

GEPHE SUMMARY

	Gephebase Gene	GepheID
RCO-A/B (Reduced Complexity) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^RCO-A/B (Reduced Complexity)^#gephebase-summary-title)	GP00000962	
	Entry Status	Main curator
Published	Martin	

PHENOTYPIC CHANGE

	Trait Category	
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=Morphology^#gephebase-summary-title)	Trait	
Leaf shape (simplification) (https://www.gephebase.org/search-criteria?/and+Trait=^Leaf shape (simplification)^#gephebase-summary-title)	Trait State in Taxon A	
Cardamine hirsuta ; other Arabidopsis	Trait State in Taxon B	
Arabidopsis thaliana	Ancestral State	
Taxon A	Taxonomic Status	
Interspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Interspecific^#gephebase-summary-title)		
Taxon A		Taxon B
Arabidopsis	Latin Name	Latin Name
(https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis^#gephebase-summary-title)		
-	Common Name	Common Name
Cardaminopsis; Arabidopsis (DC.) Heynh., 1842; Cardaminopsis Hayek	Synonyms	Synonyms
genus	Rank	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae	Lineage	Lineage
Camelineae () - (Rank: tribe)	Parent	Parent
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=980083)	NCBI Taxonomy ID	NCBI Taxonomy ID
3701		
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701)	is Taxon A an Infraspecies?	is Taxon B an Infraspecies?
No		

GENOTYPIC CHANGE

RCO	Generic Gene Name	UniProtKB Cardamine hirsuta
-	Synonyms	GenebankID or UniProtKB
-	0	
-	String	
-	Sequence Similarities	
-	GO - Molecular Function	
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)		
GO:0043565 : sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043565)		
-	GO - Biological Process	
-	GO - Cellular Component	
GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)		

Yes (#gephebase-summary-title)	Presumptive Null
Gene Loss (#gephebase-summary-title)	Molecular Type
Deletion (#gephebase-summary-title)	Aberration Type
unknown	Deletion Size
Gene deletion	Molecular Details of the Mutation
Candidate Gene (#gephebase-summary-title)	Experimental Evidence
Leaf shape evolution through duplication, regulatory diversification, and loss of a homeobox gene. (2014) (https://pubmed.ncbi.nlm.nih.gov/24531971)	Main Reference
Vlad D; Kierzkowski D; Rast MI; Vuolo F; Dello Ioio R; Galinha C; Gan X; Hajheidari M; Hay A; Smith RS; Huijser P; Bailey CD; Tsiantis M	Authors
In this work, we investigate morphological differences between <i>Arabidopsis thaliana</i> , which has simple leaves, and its relative <i>Cardamine hirsuta</i> , which has dissected leaves comprising distinct leaflets. With the use of genetics, interspecific gene transfers, and time-lapse imaging, we show that leaflet development requires the REDUCED COMPLEXITY (RCO) homeodomain protein. RCO functions specifically in leaves, where it sculpts developing leaflets by repressing growth at their flanks. RCO evolved in the Brassicaceae family through gene duplication and was lost in <i>A. thaliana</i> , contributing to leaf simplification in this species. Species-specific RCO action with respect to its paralog results from its distinct gene expression pattern in the leaf base. Thus, regulatory evolution coupled with gene duplication and loss generated leaf shape diversity by modifying local growth patterns during organogenesis.	Abstract
	Additional References

RELATED GEPHE

No matches found.	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

Gene Loss / Trait Loss