

GEPHE SUMMARY

foraging ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~foraging^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~foraging^#gephebase-summary-title</a> )	Gephebase Gene	GP00002619	GepheID
Published	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

Behavior ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=~Behavior^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=~Behavior^#gephebase-summary-title</a> )	Trait Category
Food-search behavior ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=~Food-search+behavior^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=~Food-search+behavior^#gephebase-summary-title</a> )	Trait
Sesamia nonagrioides - low foraging activity	Trait State in Taxon A
Sesamia nonagrioides - high foraging activity	Trait State in Taxon B
Unknown	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
Sesamia nonagrioides ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title</a> )	Sesamia nonagrioides ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title</a> )	Sesamia nonagrioides ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title</a> )	Sesamia nonagrioides ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Sesamia+nonagrioides^#gephebase-summary-title</a> )
Mediterranean corn borer	Common Name	Mediterranean corn borer	Common Name
Mediterranean corn borer; Sesamia nonagrioides	Synonyms	Mediterranean corn borer; Sesamia nonagrioides	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Noctuoidea; Noctuidae; Amphipyriinae; Sesamia	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Noctuoidea; Noctuidae; Amphipyriinae; Sesamia	Lineage
Sesamia () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=134396">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=134396</a> )	Parent	Sesamia () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=134396">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=134396</a> )	Parent
236805 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=236805">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=236805</a> )	NCBI Taxonomy ID	236805 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=236805">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=236805</a> )	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

for	Generic Gene Name	UniProtKB Drosophila melanogaster
142251_at; anon-WO0140519.260; anon-WO02059370.47; BcDNA:GM08338; CG10033; dg2; Dg2; DG2; Dmell\CG10033; For; FOR/PKG; I(2)06860; PKG; Pkg2; PKG2; Pkg24A; PGK2	Synonyms	Q03043 ( <a href="http://www.uniprot.org/uniprot/Q03043">http://www.uniprot.org/uniprot/Q03043</a> ) ()
7227.FBpp0088350 ( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0088350">http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0088350</a> )	String	GenebankID or UniProtKB
Belongs to the protein kinase superfamily. AGC Ser/Thr protein kinase family. cGMP subfamily.	Sequence Similarities	
GO:0005524 : ATP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005524">https://www.ebi.ac.uk/QuickGO/term/GO:0005524</a> )	GO - Molecular Function	
GO:0004674 : protein serine/threonine kinase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0004674">https://www.ebi.ac.uk/QuickGO/term/GO:0004674</a> )		

GO:0030553 : cGMP binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0030553>)

GO:0004692 : cGMP-dependent protein kinase activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0004692>)

GO - Biological Process

GO:0007616 : long-term memory (<https://www.ebi.ac.uk/QuickGO/term/GO:0007616>)

GO:0006468 : protein phosphorylation  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006468>)

GO:0007614 : short-term memory (<https://www.ebi.ac.uk/QuickGO/term/GO:0007614>)

GO:0008016 : regulation of heart contraction  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008016>)

GO:0030536 : larval feeding behavior  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0030536>)

GO:0007631 : feeding behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0007631>)

GO:0046959 : habituation (<https://www.ebi.ac.uk/QuickGO/term/GO:0046959>)

GO:0008345 : larval locomotory behavior  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008345>)

GO:0008045 : motor neuron axon guidance  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008045>)

GO:0030510 : regulation of BMP signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0030510>)

GO:0032095 : regulation of response to food  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0032095>)

GO:0009744 : response to sucrose (<https://www.ebi.ac.uk/QuickGO/term/GO:0009744>)

GO - Cellular Component

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)

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

GO:0005829 : cytosol (<https://www.ebi.ac.uk/QuickGO/term/GO:0005829>)

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=))

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

Association between a coding SNP in foraging gene and foraging activity. But not clear whether the causal mutation is this one.

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=))

Main Reference

Food searching behaviour of a Lepidoptera pest species is modulated by the foraging gene polymorphism. (2014) (<https://pubmed.ncbi.nlm.nih.gov/25274324>)

Authors

Chardonnet F; Capdevielle-Dulac C; Chouquet B; Joly N; Harry M; Le Ru B; Silvain JF; Kaiser L

Abstract

The extent of damage to crop plants from pest insects depends on the foraging behaviour of the insect's feeding stage. Little is known, however, about the genetic and molecular bases of foraging behaviour in phytophagous pest insects. The foraging gene (*for*), a candidate gene encoding a PKG-I, has an evolutionarily conserved function in feeding strategies. Until now, *for* had never been studied in Lepidoptera, which includes major pest species. The cereal stem borer *Sesamia nonagrioides* is therefore a relevant species within this order with which to study conservation of and polymorphism in the *for* gene, and its role in foraging - a behavioural trait that is directly associated with plant injuries. Full sequencing of *for* cDNA in *S. nonagrioides* revealed a high degree of conservation with other insect taxa. Activation of PKG by a cGMP analogue increased larval foraging activity, measured by how frequently larvae moved between food patches in an actimeter. We found one non-synonymous allelic variation in a natural population that defined two allelic variants. These variants presented significantly different levels of foraging activity, and the behaviour was positively correlated to gene expression levels. Our results show that *for* gene function is conserved in this species of Lepidoptera, and describe an original case of a single nucleotide polymorphism associated with foraging behaviour variation in a pest insect. By illustrating how variation in this single gene can predict phenotype, this work opens new perspectives into the evolutionary context of insect adaptation to plants, as well as pest management.

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Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

