

GEPHE SUMMARY

<p>folllistatin (<a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase=<sup>^</sup>folllistatin<sup>^</sup>#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

<p>Trait #1</p> <p>Morphology (<a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category=<sup>^</sup>Morphology<sup>^</sup>#gephebase-summary-title)</p> <p>Limb morphology (wing dimorphism) (<a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> =<sup>^</sup>Limb morphology (wing dimorphism)<sup>^</sup>#gephebase-summary-title)</p> <p>winged males (aphicarus allele)</p> <p>wingless males</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p>
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<p>Trait #2</p> <p>Behavior (<a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category=<sup>^</sup>Behavior<sup>^</sup>#gephebase-summary-title)</p> <p>Flight behavior (wing dimorphism) (<a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> =<sup>^</sup>Flight behavior (wing dimorphism)<sup>^</sup>#gephebase-summary-title)</p> <p>winged males (aphicarus allele); more active</p> <p>wingless males; less active</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p>
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<p>Taxon A</p> <p>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)</p>	<p>Ancestral State</p> <p>Taxonomic Status</p>
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<p>Taxon A</p> <p>Acyrthosiphon pisum (<a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms=<sup>^</sup>Acyrthosiphon pisum<sup>^</sup>#gephebase-summary-title)</p> <p>pea aphid</p> <p>Acyrthosiphum pisum; pea aphid; Acyrthosiphon pisum (Harris, 1776); Acyrthosiphum pisum species</p> <p>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</p> <p>Acyrthosiphon () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7028">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7028</a>)</p> <p>7029 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7029">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7029</a>)</p> <p>No</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon A an Intraspecies?</p>
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<p>Taxon B</p> <p>Acyrthosiphon pisum (<a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms=<sup>^</sup>Acyrthosiphon pisum<sup>^</sup>#gephebase-summary-title)</p> <p>pea aphid</p> <p>Acyrthosiphum pisum; pea aphid; Acyrthosiphon pisum (Harris, 1776); Acyrthosiphum pisum species</p> <p>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</p> <p>Acyrthosiphon () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7028">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7028</a>)</p> <p>7029 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7029">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7029</a>)</p> <p>No</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p>
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GENOTYPIC CHANGE

Fs	Generic Gene Name Q86NV3 ( <a href="http://www.uniprot.org/uniprot/Q86NV3">http://www.uniprot.org/uniprot/Q86NV3</a> )	UniProtKB Drosophila melanogaster
CG12955; CG12956; CG33466; dFol1; dfs; dFS; Dmel\CG33466; Fol1; fs; Dmel.CG33466	Synonyms ()	GenebankID or UniProtKB
7227.FBpp0089409 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0089409">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0089409</a> )	String	
-	Sequence Similarities	
	GO - Molecular Function GO:0048185 : activin binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0048185">https://www.ebi.ac.uk/QuickGO/term/GO:0048185</a> )	
	GO - Biological Process GO:0007275 : multicellular organism development ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0007275">https://www.ebi.ac.uk/QuickGO/term/GO:0007275</a> ) GO:0030154 : cell differentiation ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030154">https://www.ebi.ac.uk/QuickGO/term/GO:0030154</a> ) GO:0030510 : regulation of BMP signaling pathway ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030510">https://www.ebi.ac.uk/QuickGO/term/GO:0030510</a> ) GO:0030514 : negative regulation of BMP signaling pathway ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030514">https://www.ebi.ac.uk/QuickGO/term/GO:0030514</a> ) GO:0032926 : negative regulation of activin receptor signaling pathway ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0032926">https://www.ebi.ac.uk/QuickGO/term/GO:0032926</a> ) GO:0032927 : positive regulation of activin receptor signaling pathway ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0032927">https://www.ebi.ac.uk/QuickGO/term/GO:0032927</a> )	
	GO - Cellular Component GO:0005576 : extracellular region ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005576">https://www.ebi.ac.uk/QuickGO/term/GO:0005576</a> ) GO:0005615 : extracellular space ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005615">https://www.ebi.ac.uk/QuickGO/term/GO:0005615</a> )	
No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~No~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~No~#gephebase-summary-title</a> )		Presumptive Null
Gene Amplification ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Gene+Amplification~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Gene+Amplification~#gephebase-summary-title</a> )		Molecular Type
Insertion ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Insertion~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Insertion~#gephebase-summary-title</a> )		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 ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping~#gephebase-summary-title</a> )		Experimental Evidence
A large genomic insertion containing a duplicated follistatin gene is linked to the pea aphid male wing dimorphism. (2020) ( <a href="https://pubmed.ncbi.nlm.nih.gov/32141813">https://pubmed.ncbi.nlm.nih.gov/32141813</a> )		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

