

## GEPHE SUMMARY

		Gephebase Gene	GepheID
tan ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~tan~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~tan~#gephebase-summary-title</a> )		GP00002622	Main curator
Published	Entry Status	Courtier	

## PHENOTYPIC CHANGE

		Trait Category	
Morphology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology~#gephebase-summary-title</a> )		Trait	
Coloration (thorax; abdomen; trident) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=~Coloration+(thorax;+abdomen;+trident)~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=~Coloration+(thorax;+abdomen;+trident)~#gephebase-summary-title</a> )		Trait State in Taxon A	
Drosophila melanogaster		Trait State in Taxon B	
Drosophila melanogaster		Ancestral State	
Taxon A		Taxonomic Status	
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific~#gephebase-summary-title</a> )			
Taxon A		Taxon B	
		Latin Name	Latin Name
Drosophila melanogaster ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Drosophila+melanogaster~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Drosophila+melanogaster~#gephebase-summary-title</a> )		Drosophila melanogaster ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Drosophila+melanogaster~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Drosophila+melanogaster~#gephebase-summary-title</a> )	
		Common Name	Common Name
fruit fly		fruit fly	
		Synonyms	Synonyms
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster		Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	
		Rank	Rank
species		species	
		Lineage	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		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	Parent
melanogaster subgroup () - (Rank: species subgroup) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351</a> )		melanogaster subgroup () - (Rank: species subgroup) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351</a> )	
		NCBI Taxonomy ID	NCBI Taxonomy ID
7227 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227</a> )		7227 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227</a> )	
		is Taxon A an Intraspecies?	is Taxon B an Intraspecies?
No		No	

## GENOTYPIC CHANGE

		Generic Gene Name	UniProtKB Drosophila melanogaster
t		Q9W369 ( <a href="http://www.uniprot.org/uniprot/Q9W369">http://www.uniprot.org/uniprot/Q9W369</a> )	GenebankID or UniProtKB
CG12120; Dmel\CG12120; Tan; tan; Dmel_CG12120		Synonyms	
		0	
		String	
-			
		Sequence Similarities	
-			
		GO - Molecular Function	
GO:0016787 : hydrolase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0016787">https://www.ebi.ac.uk/QuickGO/term/GO:0016787</a> )			
GO:0003832 : beta-alanyl-dopamine hydrolase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0003832">https://www.ebi.ac.uk/QuickGO/term/GO:0003832</a> )			
GO:0031964 : beta-alanyl-histamine hydrolase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0031964">https://www.ebi.ac.uk/QuickGO/term/GO:0031964</a> )			
		GO - Biological Process	

GO:0048085 : adult chitin-containing cuticle pigmentation  
 (https://www.ebi.ac.uk/QuickGO/term/GO:0048085)  
 GO:0048067 : cuticle pigmentation (https://www.ebi.ac.uk/QuickGO/term/GO:0048067)  
 GO:0001692 : histamine metabolic process  
 (https://www.ebi.ac.uk/QuickGO/term/GO:0001692)  
 GO:0007601 : visual perception (https://www.ebi.ac.uk/QuickGO/term/GO:0007601)  
 GO:0042416 : dopamine biosynthetic process  
 (https://www.ebi.ac.uk/QuickGO/term/GO:0042416)  
 GO:0001694 : histamine biosynthetic process  
 (https://www.ebi.ac.uk/QuickGO/term/GO:0001694)

GO - Cellular Component

GO:0005829 : cytosol (https://www.ebi.ac.uk/QuickGO/term/GO:0005829)

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

exact causing mutation(s) unknown

Experimental Evidence

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

Main Reference

A genome-wide, fine-scale map of natural pigmentation variation in *Drosophila melanogaster*. (2013) (https://pubmed.ncbi.nlm.nih.gov/23754958)

Authors

Bastide H; Betancourt A; Nolte V; Tobler R; StÅrbe P; Futschik A; SchlÅtterer C

Abstract

Various approaches can be applied to uncover the genetic basis of natural phenotypic variation, each with their specific strengths and limitations. Here, we use a replicated genome-wide association approach (Pool-GWAS) to fine-scale map genomic regions contributing to natural variation in female abdominal pigmentation in *Drosophila melanogaster*, a trait that is highly variable in natural populations and highly heritable in the laboratory. We examined abdominal pigmentation phenotypes in approximately 8000 female European *D. melanogaster*, isolating 1000 individuals with extreme phenotypes. We then used whole-genome Illumina sequencing to identify single nucleotide polymorphisms (SNPs) segregating in our sample, and tested these for associations with pigmentation by contrasting allele frequencies between replicate pools of light and dark individuals. We identify two small regions near the pigmentation genes *tan* and *bric-Å-brac 1*, both corresponding to known cis-regulatory regions, which contain SNPs showing significant associations with pigmentation variation. While the Pool-GWAS approach suffers some limitations, its cost advantage facilitates replication and it can be applied to any non-model system with an available reference genome.

Additional References

Genetic Architecture of Abdominal Pigmentation in *Drosophila melanogaster*. (2015) (https://pubmed.ncbi.nlm.nih.gov/25933381)

Reconciling Differences in Pool-GWAS Between Populations: A Case Study of Female Abdominal Pigmentation in *Drosophila melanogaster*. (2016)

(https://pubmed.ncbi.nlm.nih.gov/26715669)

Pleiotropic effects of regulatory variation in *tan* result in correlation of two pigmentation traits in *Drosophila melanogaster*. (2018) (https://pubmed.ncbi.nlm.nih.gov/29957826)

RELATED GEPHE

Related Genes

5 (bab, bab1, ebony, yellow, wingless (wg)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^7227^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@Pleiotropy @SexualTrait (abdominal pigmentation variation in females)