

GEPHE SUMMARY

	Gephebase Gene	GephelD
flavonoid 3';5'-hydroxylase (F3'5'H) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^flavonoid 3';5'-hydroxylase (F3'5'H)^#gephebase-summary-title)	GP00000328	Main curator
	Entry Status	Martin
Published		

PHENOTYPIC CHANGE

	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=Morphology^#gephebase-summary-title)	Trait
Coloration (tuber skin) (https://www.gephebase.org/search-criteria?/and+Trait=^Coloration (tuber skin)^#gephebase-summary-title)	Trait State in Taxon A
Solanum tuberosum - purple tuber	Trait State in Taxon B
Solanum tuberosum -white tuber	Ancestral State
Data not curated	Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)	

Taxon A	Latin Name	Taxon B	Latin Name
Solanum tuberosum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Solanum+tuberosum^#gephebase-summary-title)	Common Name	Solanum tuberosum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Solanum+tuberosum^#gephebase-summary-title)	Common Name
potato	Synonyms	potato	Synonyms
Solanum tuberosum subsp. tuberosum; potato; potatoes; Solanum tuberosum L.	Rank	Solanum tuberosum subsp. tuberosum; potato; potatoes; Solanum tuberosum L.	Rank
species	Lineage	species	Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum	Parent	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum	Parent
Solanum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4107)	NCBI Taxonomy ID	Solanum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4107)	NCBI Taxonomy ID
4113 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4113)		4113 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4113)	
No	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

CYP75A2	Generic Gene Name	UniProtKB Solanum melongena
CYP75; CYPEG1	Synonyms	GenebankID or UniProtKB
-	String	NP_001274807 (https://www.ncbi.nlm.nih.gov/nucleotide/NP_001274807)
Belongs to the cytochrome P450 family.	Sequence Similarities	
	GO - Molecular Function	
GO:0020037 : heme binding (https://www.ebi.ac.uk/QuickGO/term/GO:0020037)		
GO:0005506 : iron ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005506)		
GO:0004497 : monooxygenase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004497)		
GO:0016705 : oxidoreductase activity, acting on paired donors, with incorporation or reduction of molecular oxygen (https://www.ebi.ac.uk/QuickGO/term/GO:0016705)	GO - Biological Process	
GO:0009718 : anthocyanin-containing compound biosynthetic process (https://www.ebi.ac.uk/QuickGO/term/GO:0009718)		

	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)	Aberration Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration+Type=^Unknown^#gephebase-summary-title)	Molecular Details of the Mutation
unknown	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=^Linkage+Mapping^#gephebase-summary-title)	Main Reference
The potato P locus codes for flavonoid 3',5'-hydroxylase. (2005) (https://pubmed.ncbi.nlm.nih.gov/15565378)	Authors
Jung CS; Griffiths HM; De Jong DM; Cheng S; Bodis M; De Jong WS	Abstract
The potato P locus is required for the production of blue/purple anthocyanin pigments in any tissue of the potato plant such as tubers, flowers, or stems. We have previously reported, based on RFLP mapping in tomato, that the gene coding for the anthocyanin biosynthetic enzyme flavonoid 3',5'-hydroxylase (f3'5'h) maps to the same region of the tomato genome as P maps in potato. To further evaluate this association a Petunia f3'5'h gene was used to screen a potato cDNA library prepared from purple-colored flowers and stems. Six positively hybridizing cDNA clones were sequenced and all appeared to be derived from a single gene that shares 85% sequence identity at the amino acid level with Petunia f3'5'h. The potato gene cosegregated with purple tuber color in a diploid F1 sub-population of 37 purple and 25 red individuals and was found to be expressed in tuber skin only in the presence of the anthocyanin regulatory locus I. A potato f3'5'h cDNA clone was placed under the control of a doubled CaMV 35S promoter and introduced into the red-skinned cultivar 'Desiree'. Tuber and stem tissues that are colored red in Desiree were purple in nine of 17 independently transformed lines.	Additional References

RELATED GEPHE

2 (an2-like (Stan2), dihydroflavonol reductase (DFR)) (https://www.gephebase.org/search-criteria?/or+Taxon+ID=^4113^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
	Related Haplotypes
No matches found.	

EXTERNAL LINKS

COMMENTS