

GEPHE SUMMARY

<p>tartan (<a +tartan+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+tartan+"#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00002047</p> <p>Courtier</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

Trait #1	Trait Category
Morphology (<a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title)	
	Trait
Organ size (genitalia; clasper) (<a +organ+size+(genitalia;+clasper)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Organ+size+(genitalia;+clasper)+"#gephebase-summary-title)	
	Trait State in Taxon A
Drosophila mauritiana	
	Trait State in Taxon B
Drosophila simulans	

Trait #2	Trait Category
Morphology (<a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title)	
	Trait
Bristle number (genitalia; clasper) (<a +bristle+number+(genitalia;+clasper)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Bristle+number+(genitalia;+clasper)+"#gephebase-summary-title)	
	Trait State in Taxon A
Drosophila simulans - small claspers	
	Trait State in Taxon B
Drosophila mauritiana - larger claspers; increased spatial domain and temporal expression of tartan during clasper development	

Taxon A	Ancestral State
	Taxonomic Status
Interspecific (<a +interspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Interspecific+"#gephebase-summary-title)	

Taxon A	
Latin Name	
Drosophila simulans (<a +drosophila+simulans+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Drosophila+simulans+"#gephebase-summary-title)	
Common Name	
-	
Synonyms	
-	
Rank	
species	
Lineage	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Brachycera; Muscomorpha; Eremoneura; Cyclorrhapha; Schizophora; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	
Parent	
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	
NCBI Taxonomy ID	
7240 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7240)	
is Taxon A an Intraspecies?	
No	

Taxon B	
Latin Name	
Drosophila mauritiana (<a +drosophila+mauritiana+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Drosophila+mauritiana+"#gephebase-summary-title)	
Common Name	
-	
Synonyms	
-	
Rank	
species	
Lineage	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Brachycera; Muscomorpha; Eremoneura; Cyclorrhapha; Schizophora; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	
Parent	
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	
NCBI Taxonomy ID	
7226 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7226)	
is Taxon B an Intraspecies?	
No	

GENOTYPIC CHANGE

trn	Generic Gene Name	Q9VU51 (http://www.uniprot.org/uniprot/Q9VU51)	UniProtKB Drosophila melanogaster
0024/05; 0641/17; anon-EST:fe2B1; CG11280; CT31487; Dmel\CG11280; Trn; 0024; 05; 0641; 17; Dmel_CG11280	Synonyms	()	GenebankID or UniProtKB
-	String		
-	Sequence Similarities		
-	GO - Molecular Function		
	GO - Biological Process		
GO:0007155 : cell adhesion (https://www.ebi.ac.uk/QuickGO/term/GO:0007155)			
GO:0008045 : motor neuron axon guidance (https://www.ebi.ac.uk/QuickGO/term/GO:0008045)			
GO:0016477 : cell migration (https://www.ebi.ac.uk/QuickGO/term/GO:0016477)			
GO:0035147 : branch fusion, open tracheal system (https://www.ebi.ac.uk/QuickGO/term/GO:0035147)			
GO:0007436 : larval salivary gland morphogenesis (https://www.ebi.ac.uk/QuickGO/term/GO:0007436)			
	GO - Cellular Component		
GO:0016021 : integral component of membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0016021)			
GO:0031012 : extracellular matrix (https://www.ebi.ac.uk/QuickGO/term/GO:0031012)			
GO:0005615 : extracellular space (https://www.ebi.ac.uk/QuickGO/term/GO:0005615)			
No (<a ^no^"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=">#gephebase-summary-title)			Presumptive Null
Cis-regulatory (<a ^cis-regulatory^"="" href="https://www.gephebase.org/search-criteria?/and+Molecular Type=">#gephebase-summary-title)			Molecular Type
Unknown (<a ^unknown^"="" href="https://www.gephebase.org/search-criteria?/and+Aberration Type=">#gephebase-summary-title)			Aberration Type
no coding changes			Molecular Details of the Mutation
Linkage Mapping (<a ^linkage="" href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=" mapping^"="">#gephebase-summary-title)			Experimental Evidence
tartan underlies the evolution of Drosophila male genital morphology. (2019) (https://pubmed.ncbi.nlm.nih.gov/31484761)			Main Reference
Hagen JFD; Mendes CC; Blogg A; Payne A; Tanaka KM; Gaspar P; Figueras Jimenez J; Kittelmann M; McGregor AP; Nunes MDS			Authors
Male genital structures are among the most rapidly evolving morphological traits and are often the only features that can distinguish closely related species. This process is thought to be driven by sexual selection and may reinforce species separation. However, while the genetic bases of many phenotypic differences have been identified, we still lack knowledge about the genes underlying evolutionary differences in male genital organs and organ size more generally. The claspers (surstyli) are periphallal structures that play an important role in copulation in insects. Here, we show that divergence in clasper size and bristle number between <i>Drosophila mauritiana</i> and <i>Drosophila simulans</i> is caused by evolutionary changes in tartan (trn), which encodes a transmembrane leucine-rich repeat domain protein that mediates cell-cell interactions and affinity. There are no fixed amino acid differences in trn between <i>D. mauritiana</i> and <i>D. simulans</i> , but differences in the expression of this gene in developing genitalia suggest that cis-regulatory changes in trn underlie the evolution of clasper morphology in these species. Finally, analyses of reciprocal hemizygotes that are genetically identical, except for the species from which the functional allele of trn originates, determined that the trn allele of <i>D. mauritiana</i> specifies larger claspers with more bristles than the allele of <i>D. simulans</i> . Therefore, we have identified a gene underlying evolutionary change in the size of a male genital organ, which will help to better understand not only the rapid diversification of these structures, but also the regulation and evolution of organ size more broadly.			Abstract
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RELATED GEPHE

No matches found.	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

