

## GEPHE SUMMARY

GSTe ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^GSTe+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^GSTe+^#gephebase-summary-title</a> )	Gephebase Gene	GP00002459	GepheID
Published	Entry Status	Courtier	Main curator

## PHENOTYPIC CHANGE

Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category+^Physiology+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category+^Physiology+^#gephebase-summary-title</a> )	Trait Category		
Xenobiotic resistance (insecticide; DDT) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+^Xenobiotic+resistance+(insecticide;+DDT)+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+^Xenobiotic+resistance+(insecticide;+DDT)+^#gephebase-summary-title</a> )	Trait		
Spodoptera littoralis - sensitive	Trait State in Taxon A		
Spodoptera littoralis - resistant	Trait State in Taxon B		
Data not curated	Ancestral State		
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+^Intraspecific+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+^Intraspecific+^#gephebase-summary-title</a> )	Taxonomic Status		

Taxon A	Latin Name	Taxon B	Latin Name
Spodoptera littoralis ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Spodoptera+littoralis+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Spodoptera+littoralis+^#gephebase-summary-title</a> )	Spodoptera littoralis	Spodoptera littoralis ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Spodoptera+littoralis+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Spodoptera+littoralis+^#gephebase-summary-title</a> )	Spodoptera littoralis
African cotton leafworm	Common Name	African cotton leafworm	Common Name
African cotton leafworm; Egyptian cotton leafworm; Spodoptera littoralis Boisduval, 1833	Synonyms	African cotton leafworm; Egyptian cotton leafworm; Spodoptera littoralis Boisduval, 1833	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphimesoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Noctuoidea; Noctuidae; Amphipyridae; Spodoptera	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphimesoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Noctuoidea; Noctuidae; Amphipyridae; Spodoptera	Lineage
Spodoptera () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7106">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7106</a> )	Parent	Spodoptera () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7106">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7106</a> )	Parent
7109 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7109">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7109</a> )	NCBI Taxonomy ID	7109 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7109">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7109</a> )	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

## GENOTYPIC CHANGE

GstE2	Generic Gene Name	Q7JYZ9 ( <a href="http://www.uniprot.org/uniprot/Q7JYZ9">http://www.uniprot.org/uniprot/Q7JYZ9</a> )	UniProtKB Drosophila melanogaster
CG17523; Dmel\CG17523; DmGSTE2; gste2; GSTE2; Dmel_CG17523	Synonyms	()	GenebankID or UniProtKB
7227.FBpp0085851 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0085851">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0085851</a> )	String		
-	Sequence Similarities		
GO:0004364 : glutathione transferase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0004364">https://www.ebi.ac.uk/QuickGO/term/GO:0004364</a> )	GO - Molecular Function		
GO:0006749 : glutathione metabolic process ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0006749">https://www.ebi.ac.uk/QuickGO/term/GO:0006749</a> )	GO - Biological Process		
	GO - Cellular Component		

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)

Presumptive Null

Unknown (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#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

L119F. The resistant allele is more efficient at metabolizing DDT than the susceptible one.

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Leu	Phe	119

Main Reference

Resistance in the Genus Spodoptera: Key Insect Detoxification Genes. (2021) (<https://pubmed.ncbi.nlm.nih.gov/34208014>)

Authors

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Abstract

The genus Spodoptera (Lepidoptera: Noctuidae) includes species that are among the most important crop pests in the world. These polyphagous species are able to feed on many plants, including corn, rice and cotton. In addition to their ability to adapt to toxic compounds produced by plants, they have developed resistance to the chemical insecticides used for their control. One of the main mechanisms developed by insects to become resistant involves detoxification enzymes. In this review, we illustrate some examples of the role of major families of detoxification enzymes such as cytochromes P450, carboxyl/cholinesterases, glutathione S-transferases (GST) and transporters such as ATP-binding cassette (ABC) transporters in insecticide resistance. We compare available data for four species, *Spodoptera exigua*, *S. frugiperda*, *S. littoralis* and *S. litura*. Molecular mechanisms underlying the involvement of these genes in resistance will be described, including the duplication of the CYP9A cluster, over-expression of GST epsilon or point mutations in acetylcholinesterase and ABCC2. This review is not intended to be exhaustive but to highlight the key roles of certain genes.

Additional References

A single mutation in the GSTe2 gene allows tracking of metabolically based insecticide resistance in a major malaria vector. (2014) (<https://pubmed.ncbi.nlm.nih.gov/24565444>)

## RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS