GEPHE SUMMARY

Gephebase Gene
Distal-less (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Distal-less^#gephebase-summary-title)

GepheID
GP00000229

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Morphology^#gephebase-summary-title)

Trait
Coloration (wing) (https://www.gephebase.org/search-criteria?/and+Trait=^Coloration (wing)^#gephebase-summary-title)

Trait State in Taxon A
Bicyclus anynana - selected for small eyespots

Trait State in Taxon B
Bicyclus anynana - selected for large eyespots

Ancestral State
Data not curated

Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)

Taxon A

Latin Name
Bicyclus anynana (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Bicyclus anynana^#gephebase-summary-title)

Common Name
squinting bush brown

Synonyms
squinting bush brown; Bicyclus anynana (Butler, 1879); Bicyclus anyana

Rank
species

Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Satyrinae; Satyrini; Mycalesina; Bicyclus

Parent
Bicyclus (bush browns) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 110367)

NCBI Taxonomy ID
110368 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 110368)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Bicyclus anynana (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Bicyclus anynana^#gephebase-summary-title)

Common Name
squinting bush brown

Synonyms
squinting bush brown; Bicyclus anynana (Butler, 1879); Bicyclus anyana

Rank
species

Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Satyrinae; Satyrini; Mycalesina; Bicyclus

Parent
Bicyclus (bush browns) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 110367)

NCBI Taxonomy ID
110368 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 110368)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
Dll

Synonyms
2.7; Art; Ba; BcDNA:LP01770; CG3629; dll; DLL; Dmel\CG3629; E(Arp); En(Arp); l(2)01092; l(2)387; BR

String
-

Sequence Similarities
-

GO - Molecular Function
GO:0043565 : sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043565)

GO - Biological Process
GO:0045893 : positive regulation of transcription, DNA-templated (https://www.ebi.ac.uk/QuickGO/term/GO:0045893)
GO:0010629 : negative regulation of gene expression (https://www.ebi.ac.uk/QuickGO/term/GO:0010629)

UniProtKB Drosophila melanogaster
P20009 (http://www.uniprot.org/uniprot/P20009)

GenebankID or UniProtKB
AAL69325 (https://www.ncbi.nlm.nih.gov/nuccore/AAL69325)

GO:0048264 : determination of ventral identity
(https://www.ebi.ac.uk/QuickGO/term/GO:0048264)
GO:0007480 : imaginal disc-derived leg morphogenesis
(https://www.ebi.ac.uk/QuickGO/term/GO:0007480)
GO:0007487 : analia development (https://www.ebi.ac.uk/QuickGO/term/GO:0007487)
GO:0007469 : antennal development
(https://www.ebi.ac.uk/QuickGO/term/GO:0007469)
GO:0035215 : genital disc development
(https://www.ebi.ac.uk/QuickGO/term/GO:0035215)
GO:0035114 : imaginal disc-derived appendage morphogenesis
(https://www.ebi.ac.uk/QuickGO/term/GO:0035114)
GO:0007485 : imaginal disc-derived male genitalia development
(https://www.ebi.ac.uk/QuickGO/term/GO:0007485)
GO:0008587 : imaginal disc-derived wing margin morphogenesis
(https://www.ebi.ac.uk/QuickGO/term/GO:0008587)
GO:0007479 : leg disc proximal/distal pattern formation
(https://www.ebi.ac.uk/QuickGO/term/GO:0007479)
GO:0016319 : mushroom body development
(https://www.ebi.ac.uk/QuickGO/term/GO:0016319)
GO:0042048 : olfactory behavior (https://www.ebi.ac.uk/QuickGO/term/GO:0042048)
GO:0021553 : olfactory nerve development
(https://www.ebi.ac.uk/QuickGO/term/GO:0021553)
GO:0048728 : proboscis development
(https://www.ebi.ac.uk/QuickGO/term/GO:0048728)
GO:0007449 : proximal/distal pattern formation, imaginal disc
(https://www.ebi.ac.uk/QuickGO/term/GO:0007449)
GO:0010092 : specification of animal organ identity
(https://www.ebi.ac.uk/QuickGO/term/GO:0010092)

GO - Cellular Component

GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)

Presumptive Null

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

unknown

Experimental Evidence

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

Main Reference

Contribution of Distal-less to quantitative variation in butterfly eyespots. (2002) (https://pubmed.ncbi.nlm.nih.gov/11797007)

Authors

Beldade P; Brakefield PM; Long AD

Abstract

The colour patterns decorating butterfly wings provide ideal material to study the reciprocal interactions between evolution and development. They are visually compelling products of selection, often with a clear adaptive value, and are amenable to a detailed developmental characterization. Research on wing-pattern evolution and development has focused on the eyespots of the tropical butterfly Bicyclus anynana. There is quantitative variation for several features of eyespot morphology but the actual genes contributing to such variation are unknown. On the other hand, studies of gene expression patterns in wing primordia have implicated different developmental pathways in eyespot formation. To link these two sets of information we need to identify which genes within the implicated pathways contribute to the quantitative variation accessible to natural selection. Here we begin to bridge this gap by demonstrating linkage between DNA polymorphisms in the candidate gene Distal-less (Dll) and eyespot size in B. anynana.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS