

GEPHE SUMMARY

yellow (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^yellow^#gephebase-summary-title)	Gephebase Gene	GP00001551	GepheID
Published	Entry Status	Prigent	Main curator

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Morphology^#gephebase-summary-title)	Trait Category		
Coloration (male-specific) (https://www.gephebase.org/search-criteria?/and+Trait=^Coloration (male-specific)^#gephebase-summary-title)	Trait		
D. m. malerkotliana with darker male abdominal pigmentation	Trait State in Taxon A		
D. bipectinata with light colored male abdominal pigmentation	Trait State in Taxon B		
Unknown	Ancestral State		
Interspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Interspecific^#gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
	Latin Name		Latin Name
Drosophila malerkotliana (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Drosophila+malerkotliana^#gephebase-summary-title)	Drosophila bipectinata (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Drosophila+bipectinata^#gephebase-summary-title)		
-	Common Name	-	Common Name
-	Synonyms	-	Synonyms
species	Rank	Drosophila bipectinata Duda, 1923	Rank
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; Acalyptera; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; ananassae subgroup; bipectinata species complex	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; Acalyptera; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; ananassae subgroup; bipectinata species complex	Lineage
bipectinata species complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=186282)	Parent	bipectinata species complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=186282)	Parent
30036 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=30036)	NCBI Taxonomy ID	42026 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=42026)	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
D. m. malerkotliana with darker male abdominal pigmentation	Taxon A Description	D. bipectinata with light colored male abdominal pigmentation	Taxon B Description

GENOTYPIC CHANGE

y	Generic Gene Name	UniProtKB Drosophila melanogaster
CG3757; Dmel\CG3757; EG:125H10.2; T6; Y	Synonyms	GenebankID or UniProtKB
7227.FBpp0070070 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0070070)	String	()
Belongs to the major royal jelly protein family.	Sequence Similarities	
-	GO - Molecular Function	
GO:0042438 : melanin biosynthetic process	GO - Biological Process	

(<https://www.ebi.ac.uk/QuickGO/term/GO:0042438>)
 GO:0048082 : regulation of adult chitin-containing cuticle pigmentation
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0048082>)
 GO:0048066 : developmental pigmentation
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0048066>)
 GO:0048067 : cuticle pigmentation (<https://www.ebi.ac.uk/QuickGO/term/GO:0048067>)
 GO:0006583 : melanin biosynthetic process from tyrosine
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0006583>)
 GO:0048065 : male courtship behavior, veined wing extension
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0048065>)
 GO:0060179 : male mating behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0060179>)
 GO - Cellular Component
 GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)
 GO:0005576 : extracellular region (<https://www.ebi.ac.uk/QuickGO/term/GO:0005576>)
 GO:0070451 : cell hair (<https://www.ebi.ac.uk/QuickGO/term/GO:0070451>)

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

unknown

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence="+Linkage Mapping+"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=))

Main Reference

Genetic Convergence in the Evolution of Male-Specific Color Patterns in *Drosophila*. (2016) (<https://pubmed.ncbi.nlm.nih.gov/27546578>)

Authors

Signor SA; Liu Y; Rebeiz M; Kopp A

Abstract

Convergent evolution provides a type of natural replication that can be exploited to understand the roles of contingency and constraint in the evolution of phenotypes and the gene networks that control their development. For sex-specific traits, convergence offers the additional opportunity for testing whether the same gene networks follow different evolutionary trends in males versus females. Here, we use an unbiased, systematic mapping approach to compare the genetic basis of evolutionary changes in male-limited pigmentation in several pairs of *Drosophila* species that represent independent evolutionary transitions. We find strong evidence for repeated recruitment of the same genes to specify similar pigmentation in different species. At one of these genes, *ebony*, we observe convergent evolution of sexually dimorphic and monomorphic expression through cis-regulatory changes. However, this functional convergence has a different molecular basis in different species, reflecting both parallel fixation of ancestral alleles and independent origin of distinct mutations with similar functional consequences. Our results show that a strong evolutionary constraint at the gene level is compatible with a dominant role of chance at the molecular level.

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Additional References

RELATED GEPHE

Related Genes

2 (Abdominal-B, *ebony*) ([https://www.gephebase.org/search-criteria?/or+Taxon ID="+30036"/and+Trait=Coloration/or+Taxon ID="+42026"/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@SexualTrait - X-linked QTLs including yellow