

GEPHE SUMMARY

<p>follistatin (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=[^]follistatin[^]#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00002138</p> <p>Martin</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

Trait #1	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category= [^] Morphology [^] #gephebase-summary-title)	Trait
Limb morphology (wing dimorphism) (https://www.gephebase.org/search-criteria?/and+Trait = [^] Limb morphology (wing dimorphism) [^] #gephebase-summary-title)	Trait State in Taxon A
winged males (aphicarus allele)	Trait State in Taxon B
wingless males	

Trait #2	Trait Category
Behavior (https://www.gephebase.org/search-criteria?/and+Trait Category= [^] Behavior [^] #gephebase-summary-title)	Trait
Flight behavior (wing dimorphism) (https://www.gephebase.org/search-criteria?/and+Trait = [^] Flight behavior (wing dimorphism) [^] #gephebase-summary-title)	Trait State in Taxon A
winged males (aphicarus allele); more active	Trait State in Taxon B
wingless males; less active	

Taxon A	Ancestral State
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status= [^] Intraspecific [^] #gephebase-summary-title)	Taxonomic Status

Taxon A	Taxon B
Latin Name	Latin Name
Acyrthosiphon pisum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= [^] Acyrthosiphon pisum [^] #gephebase-summary-title)	Acyrthosiphon pisum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms= [^] Acyrthosiphon pisum [^] #gephebase-summary-title)
Common Name	Common Name
pea aphid	pea aphid
Synonyms	Synonyms
Acyrthosiphum pisum; pea aphid; Acyrthosiphon pisum (Harris, 1776); Acyrthosiphum pisum species	Acyrthosiphum pisum; pea aphid; Acyrthosiphon pisum (Harris, 1776); Acyrthosiphum pisum species
Rank	Rank
species	species
Lineage	Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Paraneoptera; Hemiptera; Sternorrhyncha; Aphidomorpha; Aphidoidea; Aphididae; Aphidinae; Macrosiphini; Acyrthosiphon	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Paraneoptera; Hemiptera; Sternorrhyncha; Aphidomorpha; Aphidoidea; Aphididae; Aphidinae; Macrosiphini; Acyrthosiphon
Parent	Parent
Acyrthosiphon () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7028)	Acyrthosiphon () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7028)
NCBI Taxonomy ID	NCBI Taxonomy ID
7029	7029
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7029)	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7029)
is Taxon A an Intraspecies?	is Taxon B an Intraspecies?
No	No

GENOTYPIC CHANGE

Fs	Generic Gene Name Q86NV3 (http://www.uniprot.org/uniprot/Q86NV3)	UniProtKB Drosophila melanogaster
CG12955; CG12956; CG33466; dFol1; dfs; dFS; Dmel\CG33466; Fol1; fs; Dmel.CG33466	Synonyms ()	GenebankID or UniProtKB
7227.FBpp0089409 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0089409)	String	
-	Sequence Similarities	
GO:0048185 : activin binding (https://www.ebi.ac.uk/QuickGO/term/GO:0048185)	GO - Molecular Function	
GO:0007275 : multicellular organism development (https://www.ebi.ac.uk/QuickGO/term/GO:0007275)	GO - Biological Process	
GO:0030154 : cell differentiation (https://www.ebi.ac.uk/QuickGO/term/GO:0030154)		
GO:0030510 : regulation of BMP signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0030510)		
GO:0030514 : negative regulation of BMP signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0030514)		
GO:0032926 : negative regulation of activin receptor signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0032926)		
GO:0032927 : positive regulation of activin receptor signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0032927)		
GO:0005576 : extracellular region (https://www.ebi.ac.uk/QuickGO/term/GO:0005576)	GO - Cellular Component	
GO:0005615 : extracellular space (https://www.ebi.ac.uk/QuickGO/term/GO:0005615)		
No (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~No~#gephebase-summary-title)		Presumptive Null
Gene Amplification (https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Gene+Amplification~#gephebase-summary-title)		Molecular Type
Insertion (https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Insertion~#gephebase-summary-title)		Aberration Type
-		Insertion Size
the api allele from winged males is a 120kb insertion that includes a copy of the follistatin gene		Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping~#gephebase-summary-title)		Experimental Evidence
A large genomic insertion containing a duplicated follistatin gene is linked to the pea aphid male wing dimorphism. (2020) (https://pubmed.ncbi.nlm.nih.gov/32141813)		Main Reference
Li B; Bickel RD; Parker BJ; Saleh Ziabari O; Liu F; Vellichiramal NN; Simon JC; Stern DL; Brisson JA		Authors
Wing dimorphisms have long served as models for examining the ecological and evolutionary tradeoffs associated with alternative phenotypes. Here, we investigated the genetic cause of the pea aphid (<i>Acyrtosiphon pisum</i>) male wing dimorphism, wherein males exhibit one of two morphologies that differ in correlated traits that include the presence or absence of wings. We mapped this trait difference to a single genomic region and, using third generation, long-read sequencing, we identified a 120 kb insertion in the wingless allele. This insertion includes a duplicated follistatin gene, which is a strong candidate gene in the minimal mapped interval to cause the dimorphism. We found that both alleles were present prior to pea aphid biotype lineage diversification, we estimated that the insertion occurred millions of years ago, and we propose that both alleles have been maintained in the species, likely due to balancing selection.		Abstract
Â© 2020, Li et al.		Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

@GeneDuplication @BalancingSelection ; ancient polymorphism in the pea aphid lineage

