

GEPHE SUMMARY

| | | | |
|--|----------------|------------|--------------|
| | Gephebase Gene | | GepheID |
| Period (per) (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^Period+per)^#gephebase-summary-title) | | GP00002002 | |
| | Entry Status | Courtier | Main curator |
| Published | | | |

PHENOTYPIC CHANGE

| | | | |
|--|-----------------------------|--|-----------------------------|
| | Trait Category | | |
| Behavior (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Behavior^#gephebase-summary-title) | | | |
| | Trait | | |
| Locomotor activity (temperature sensitivity) (https://www.gephebase.org/search-criteria?/and+Trait=^Locomotor+activity+(temperature+sensitivity)^#gephebase-summary-title) | | | |
| | Trait State in Taxon A | | |
| Drosophila melanogaster - allele with repeat (Thr-Gly)17 | | | |
| | Trait State in Taxon B | | |
| Drosophila melanogaster - allele with repeat (Thr-Gly)20 | | | |
| | Ancestral State | | |
| Data not curated | | | |
| | Taxonomic Status | | |
| Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title) | | | |
| | Taxon A | Taxon B | |
| | Latin Name | | 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) | |
| | 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; Acalypratae; 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; Acalypratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup | |
| | Parent | | Parent |
| melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351) | | melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351) | |
| | NCBI Taxonomy ID | | NCBI Taxonomy ID |
| 7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227) | | 7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227) | |
| | is Taxon A an Intraspecies? | | is Taxon B an Intraspecies? |
| No | | No | |

GENOTYPIC CHANGE

| | | | |
|---|-------------------------|--|-----------------------------------|
| | Generic Gene Name | | UniProtKB Drosophila melanogaster |
| per | | P07663 (http://www.uniprot.org/uniprot/P07663) | |
| | Synonyms | | GenebankID or UniProtKB |
| CG2647; Clk; clk-6; Dmel\CG2647; dmper; dper; dPER; EG:155E2.4; mel_per; Per; PER; Per-2 | | () | |
| | String | | |
| 7227.FBpp0070455 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0070455) | | | |
| | Sequence Similarities | | |
| - | | | |
| | GO - Molecular Function | | |
| GO:0042802 : identical protein binding (https://www.ebi.ac.uk/QuickGO/term/GO:0042802) | | | |

GO:0042803 : protein homodimerization activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042803>)
GO:0046982 : protein heterodimerization activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0046982>)
GO:0008134 : transcription factor binding
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008134>)
GO:0003714 : transcription corepressor activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0003714>)
GO:0003712 : transcription coregulator activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0003712>)
GO:0000976 : transcription regulatory region sequence-specific DNA binding
(<https://www.ebi.ac.uk/QuickGO/term/GO:0000976>)
GO:0001222 : transcription corepressor binding
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001222>)

GO - Biological Process

GO:0009416 : response to light stimulus
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009416>)
GO:0000122 : negative regulation of transcription by RNA polymerase II
(<https://www.ebi.ac.uk/QuickGO/term/GO:0000122>)
GO:0045892 : negative regulation of transcription, DNA-templated
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045892>)
GO:0007616 : long-term memory (<https://www.ebi.ac.uk/QuickGO/term/GO:0007616>)
GO:0032922 : circadian regulation of gene expression
(<https://www.ebi.ac.uk/QuickGO/term/GO:0032922>)
GO:0007623 : circadian rhythm (<https://www.ebi.ac.uk/QuickGO/term/GO:0007623>)
GO:0042752 : regulation of circadian rhythm
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042752>)
GO:0045187 : regulation of circadian sleep/wake cycle, sleep
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045187>)
GO:0007619 : courtship behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0007619>)
GO:0045433 : male courtship behavior, veined wing generated song production
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045433>)
GO:0045475 : locomotor rhythm (<https://www.ebi.ac.uk/QuickGO/term/GO:0045475>)
GO:0008340 : determination of adult lifespan
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008340>)
GO:0009266 : response to temperature stimulus
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009266>)
GO:0006979 : response to oxidative stress
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006979>)
GO:0001932 : regulation of protein phosphorylation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001932>)
GO:0001306 : age-dependent response to oxidative stress
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001306>)
GO:0048148 : behavioral response to cocaine
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048148>)
GO:0048512 : circadian behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0048512>)
GO:0042745 : circadian sleep/wake cycle
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042745>)
GO:0060086 : circadian temperature homeostasis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060086>)
GO:0007620 : copulation (<https://www.ebi.ac.uk/QuickGO/term/GO:0007620>)
GO:0008062 : eclosion rhythm (<https://www.ebi.ac.uk/QuickGO/term/GO:0008062>)
GO:0009649 : entrainment of circadian clock
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009649>)
GO:0043153 : entrainment of circadian clock by photoperiod
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043153>)
GO:0007617 : mating behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0007617>)
GO:2000678 : negative regulation of transcription regulatory region DNA binding
(<https://www.ebi.ac.uk/QuickGO/term/GO:2000678>)
GO:1904059 : regulation of locomotor rhythm
(<https://www.ebi.ac.uk/QuickGO/term/GO:1904059>)
GO:0007622 : rhythmic behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0007622>)

GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)
GO:0005829 : cytosol (<https://www.ebi.ac.uk/QuickGO/term/GO:0005829>)
GO:0005654 : nucleoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005654>)
GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)
GO:0044297 : cell body (<https://www.ebi.ac.uk/QuickGO/term/GO:0044297>)
GO:0048471 : perinuclear region of cytoplasm
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048471>)

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

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type="+Coding+"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=))

Aberration Type

Indel ([https://www.gephebase.org/search-criteria?/and+Aberration Type="+Indel+"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=))

Indel Size

repeat (Thr-Gly) either 17 times or 20 times within the protein coding sequence

Experimental Evidence

Candidate Gene ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Candidate+Gene^#gephebase-summary-title))

Main Reference

Natural variation in a *Drosophila* clock gene and temperature compensation. (1997) (<https://pubmed.ncbi.nlm.nih.gov/9405346>)

Authors

Sawyer LA; Hennessy JM; Peixoto AA; Rosato E; Parkinson H; Costa R; Kyriacou CP

Abstract

The threonine-glycine (Thr-Gly) encoding repeat within the clock gene period of *Drosophila melanogaster* is polymorphic in length. The two major variants (Thr-Gly)₁₇ and (Thr-Gly)₂₀ are distributed as a highly significant latitudinal cline in Europe and North Africa. Thr-Gly length variation from both wild-caught and transgenic individuals is related to the flies' ability to maintain a circadian period at different temperatures. This phenomenon provides a selective explanation for the geographical distribution of Thr-Gly lengths and gives a rare glimpse of the interplay between molecular polymorphism, behavior, population biology, and natural selection.

Additional References

RELATED GEPHE

Related Genes

2 (Catecholamines up, timeless (tim)) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=~7227^/and+Trait=Locomotor activity/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~7227^/and+Trait=Locomotor+activity/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~Period \(per\)^/and+Taxon ID=~7227^/or+Gene Gephebase=~Period \(per\)^/and+Taxon ID=~7227^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=~Period+(per)^/and+Taxon+ID=~7227^/or+Gene+Gephebase=~Period+(per)^/and+Taxon+ID=~7227^#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS

<http://flybase.org/reports/FBal0082362> - <http://flybase.org/reports/FBal0082363> - <http://flybase.org/reports/FBal0082364> - <http://flybase.org/reports/FBal0082365> - <http://flybase.org/reports/FBal0082366>