

## GEPHE SUMMARY

ALS ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase= <sup>^</sup> ALS <sup>^</sup> #gephebase-summary-title)	Gephebase Gene	GP00001893	GepheID
Published	Entry Status	Courtier	Main curator

## PHENOTYPIC CHANGE

Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category= <sup>^</sup> Physiology <sup>^</sup> #gephebase-summary-title)	Trait Category		
Xenobiotic resistance (herbicides; ALS inhibitor) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> = <sup>^</sup> Xenobiotic resistance (herbicides; ALS inhibitor) <sup>^</sup> #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 ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic">https://www.gephebase.org/search-criteria?/and+Taxonomic</a> Status= <sup>^</sup> Intraspecific <sup>^</sup> #gephebase-summary-title)	Taxonomic Status		
	Taxon A	Taxon B	
Amaranthus tuberculatus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms= <sup>^</sup> Amaranthus tuberculatus <sup>^</sup> #gephebase-summary-title)	Latin Name	Amaranthus tuberculatus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms= <sup>^</sup> Amaranthus tuberculatus <sup>^</sup> #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) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564</a> )	Parent	Amaranthus () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3564</a> )	Parent
277990 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990</a> )	NCBI Taxonomy ID	277990 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=277990</a> )	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

## GENOTYPIC CHANGE

ALS	Generic Gene Name	P17597 ( <a href="http://www.uniprot.org/uniprot/P17597">http://www.uniprot.org/uniprot/P17597</a> )	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 ( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT3G48560.1">http://string-db.org/newstring_cgi/show_network_section.pl?identifier=3702.AT3G48560.1</a> )	String		
Belongs to the TPP enzyme family.	Sequence Similarities		
GO:0000287 : magnesium ion binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0000287">https://www.ebi.ac.uk/QuickGO/term/GO:0000287</a> )	GO - Molecular Function		
GO:0050660 : flavin adenine dinucleotide binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0050660">https://www.ebi.ac.uk/QuickGO/term/GO:0050660</a> )			
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 (<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>)

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

W574L

Experimental Evidence

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

	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#gephebase-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^#gephebase-summary-title>)

## EXTERNAL LINKS

## COMMENTS