

GEPHE SUMMARY

EPSPS (https://www.gephebase.org/search-criteria?/and+Gene Gephebase="EPSPS" #gephebase-summary-title)	Gephebase Gene	GP00001892	GepheID
Published	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category="Physiology" #gephebase-summary-title)	Trait Category		
Xenobiotic resistance (herbicides; glyphosate) (<a #gephebase-summary-title"="" (herbicides;="" glyphosate)"="" href="https://www.gephebase.org/search-criteria?/and+Trait=" resistance="" xenobiotic="">https://www.gephebase.org/search-criteria?/and+Trait="Xenobiotic resistance (herbicides; glyphosate)" #gephebase-summary-title)	Trait		
Amaranthus tuberculatus - sensitive	Trait State in Taxon A		
Amaranthus tuberculatus - resistant	Trait State in Taxon B		
	Ancestral State		
Taxon A	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status="Intraspecific" #gephebase-summary-title)			
	Taxon A	Taxon B	
	Latin Name	Latin Name	
Amaranthus tuberculatus (<a #gephebase-summary-title"="" amaranthus="" href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=" tuberculatus"="">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Amaranthus tuberculatus" #gephebase-summary-title)	Amaranthus tuberculatus (<a #gephebase-summary-title"="" amaranthus="" href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=" tuberculatus"="">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Amaranthus tuberculatus" #gephebase-summary-title)	Amaranthus tuberculatus (<a #gephebase-summary-title"="" amaranthus="" href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=" tuberculatus"="">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Amaranthus tuberculatus" #gephebase-summary-title)	
	Common Name	Common Name	
-	-	-	
	Synonyms	Synonyms	
Amaranthus rudis; Amaranthus rudis J.D.Sauer; Amaranthus tuberculatus (Moq.) J.D.Sauer	Amaranthus rudis; Amaranthus rudis J.D.Sauer; Amaranthus tuberculatus (Moq.) J.D.Sauer	Amaranthus rudis; Amaranthus rudis J.D.Sauer; Amaranthus tuberculatus (Moq.) J.D.Sauer	
	Rank	Rank	
species	species	species	
	Lineage	Lineage	
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; Caryophyllales; Amaranthaceae; Amaranthus	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; Caryophyllales; Amaranthaceae; Amaranthus	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; Caryophyllales; Amaranthaceae; Amaranthus	
	Parent	Parent	
Amaranthus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564)	Amaranthus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564)	Amaranthus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564)	
	NCBI Taxonomy ID	NCBI Taxonomy ID	
277990 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990)	277990 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990)	277990 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990)	
	is Taxon A an Intraspecies?	is Taxon B an Intraspecies?	
No	Yes		
		Taxon B Description	
		Brown County glyphosate-resistant	

GENOTYPIC CHANGE

At2g45300	Generic Gene Name	P05466 (http://www.uniprot.org/uniprot/P05466)	UniProtKB Arabidopsis thaliana
F4L23.19; At2g45300	Synonyms	0	GenebankID or UniProtKB
	String		
3702.AT2G45300.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT2G45300.1)			
	Sequence Similarities		
Belongs to the EPSP synthase family.			
	GO - Molecular Function		
GO:0003866 : 3-phosphoshikimate 1-carboxyvinyltransferase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003866)			
	GO - Biological Process		
GO:0009073 : aromatic amino acid family biosynthetic process (https://www.ebi.ac.uk/QuickGO/term/GO:0009073)			

GO:0009423 : chorismate biosynthetic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009423>)

GO - Cellular Component

GO:0009507 : chloroplast (<https://www.ebi.ac.uk/QuickGO/term/GO:0009507>)

GO:0009570 : chloroplast stroma (<https://www.ebi.ac.uk/QuickGO/term/GO:0009570>)

Presumptive Null

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^No^#gephebase-summary-title))

Molecular Type

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

Aberration Type

SNP ([https://www.gephebase.org/search-criteria?/and+Aberration Type=^SNP^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=^SNP^#gephebase-summary-title))

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

resistance not due to EPSPS amplification; partly due to P106S mutation

Experimental Evidence

Candidate Gene ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=^Candidate+Gene^#gephebase-summary-title))

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Pro	Ser	106

Main Reference

Multiple resistance to herbicides from four site-of-action groups in waterhemp (*Amaranthus tuberculatus*) . (2013) (<https://pubmed.ncbi.nlm.nih.gov/00000000.000011>)

Authors

Bell Michael S; Hager Aaron G; Tranel Patrick J

Abstract

-

Additional References

RELATED GEPHE

Related Genes

2 (ALS, protoporphyrinogen oxidase (PPO2 = PPX2L)) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=^277990^/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^277990^/and+Trait=Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^EPSPS^/and+Taxon ID=^277990^/or+Gene Gephebase=^EPSPS^/and+Taxon ID=^277990^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=^EPSPS^/and+Taxon+ID=^277990^/or+Gene+Gephebase=^EPSPS^/and+Taxon+ID=^277990^#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS