

GEPHE SUMMARY

Drip (https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^Drip^#gephebase-summary-title)	Gephebase Gene GP00000237	GephelD Main curator
Published	Entry Status Martin	

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria/?and+Trait Category=^Physiology^#gephebase-summary-title)	Trait Category
Fertility (https://www.gephebase.org/search-criteria/?and+Trait=^Fertility^#gephebase-summary-title)	Trait
Drosophila melanogaster - wild	Trait State in Taxon A
Drosophila melanogaster - wild	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	Latin Name	Taxon B	Latin Name
Drosophila melanogaster (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Drosophila+melanogaster^#gephebase-summary-title)		Drosophila melanogaster (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Drosophila+melanogaster^#gephebase-summary-title)	
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; Ephydriodea; 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; Ephydriodea; 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 Infraspecies?	No	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

Drip	Generic Gene Name Q9V5Z7 (http://www.uniprot.org/uniprot/Q9V5Z7)	UniProtKB Drosophila melanogaster GenebankID or UniProtKB
anon-48Aa; CG9023; Dmel\CG9023; drip; DRIP; I	Synonyms	
7227.FBpp0303808 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0303808)	String	
Belongs to the MIP/aquaporin (TC 1.A.8) family.	Sequence Similarities GO - Molecular Function GO:0015250 : water channel activity (https://www.ebi.ac.uk/QuickGO/term/GO:0015250) GO - Biological Process GO:0055085 : transmembrane transport (https://www.ebi.ac.uk/QuickGO/term/GO:0055085)	

GO:0046662 : regulation of oviposition
(<https://www.ebi.ac.uk/QuickGO/term/GO:0046662>)
GO:0003014 : renal system process (<https://www.ebi.ac.uk/QuickGO/term/GO:0003014>)
GO:0030104 : water homeostasis (<https://www.ebi.ac.uk/QuickGO/term/GO:0030104>)
GO:0006833 : water transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0006833>)
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>)

Presumptive Null

Unknown ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=%27Unknown%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive%20Null=%27Unknown%27#gephebase-summary-title))

Molecular Type

Cis-regulatory ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%27Cis-regulatory%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular%20Type=%27Cis-regulatory%27#gephebase-summary-title))

Aberration Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%27Unknown%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration%20Type=%27Unknown%27#gephebase-summary-title))

Molecular Details of the Mutation

unknown

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%27Linkage Mapping%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental%20Evidence=%27Linkage%20Mapping%27#gephebase-summary-title))

Main Reference

Fine-scale mapping of natural variation in fly fecundity identifies neuronal domain of expression and function of an aquaporin. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22509142>)

Authors

Bergland AO; Chae HS; Kim YJ; Tatar M

Abstract

To gain insight into the molecular genetic basis of standing variation in fitness related traits, we identify a novel factor that regulates the molecular and physiological basis of natural variation in female *Drosophila melanogaster* fecundity. Genetic variation in female fecundity in flies derived from a wild orchard population is heritable and largely independent of other measured life history traits. We map a portion of this variation to a single QTL and then use deficiency mapping to further refine this QTL to 5 candidate genes. Ubiquitous expression of RNAi against only one of these genes, an aquaporin encoded by *Drip*, reduces fecundity. Within our mapping population *Drip* mRNA level in the head, but not other tissues, is positively correlated with fecundity. We localize *Drip* expression to a small population of corazonin producing neurons located in the dorsolateral posterior compartments of the protocerebrum. Expression of *Drip*-RNAi using both the pan-neuronal ELAV-Gal4 and the Crz-Gal4 drivers reduces fecundity. Low-fecundity RILs have decreased Crz expression and increased expression of pale, the enzyme encoding the rate-limiting step in the production of dopamine, a modulator of insect life histories. Taken together these data suggest that natural variation in *Drip* expression in the corazonin producing neurons contributes to standing variation in fitness by altering the concentration of two neuropeptides.

Additional References

RELATED GEPHE

6 (bab2, PPAR-gamma, Sdic gene cluster, InR, PHGPx, RnrS) (<https://www.gephebase.org/search-criteria?/or+TaxonID=%277227%27/and+Trait=Fertility/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS