

GEPHE SUMMARY

pastrel (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^pastrel^#gephebase-summary-title)	Gephebase Gene	GP00000854	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)	Trait Category		
Pathogen resistance (viruses) (https://www.gephebase.org/search-criteria?/and+Trait=^Pathogen+resistance+(viruses)^#gephebase-summary-title)	Trait		
Drosophila melanogaster - DGRP lines	Trait State in Taxon A		
Drosophila melanogaster - DGRP lines	Trait State in Taxon B		
Data not curated	Ancestral State		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title)	Taxonomic Status		
	Taxon A	Taxon B	
Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Drosophila+melanogaster^#gephebase-summary-title)	Latin Name	Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Drosophila+melanogaster^#gephebase-summary-title)	Latin Name
fruit fly	Common Name	fruit fly	Common Name
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	Synonyms	Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	Synonyms
species	Rank	species	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; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	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	Lineage
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	Parent	melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	Parent
7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227)	NCBI Taxonomy ID	7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

pst	Generic Gene Name	UniProtKB Drosophila melanogaster
CG8588; Dm-65; Dmel\CG8588; Pst; Dmel_CG8588	Synonyms	Q81Q82 (http://www.uniprot.org/uniprot/Q81Q82) GenebankID or UniProtKB AE014296 (https://www.ncbi.nlm.nih.gov/nucleotide/CG8588)
-	String	
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	
GO:0007616 : long-term memory (https://www.ebi.ac.uk/QuickGO/term/GO:0007616)		
GO:0009306 : protein secretion (https://www.ebi.ac.uk/QuickGO/term/GO:0009306)		
GO:0005829 : cytosol (https://www.ebi.ac.uk/QuickGO/term/GO:0005829)	GO - Cellular Component	

Unknown (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#gephebase-summary-title>)

Presumptive Null

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

Molecular Type

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

Aberration Type

unknown

Molecular Details of the Mutation

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

Experimental Evidence

Genome-wide association studies reveal a simple genetic basis of resistance to naturally coevolving viruses in *Drosophila melanogaster*. (2012) (<https://pubmed.ncbi.nlm.nih.gov/23166512>)

Main Reference

Magwire MM; Fabian DK; Schweyen H; Cao C; Longdon B; Bayer F; Jiggins FM

Authors

Variation in susceptibility to infectious disease often has a substantial genetic component in animal and plant populations. We have used genome-wide association studies (GWAS) in *Drosophila melanogaster* to identify the genetic basis of variation in susceptibility to viral infection. We found that there is substantially more genetic variation in susceptibility to two viruses that naturally infect *D. melanogaster* (DCV and DMelSV) than to two viruses isolated from other insects (FHV and DAffSV). Furthermore, this increased variation is caused by a small number of common polymorphisms that have a major effect on resistance and can individually explain up to 47% of the heritability in disease susceptibility. For two of these polymorphisms, it has previously been shown that they have been driven to a high frequency by natural selection. An advantage of GWAS in *Drosophila* is that the results can be confirmed experimentally. We verified that a gene called *pastrel*--which was previously not known to have an antiviral function--is associated with DCV-resistance by knocking down its expression by RNAi. Our data suggest that selection for resistance to infectious disease can increase genetic variation by increasing the frequency of major-effect alleles, and this has resulted in a simple genetic basis to variation in virus resistance.

Abstract

Additional References

RELATED GEPHE

15 (18-wheeler, CG8492, Dipteracin, Drosomycin-like 5, Ge-1, GGBP1, GGBP2, Immune deficiency, Lectin-24A, PGRP-LC, ref(2)P, SR-CII, T ehao, Ubiquitin conjugating enzyme E2H (Ubc-E2H), CHKov1) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^7227^/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

RNAi functional evidence