

GEPHE SUMMARY

DCAR-032551 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~DCAR-032551~#gephebase-summary-title)	Gephebase Gene	GP00001568	GepheID
Published	Entry Status	Prigent	Main curator

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology~#gephebase-summary-title)	Trait Category		
Carotenoid content (https://www.gephebase.org/search-criteria?/and+Trait=~Carotenoid+content~#gephebase-summary-title)	Trait		
Wild and cultivated carrot strains with white root	Trait State in Taxon A		
Cultivated carrot strain with pigmented root	Trait State in Taxon B		
Taxon A	Ancestral State		
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Domesticated~#gephebase-summary-title)	Taxonomic Status		
	Taxon A	Taxon B	
Daucus carota (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Daucus+carota~#gephebase-summary-title)	Latin Name	Daucus carota (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Daucus+carota~#gephebase-summary-title)	Latin Name
carrot	Common Name	carrot	Common Name
carrot; Queen Anne's lace; carrots; Daucus carota L.	Synonyms	carrot; Queen Anne's lace; carrots; Daucus carota L.	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; campanulids; Apiales; Apiineae; Apiaceae; Apioideae; Scandiceae; Daucinae; Daucus; Daucus sect. Daucus	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; campanulids; Apiales; Apiineae; Apiaceae; Apioideae; Scandiceae; Daucinae; Daucus; Daucus sect. Daucus	Lineage
Daucus sect. Daucus () - (Rank: species group) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1873447)	Parent	Daucus sect. Daucus () - (Rank: species group) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1873447)	Parent
4039 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4039)	NCBI Taxonomy ID	4039 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4039)	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Wild and cultivated carrot strains with white root	Taxon A Description	Cultivated carrot strain with pigmented root	Taxon B Description

GENOTYPIC CHANGE

DCAR_032551	Generic Gene Name	UniProtKB Daucus carota subsp. sativus A0A162A3G8 (http://www.uniprot.org/uniprot/A0A162A3G8)
DCAR_032551	Synonyms	GenebankID or UniProtKB
-	String	0
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Yes~#gephebase-summary-title)		Presumptive Null

Coding (<https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding^#gephebase-summary-title>)

Molecular Type

Insertion (<https://www.gephebase.org/search-criteria?/and+Aberration Type=^Insertion^#gephebase-summary-title>)

Aberration Type

100-999 bp

Insertion Size

A 212-nt insertion in exon 2 that creates a frameshift mutation

Molecular Details of the Mutation

Linkage Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title>)

Experimental Evidence

A high-quality carrot genome assembly provides new insights into carotenoid accumulation and asterid genome evolution. (2016) (<https://pubmed.ncbi.nlm.nih.gov/27158781>)

Main Reference

Iorizzo M; Ellison S; Senalik D; Zeng P; Satapoomin P; Huang J; Bowman M; Iovene M; Sanseverino W; Cavagnaro P; Yildiz M; Macko-Podg³ri A; Moranska E; Grzebelus E; Grzebelus D; Ashrafi H; Zheng Z; Cheng S; Spooner D; Van Deynze A; Simon P

Authors

Abstract

We report a high-quality chromosome-scale assembly and analysis of the carrot (*Daucus carota*) genome, the first sequenced genome to include a comparative evolutionary analysis among members of the euasterid II clade. We characterized two new polyploidization events, both occurring after the divergence of carrot from members of the Asterales order, clarifying the evolutionary scenario before and after radiation of the two main asterid clades. Large- and small-scale lineage-specific duplications have contributed to the expansion of gene families, including those with roles in flowering time, defense response, flavor, and pigment accumulation. We identified a candidate gene, DCAR_032551, that conditions carotenoid accumulation (Y) in carrot taproot and is coexpressed with several isoprenoid biosynthetic genes. The primary mechanism regulating carotenoid accumulation in carrot taproot is not at the biosynthetic level. We hypothesize that DCAR_032551 regulates upstream photosystem development and functional processes, including photomorphogenesis and root de-etiolation.

Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

Presumably a null mutation