title)		Trait	
Coloration (flowers) (https://www.gephebase.org/search-criteria?/and+Trait=^Coloration (flowers)^#gephebase-summary-title)			
	Trait State in Taxon A		
Mimulus lewisii - bumblebee-pollinated		Trait State in Taxon B	
Mimulus cardinalis - hummingbird-pollinated			
	Ancestral State		
Data not curated		Taxonomic Status	
Interspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=^Interspecific^#gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Erythranthe lewisii (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Erythranthe lewisii^#gephebase-summary-title)		Erythranthe lewisii (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Erythranthe lewisii^#gephebase-summary-title)	
	Common Name		Common Name
-		-	
	Synonyms		Synonyms
Mimulus lewisii; Erythranthe lewisii (Pursh) G.L.Nesom & N.S.Fraga; Mimulus lewisii Pursh		Mimulus lewisii; Erythranthe lewisii (Pursh) G.L.Nesom & N.S.Fraga; Mimulus lewisii Pursh	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Lamiales; Phrymaceae; Erythranthe		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Lamiales; Phrymaceae; Erythranthe	
	Parent		Parent
Erythranthe () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 1502711)		Erythranthe () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 1502711)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
69919 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 69919)		69919 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 69919)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Erythranthe lewisii
RO1t		L7VK04 (http://www.uniprot.org/uniprot/L7VK04)	
	Synonyms		GenebankID or UniProtKB
-		JX992854 (https://www.ncbi.nlm.nih.gov/nuccore/JX992854)	
	String		
-			
	Sequence Similarities		
-			
	GO - Molecular Function		
GO:0003677 : DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003677)			
	GO - Biological Process		
-			
	GO - Cellular Component		
GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)			
			Presumptive Null
Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#gephebase-summary-title)			
			Molecular Type
Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#gephebase-summary-title)			

Unknown (https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Unknown~#gephebase-summary-title)	Aberration Type
unknown but coding variation was ruled out	Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping~#gephebase-summary-title)	Experimental Evidence
Genetic dissection of a major anthocyanin QTL contributing to pollinator-mediated reproductive isolation between sister species of <i>Mimulus</i> . (2013) (https://pubmed.ncbi.nlm.nih.gov/23335333)	Main Reference
Yuan YW; Sagawa JM; Young RC; Christensen BJ; Bradshaw HD	Authors
Prezygotic barriers play a major role in the evolution of reproductive isolation, which is a prerequisite for speciation. However, despite considerable progress in identifying genes and mutations responsible for postzygotic isolation, little is known about the genetic and molecular basis underlying prezygotic barriers. The bumblebee-pollinated <i>Mimulus lewisii</i> and the hummingbird-pollinated <i>M. cardinalis</i> represent a classic example of pollinator-mediated prezygotic isolation between two sister species in sympatry. Flower color differences resulting from both carotenoid and anthocyanin pigments contribute to pollinator discrimination between the two species in nature. Through fine-scale genetic mapping, site-directed mutagenesis, and transgenic experiments, we demonstrate that a single-repeat R3 MYB repressor, ROSE INTENSITY1 (ROH1), is the causal gene underlying a major quantitative trait locus (QTL) with the largest effect on anthocyanin concentration and that cis-regulatory change rather than coding DNA mutations cause the allelic difference between <i>M. lewisii</i> and <i>M. cardinalis</i>. Together with the genomic resources and stable transgenic tools developed here, these results suggest that <i>Mimulus</i> is an excellent platform for studying the genetics of pollinator-mediated reproductive isolation and the molecular basis of morphological evolution at the most fundamental level-gene by gene, mutation by mutation.	Abstract
	Additional References

RELATED GEPHE

2 (Dihydroflavonol 4 reductase (MIDfr), LIGHT AREAS1 (LAR1)) (https://www.gephebase.org/search-criteria?/or+TaxonID=~69919~/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

Gain of a regulatory repressor	
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