

GEPHE SUMMARY

<p>syntaxin1a (<a +syntaxin1a+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+syntaxin1a+"#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00002624</p> <p>Courtier</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

<p>Behavior (<a +behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Behavior+"#gephebase-summary-title)</p> <p>Eusociality (<a +eusociality+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Eusociality+"#gephebase-summary-title)</p> <p>Lasioglossum albipes - solitary nest</p> <p>Lasioglossum albipes - eusocial nest</p> <p>Taxon A</p> <p>Intraspecific (<a +intraspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific+"#gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Latin Name</p> <p>Lasioglossum albipes (<a +lasioglossum+albipes+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Lasioglossum+albipes+"#gephebase-summary-title)</p> <p>-</p> <p>Lasioglossum albipes (Fabricius, 1781)</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Hymenoptera; Apocrita; Aculeata; Apoidea; Halictidae; Halictinae; Halictini; Lasioglossum; Evylaeus</p> <p>Evylaeus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=88474)</p> <p>88501 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=88501)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Lasioglossum albipes (<a +lasioglossum+albipes+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Lasioglossum+albipes+"#gephebase-summary-title)</p> <p>-</p> <p>Lasioglossum albipes (Fabricius, 1781)</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Hymenoptera; Apocrita; Aculeata; Apoidea; Halictidae; Halictinae; Halictini; Lasioglossum; Evylaeus</p> <p>Evylaeus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=88474)</p> <p>88501 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=88501)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p>
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GENOTYPIC CHANGE

<p>Syx1A</p> <p>anon-EST:Gibbs4; anon-WO02059370.54; CG10716; CG18615; CG31136; CG5448; CT30033; Dm Syx1; Dmel\CG31136; DmSyx1A; dsyn-1A; dSyx1; l(3)06737; STX1; Stx1a; Sx1A; Syn; synt; syntaxin; syntaxin1A; Synx1A; syt-1A; Syt1A; sytx; syx; Syx; SYX; SYX 1A; syx-1; syx-1A; Syx-1A; syx1; Syx1; syx1A; Syx1a; SYX1A; SyxA</p> <p>7227.FBpp0292260 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0292260)</p> <p>Belongs to the syntaxin family.</p> <p>GO:0000149 : SNARE binding (https://www.ebi.ac.uk/QuickGO/term/GO:0000149)</p> <p>GO:0005484 : SNAP receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0005484)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p>	<p>UniProtKB Drosophila melanogaster</p> <p>Q24547 (http://www.uniprot.org/uniprot/Q24547)</p> <p>()</p> <p>GenebankID or UniProtKB</p>
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GO:0006886 : intracellular protein transport
 (https://www.ebi.ac.uk/QuickGO/term/GO:0006886)
 GO:0016192 : vesicle-mediated transport
 (https://www.ebi.ac.uk/QuickGO/term/GO:0016192)
 GO:0007274 : neuromuscular synaptic transmission
 (https://www.ebi.ac.uk/QuickGO/term/GO:0007274)
 GO:0007482 : haltere development (https://www.ebi.ac.uk/QuickGO/term/GO:0007482)
 GO:0000281 : mitotic cytokinesis (https://www.ebi.ac.uk/QuickGO/term/GO:0000281)
 GO:0007349 : cellularization (https://www.ebi.ac.uk/QuickGO/term/GO:0007349)
 GO:0048278 : vesicle docking (https://www.ebi.ac.uk/QuickGO/term/GO:0048278)
 GO:0006906 : vesicle fusion (https://www.ebi.ac.uk/QuickGO/term/GO:0006906)
 GO:0006887 : exocytosis (https://www.ebi.ac.uk/QuickGO/term/GO:0006887)
 GO:0007269 : neurotransmitter secretion
 (https://www.ebi.ac.uk/QuickGO/term/GO:0007269)
 GO:0017157 : regulation of exocytosis (https://www.ebi.ac.uk/QuickGO/term/GO:0017157)
 GO:0007317 : regulation of pole plasm oskar mRNA localization
 (https://www.ebi.ac.uk/QuickGO/term/GO:0007317)
 GO:0016081 : synaptic vesicle docking
 (https://www.ebi.ac.uk/QuickGO/term/GO:0016081)
 GO:0031629 : synaptic vesicle fusion to presynaptic active zone membrane
 (https://www.ebi.ac.uk/QuickGO/term/GO:0031629)

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)
 GO:0008021 : synaptic vesicle (https://www.ebi.ac.uk/QuickGO/term/GO:0008021)
 GO:0005765 : lysosomal membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005765)
 GO:0012505 : endomembrane system
 (https://www.ebi.ac.uk/QuickGO/term/GO:0012505)
 GO:0043195 : terminal bouton (https://www.ebi.ac.uk/QuickGO/term/GO:0043195)
 GO:0031201 : SNARE complex (https://www.ebi.ac.uk/QuickGO/term/GO:0031201)
 GO:0070161 : anchoring junction (https://www.ebi.ac.uk/QuickGO/term/GO:0070161)
 GO:0048787 : presynaptic active zone membrane
 (https://www.ebi.ac.uk/QuickGO/term/GO:0048787)
 GO:0030672 : synaptic vesicle membrane
 (https://www.ebi.ac.uk/QuickGO/term/GO:0030672)

Presumptive Null

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No^#gephebase-summary-title)

Molecular Type

Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Cis-regulatory^#gephebase-summary-title)

Aberration Type

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

Molecular Details of the Mutation

Increased expression in eusocial individuals compared to solitary individuals

Experimental Evidence

Association Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Association Mapping^#gephebase-summary-title)

Main Reference

The genetic basis of a social polymorphism in halictid bees. (2018) (https://pubmed.ncbi.nlm.nih.gov/30337532)

Authors

Kocher SD; Mallarino R; Rubin BER; Yu DW; Hoekstra HE; Pierce NE

Abstract

The emergence of eusociality represents a major evolutionary transition from solitary to group reproduction. The most commonly studied eusocial species, honey bees and ants, represent the behavioral extremes of social evolution but lack close relatives that are non-social. Unlike these species, the halictid bee *Lasioglossum albipes* produces both solitary and eusocial nests and this intraspecific variation has a genetic basis. Here, we identify genetic variants associated with this polymorphism, including one located in the intron of *syntaxin 1a* (*syx1a*), a gene that mediates synaptic vesicle release. We show that this variant can alter gene expression in a pattern consistent with differences between social and solitary bees. Surprisingly, *syx1a* and several other genes associated with sociality in *L. albipes* have also been implicated in autism spectrum disorder in humans. Thus, genes underlying behavioral variation in *L. albipes* may also shape social behaviors across a wide range of taxa, including humans.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

