

GEPHE SUMMARY

PG (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=%PG%#gephebase-summary-title)	Gephebase Gene	GP00001449	GephelD
	Entry Status	Prigent	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=%Physiology%#gephebase-summary-title)		Trait	
Fruit ripening (https://www.gephebase.org/search-criteria?/and+Trait=%Fruit ripening%#gephebase-summary-title)		Trait State in Taxon A	
Tomato fruit softening		Trait State in Taxon B	
Wild-type pepper		Ancestral State	
Taxon A		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 lycopersicum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=%Solanum lycopersicum%#gephebase-summary-title)		Capsicum chinense (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=%Capsicum chinense%#gephebase-summary-title)	
tomato	Common Name	-	Common Name
Lycopersicon esculentum var. esculentum; Solanum esculentum; Solanum lycopersicum var. humboldtii; tomato; Lycopersicon esculentum Mill.; Solanum esculentum Dunal; Solanum lycopersicum L.; Lycopersicon lycopersicum; Lycopersicum esculentum; Solanum lycopersicon	Synonyms	Scotch bonnet; bonnet pepper; habanero; piri piri; rocotillo; Capsicum chinense Jacq.	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllphyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllphyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Capsiceae; Capsicum	Lineage
Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)	Parent	Capsicum (peppers) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4071)	Parent
4081 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4081)	NCBI Taxonomy ID	80379 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 80379)	NCBI Taxonomy ID
No			is Taxon B an Infraspecies?
is Taxon A an Infraspecies?		No	

GENOTYPIC CHANGE

PG	Generic Gene Name	UniProtKB Capsicum annuum
-	Synonyms	GenebankID or UniProtKB
-	String	
Belongs to the glycosyl hydrolase 28 family.	Sequence Similarities	
GO:0004650 : polygalacturonase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004650)	GO - Molecular Function	
GO:0005975 : carbohydrate metabolic process (https://www.ebi.ac.uk/QuickGO/term/GO:0005975)	GO - Biological Process	
	GO - Cellular Component	

Yes (#gephebase-summary-title)	Presumptive Null
Coding (#gephebase-summary-title)	Molecular Type
SNP (#gephebase-summary-title)	Aberration Type
	SNP Coding Change
	Molecular Details of the Mutation
a point mutation in the 3' splice acceptor site of intron VIII generates a premature stop codon	
Candidate Gene (#gephebase-summary-title)	Experimental Evidence

Taxon A	Taxon B	Position
Codon	-	-
Amino-acid	-	-

Genome sequence of the hot pepper provides insights into the evolution of pungency in Capsicum species. (2014) (https://pubmed.ncbi.nlm.nih.gov/24441736)	Main Reference
Kim S; Park M; Yeom SI; Kim YM; Lee JM; Lee HA; Seo E; Choi J; Cheong K; Kim KT; Jung K; Lee GW; Oh SK; Bae C; Kim SB; Lee HY; Kim SY; Kim MS; Kang BC; Jo YD; Yang HB; Jeong HJ; Kang WH; Kwon JK; Shin C; Lim JY; Park JH; Huh JH; Kim JS; Kim BD; Cohen O; Paron I; Suh MC; Lee SB; Kim YK; Shin Y; Noh SJ; Park J; Seo YS; Kwon SY; Kim HA; Park JM; Kim HJ; Choi SB; Bosland PW; Reeves G; Jo SH; Lee BW; Cho HT; Choi HS; Lee MS; Yu Y; Do Choi Y; Park BS; van Deynze A; Ashrafi H; Hill T; Kim WT; Pai HS; Ahn HK; Yeam I; Giovannoni JJ; Rose JK; Sárensen I; Lee SJ; Kim RW; Choi IY; Choi BS; Lim JS; Lee YH; Choi D	Authors

Hot pepper (*Capsicum annuum*), one of the oldest domesticated crops in the Americas, is the most widely grown spice crop in the world. We report whole-genome sequencing and assembly of the hot pepper (Mexican landrace of *Capsicum annuum* cv. CM334) at 186.6 Å— coverage. We also report resequencing of two cultivated peppers and de novo sequencing of the wild species *Capsicum chinense*. The genome size of the hot pepper was approximately fourfold larger than that of its close relative tomato, and the genome showed an accumulation of Gypsy and Caulimoviridae family elements. Integrative genomic and transcriptomic analyses suggested that change in gene expression and neofunctionalization of capsaicin synthase have shaped capsaicinoid biosynthesis. We found differential molecular patterns of ripening regulators and ethylene synthesis in hot pepper and tomato. The reference genome will serve as a platform for improving the nutritional and medicinal values of *Capsicum* species.

Additional References

RELATED GEPHE

2 (LeSPL-CNR, ripening inhibitor (rin) = LeMADS-RIN and LeMADS-MC) (#gephebase-summary-title)	Related Genes
1 (#gephebase-summary-title)	Related Haplotypes

EXTERNAL LINKS

COMMENTS

@Splicing not clear if pepper is *C. chinense*