

GEPHE SUMMARY

	Gephebase Gene		GepheID
an2-like (Stan2) (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~an2-like+(Stan2)^#gephebase-summary-title)	GP00000088		
	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 (tuber skin) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration+(tuber+skin)^#gephebase-summary-title)	Trait State in Taxon A	
Solanum tuberosum - red 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		Taxon B	
	Latin Name		Latin Name	
Solanum tuberosum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Solanum+tuberosum^#gephebase-summary-title)	Common Name		Common Name	
potato	Synonyms		Synonyms	
Solanum tuberosum subsp. tuberosum; potato; potatoes; Solanum tuberosum L.	Rank		Rank	
species	Lineage		Lineage	
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum	Parent		Parent	
Solanum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4107)	NCBI Taxonomy ID		NCBI Taxonomy ID	
4113 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4113)	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No			No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Petunia integrifolia
AN2	Synonyms		GenebankID or UniProtKB
-	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	Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping~#gephebase-summary-title)	Experimental Evidence
The potato developer (D) locus encodes an R2R3 MYB transcription factor that regulates expression of multiple anthocyanin structural genes in tuber skin. (2009) (https://pubmed.ncbi.nlm.nih.gov/19779693/)	Main Reference
Jung CS; Griffiths HM; De Jong DM; Cheng S; Bodis M; Kim TS; De Jong WS	Authors
A dominant allele at the D locus (also known as I in diploid potato) is required for the synthesis of red and purple anthocyanin pigments in tuber skin. It has previously been reported that D maps to a region of chromosome 10 that harbors one or more homologs of Petunia an2, an R2R3 MYB transcription factor that coordinately regulates the expression of multiple anthocyanin biosynthetic genes in the floral limb. To test whether D acts similarly in tuber skin, RT-PCR was used to evaluate the expression of flavanone 3-hydroxylase (f3h), dihydroflavonol 4-reductase (dfr) and flavonoid 3',5'-hydroxylase (f3'5'h). All three genes were expressed in the periderm of red- and purple-skinned clones, while dfr and f3'5'h were not expressed, and f3h was only weakly expressed, in white-skinned clones. A potato cDNA clone with similarity to an2 was isolated from an expression library prepared from red tuber skin, and an assay developed to distinguish the two alleles of this gene in a diploid potato clone known to be heterozygous Dd. One allele was observed to cosegregate with pigmented skin in an F(1) population of 136 individuals. This allele was expressed in tuber skin of red- and purple-colored progeny, but not in white tubers, while other parental alleles were not expressed in white or colored tubers. The allele was placed under the control of a doubled 35S promoter and transformed into the light red-colored cultivar DÃ©sirÃ©e, the white-skinned cultivar Bintje, and two white diploid clones known to lack the functional allele of D. Transformants accumulated pigment in tuber skin, as well as in other tissues, including young foliage, flower petals, and tuber flesh.	Abstract
	Additional References

RELATED GEPHE

2 (dihydroflavonol reductase (DFR), flavonoid 3';5'-hydroxylase (F3'5'H)) (https://www.gephebase.org/search-criteria?/or+Taxon+ID=~4113~/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS