

GEPHE SUMMARY

ALS (https://www.gephebase.org/search-criteria?/and+Gene Gephebase= [^] ALS [^] #gephebase-summary-title)	Gephebase Gene	GP00001894	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; ALS inhibitor) (https://www.gephebase.org/search-criteria?/and+Trait [^] Xenobiotic resistance (herbicides; ALS inhibitor) [^] #gephebase-summary-title)	Trait		
Amaranthus tuberculatus - sensitive	Trait State in Taxon A		
Amaranthus tuberculatus - resistant	Trait State in Taxon B		
Taxon A	Ancestral State		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status= [^] Intraspecific [^] #gephebase-summary-title)	Taxonomic Status		
	Taxon A	Taxon B	
Amaranthus tuberculatus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= [^] Amaranthus tuberculatus [^] #gephebase-summary-title)	Latin Name	Amaranthus tuberculatus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= [^] Amaranthus tuberculatus [^] #gephebase-summary-title)	Latin Name
-	Common Name	-	Common Name
Amaranthus rudis; Amaranthus rudis J.D.Sauer; Amaranthus tuberculatus (Moq.) J.D.Sauer	Synonyms	Amaranthus rudis; Amaranthus rudis J.D.Sauer; Amaranthus tuberculatus (Moq.) J.D.Sauer	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; Caryophyllales; Amaranthaceae; Amaranthus	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; Caryophyllales; Amaranthaceae; Amaranthus	Lineage
Amaranthus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564)	Parent	Amaranthus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564)	Parent
277990 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990)	NCBI Taxonomy ID	277990 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

ALS	Generic Gene Name	P17597 (http://www.uniprot.org/uniprot/P17597)	UniProtKB Arabidopsis thaliana
ACETOHYDROXY ACID SYNTHASE; ACETOLACTATE SYNTHASE; AHAS; ALS; chlorsulfuron/imidazolinone resistant 1; IMIDAZOLE RESISTANT 1; IMR1; TRIAZOLOPYRIMIDINE RESISTANT 5; TZP5; CSR1; At3g48560; T8P19.70	Synonyms	()	GenebankID or UniProtKB
3702.AT3G48560.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT3G48560.1)	String		
Belongs to the TPP enzyme family.	Sequence Similarities		
GO:0000287 : magnesium ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0000287)	GO - Molecular Function		
GO:0050660 : flavin adenine dinucleotide binding (https://www.ebi.ac.uk/QuickGO/term/GO:0050660)			
GO:0003984 : acetolactate synthase activity			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0003984>)

GO:0030976 : thiamine pyrophosphate binding

(<https://www.ebi.ac.uk/QuickGO/term/GO:0030976>)

GO - Biological Process

GO:0009635 : response to herbicide (<https://www.ebi.ac.uk/QuickGO/term/GO:0009635>)

GO:0009097 : isoleucine biosynthetic process

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009097>)

GO:0009099 : valine biosynthetic process

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009099>)

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

S653N

Experimental Evidence

Linkage Mapping ([#gpepbase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence+Linkage+Mapping))

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

Main Reference

Multiple ALS mutations confer herbicide resistance in waterhemp (*Amaranthus tuberculatus*) . (2007) (<https://pubmed.ncbi.nlm.nih.gov/00000000.000012>)

Authors

Patzoldt William L; Tranel Patrick J

Abstract

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Additional References

RELATED GEPHE

Related Genes

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

Related Haplotypes

2 (<https://www.gephebase.org/search-criteria?/or+Gene+Gephebase+ALS+and+Taxon+ID+277990+or+Gene+Gephebase+ALS+and+Taxon+ID+277990#gpepbase-summary-title>)

EXTERNAL LINKS

COMMENTS