

GEPHE SUMMARY

	Gephebase Gene		GepheID
cadherin (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~cadherin~#gephebase-summary-title)		GP00000161	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)		Trait Category	
Xenobiotic resistance (insecticide) (https://www.gephebase.org/search-criteria?/and+Trait=^Xenobiotic resistance (insecticide)^#gephebase-summary-title)		Trait	
Heliothis virescens - Bt susceptible		Trait State in Taxon A	
Heliothis virescens - Bt 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	
Heliothis virescens (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Heliothis virescens^#gephebase-summary-title)	Latin Name	Heliothis virescens (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Heliothis virescens^#gephebase-summary-title)	Latin Name
tobacco budworm	Common Name	tobacco budworm	Common Name
tobacco budworm; Chloridea virescens; Helicoverpa virescens; Heliothis virescens (Fabricius, 1777)	Synonyms	tobacco budworm; Chloridea virescens; Helicoverpa virescens; Heliothis virescens (Fabricius, 1777)	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Noctuoidea; Noctuidae; Heliothinae; Heliothis	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Noctuoidea; Noctuidae; Heliothinae; Heliothis	Lineage
Heliothis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7101)	Parent	Heliothis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7101)	Parent
7102 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7102)	NCBI Taxonomy ID	7102 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7102)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

BtR	Generic Gene Name	Q19KJ3 (http://www.uniprot.org/uniprot/Q19KJ3)	UniProtKB Helicoverpa armigera
-	Synonyms	AAK85198 (https://www.ncbi.nlm.nih.gov/nuccore/AAK85198)	GenebankID or UniProtKB
-	String		
-	Sequence Similarities		
-	GO - Molecular Function		
	GO:0005509 : calcium ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005509)		
	GO - Biological Process		
	GO:0007156 : homophilic cell adhesion via plasma membrane adhesion molecules (https://www.ebi.ac.uk/QuickGO/term/GO:0007156)		
	GO - Cellular Component		
	GO:0016021 : integral component of membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0016021)		

GO:0005886 : plasma membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005886)	Presumptive Null
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^Yes^#gephebase-summary-title)	Molecular Type
Coding (https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Coding^#gephebase-summary-title)	Aberration Type
Insertion (https://www.gephebase.org/search-criteria?/and+Aberration+Type=^Insertion^#gephebase-summary-title)	Insertion Size
1-10 kb	Molecular Details of the Mutation
Insertion of retrotransposon	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=^Linkage+Mapping^#gephebase-summary-title)	Main Reference
Identification of a gene associated with Bt resistance in <i>Heliothis virescens</i> . (2001) (https://pubmed.ncbi.nlm.nih.gov/11486086)	Authors
Gahan LJ; Gould F; Heckel DG	Abstract
Transgenic crops producing insecticidal toxins from <i>Bacillus thuringiensis</i> (Bt) are widely used for pest control. Bt-resistant insect strains have been studied, but the molecular basis of resistance has remained elusive. Here, we show that disruption of a cadherin-superfamily gene by retrotransposon-mediated insertion was linked to high levels of resistance to the Bt toxin Cry1Ac in the cotton pest <i>Heliothis virescens</i> . Monitoring the early phases of Bt resistance evolution in the field has been viewed as crucial but extremely difficult, especially when resistance is recessive. Our findings enable efficient DNA-based screening for resistant heterozygotes by directly detecting the recessive allele.	
	Additional References

RELATED GEPHE

2 (ABCC2, para (kdr)) (https://www.gephebase.org/search-criteria?/or+Taxon+ID=^7102^/and+Trait=Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

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