

GEPHE SUMMARY

MdMYB10 (https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=%MDMYB10%#gephebase-summary-title)	Gephebase Gene	GP00000639	GepheID
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Morphology (https://www.gephebase.org/search-criteria/?and+Trait+Category=%Morphology%#gephebase-summary-title)	Trait		
Coloration (fruit flesh; foliage) (https://www.gephebase.org/search-criteria/?and+Trait=%Coloration+(fruit+flesh;+foliage)%#gephebase-summary-title)	Trait State in Taxon A		
Malus x domestica - Sciros	Trait State in Taxon B		
Malus x domestica - red-fleshed 91.136 B6-77	Ancestral State		
Data not curated	Taxonomic Status		
Domesticated (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=%Domesticated%#gephebase-summary-title)			
Taxon A		Taxon B	
Malus domestica	Latin Name	Malus domestica	Latin Name
(https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Malus+domestica%#gephebase-summary-title)		(https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Malus+domestica%#gephebase-summary-title)	
apple	Common Name	apple	Common Name
	Synonyms		Synonyms
Malus communis; Malus pumila auct.; Malus pumila var. domestica; Malus sylvestris var. domestica; Malus x domestica; Pyrus malus; apple; apple tree; cultivated apple; Malus communis Desf.; Malus domestica Borkh., nom. cons. prop.; Malus pumila var. domestica (Borkh.) C.K.Schneid.; Malus sylvestris var. domestica (Borkh.) Mansf.; Pyrus malus L.		Malus communis; Malus pumila auct.; Malus pumila var. domestica; Malus sylvestris var. domestica; Malus x domestica; Pyrus malus; apple; apple tree; cultivated apple; Malus communis Desf.; Malus domestica Borkh., nom. cons. prop.; Malus pumila var. domestica (Borkh.) C.K.Schneid.; Malus sylvestris var. domestica (Borkh.) Mansf.; Pyrus malus L.	
species	Rank	species	Rank
cellular organisms; Eukaryota; Viriplantae; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophytina; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; fabids; Rosales; Rosaceae; Amygdaloideae; Malaeae; Malus	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophytina; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; fabids; Rosales; Rosaceae; Amygdaloideae; Malaeae; Malus	Lineage
Malus () - (Rank: genus)	Parent	Malus () - (Rank: genus)	Parent
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3749)	NCBI Taxonomy ID	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3749)	NCBI Taxonomy ID
3750		3750	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3750)	is Taxon A an Infraspecies?	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3750)	is Taxon B an Infraspecies?
Yes	Taxon A Description	Yes	Taxon B Description
Malus x domestica - Sciros	Malus x domestica - red-fleshed 91.136 B6-77		

GENOTYPIC CHANGE

MYB1	Generic Gene Name	UniProtKB Malus domestica
MdMYBA; MYB10	Synonyms	GenebankID or UniProtKB
-	String	DQ886414 (https://www.ncbi.nlm.nih.gov/nuccore/DQ886414)
-	Sequence Similarities	
GO:0003677 : DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003677)	GO - Molecular Function	
	GO - Biological Process	
-	GO - Cellular Component	

Unknown ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^Unknown)Cis-regulatory ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Cis-regulatory)Unknown ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/and+Aberration+Type=^Unknown)

unknown

Linkage Mapping ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=^Linkage+Mapping)Mapping a candidate gene (MdMYB10) for red flesh and foliage colour in apple. (2007) (<https://pubmed.ncbi.nlm.nih.gov/17608951>)

Chagné D; Carlisle CM; Blond C; Volz RK; Whitworth CJ; Oraguzie NC; Crowhurst RN; Allan AC; Espley RV; Hellens RP; Gardiner SE

Integrating plant genomics and classical breeding is a challenge for both plant breeders and molecular biologists. Marker-assisted selection (MAS) is a tool that can be used to accelerate the development of novel apple varieties such as cultivars that have fruit with anthocyanin through to the core. In addition, determining the inheritance of novel alleles, such as the one responsible for red flesh, adds to our understanding of allelic variation. Our goal was to map candidate anthocyanin biosynthetic and regulatory genes in a population segregating for the red flesh phenotypes.

We have identified the Rni locus, a major genetic determinant of the red foliage and red colour in the core of apple fruit. In a population segregating for the red flesh and foliage phenotype we have determined the inheritance of the Rni locus and DNA polymorphisms of candidate anthocyanin biosynthetic and regulatory genes. Simple Sequence Repeats (SSRs) and Single Nucleotide Polymorphisms (SNPs) in the candidate genes were also located on an apple genetic map. We have shown that the MdMYB10 gene co-segregates with the Rni locus and is on Linkage Group (LG) 09 of the apple genome.

We have performed candidate gene mapping in a fruit tree crop and have provided genetic evidence that red colouration in the fruit core as well as red foliage are both controlled by a single locus named Rni. We have shown that the transcription factor MdMYB10 may be the gene underlying Rni as there were no recombinants between the marker for this gene and the red phenotype in a population of 516 individuals. Associating markers derived from candidate genes with a desirable phenotypic trait has demonstrated the application of genomic tools in a breeding programme of a horticultural crop species.

An ancient duplication of apple MYB transcription factors is responsible for novel red fruit-flesh phenotypes. (2013) (<https://pubmed.ncbi.nlm.nih.gov/23096157>)

RELATED GEPHE

1 (MdMYB110a) ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^3750/and+Trait=Coloration/and+groupHaplotypes=true)

No matches found.

EXTERNAL LINKS

COMMENTS