

GEPHE SUMMARY

Unpaired-like (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~Unpaired-like~#gephebase-summary-title)	Gephebase Gene	GP00001163	GepheID
	Entry Status	Martin	Main curator
	Published		

PHENOTYPIC CHANGE

Trait #1	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Morphology~#gephebase-summary-title)	Trait
Wing shape (sex-specific) (https://www.gephebase.org/search-criteria?/and+Trait=~Wing shape (sex-specific)~#gephebase-summary-title)	Trait State in Taxon A
Nasonia vitripennis	Trait State in Taxon B
Nasonia giraulti	

Trait #2	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Morphology~#gephebase-summary-title)	Trait
Wing size (https://www.gephebase.org/search-criteria?/and+Trait=~Wing size~#gephebase-summary-title)	Trait State in Taxon A
-	Trait State in Taxon B
-	

Data not curated		Ancestral State	
Interspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Interspecific~#gephebase-summary-title)		Taxonomic Status	
Taxon A	Latin Name	Taxon B	Latin Name
Nasonia vitripennis (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Nasonia vitripennis~#gephebase-summary-title)		Nasonia giraulti (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Nasonia giraulti~#gephebase-summary-title)	
jewel wasp	Common Name	-	Common Name
jewel wasp; Nasonia vitripennis (Walker, 1836)	Synonyms	Nasonia giraulti Darling, 1990	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Hymenoptera; Apocrita; Parasitoida; Chalcidoidea; Pteromalidae; Pteromalinae; Nasonia	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Hymenoptera; Apocrita; Parasitoida; Chalcidoidea; Pteromalidae; Pteromalinae; Nasonia	Lineage
Nasonia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7424)	Parent	Nasonia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7424)	Parent
7425	NCBI Taxonomy ID	7426	NCBI Taxonomy ID
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7425)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7426)	
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Drosophila melanogaster
upd1	O96525 (http://www.uniprot.org/uniprot/O96525)	
	Synonyms	GenebankID or UniProtKB
os; unpaired; CG5993	AFC60675 (https://www.ncbi.nlm.nih.gov/nuccore/AFC60675)	
	String	
-		
	Sequence Similarities	
-		
	GO - Molecular Function	
GO:0005125 : cytokine activity (https://www.ebi.ac.uk/QuickGO/term/GO:0005125)		
GO:0005102 : signaling receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005102)		
GO:0016015 : morphogen activity (https://www.ebi.ac.uk/QuickGO/term/GO:0016015)		
	GO - Biological Process	
GO:0007530 : sex determination (https://www.ebi.ac.uk/QuickGO/term/GO:0007530)		
GO:0007540 : sex determination, establishment of X:A ratio (https://www.ebi.ac.uk/QuickGO/term/GO:0007540)		
GO:0007616 : long-term memory (https://www.ebi.ac.uk/QuickGO/term/GO:0007616)		
GO:0007455 : eye-antennal disc morphogenesis (https://www.ebi.ac.uk/QuickGO/term/GO:0007455)		
GO:0007298 : border follicle cell migration (https://www.ebi.ac.uk/QuickGO/term/GO:0007298)		
GO:0030707 : ovarian follicle cell development (https://www.ebi.ac.uk/QuickGO/term/GO:0030707)		
GO:0050829 : defense response to Gram-negative bacterium (https://www.ebi.ac.uk/QuickGO/term/GO:0050829)		
GO:0045475 : locomotor rhythm (https://www.ebi.ac.uk/QuickGO/term/GO:0045475)		
GO:0007259 : JAK-STAT cascade (https://www.ebi.ac.uk/QuickGO/term/GO:0007259)		
GO:0001700 : embryonic development via the syncytial blastoderm (https://www.ebi.ac.uk/QuickGO/term/GO:0001700)		
GO:0042078 : germ-line stem cell division (https://www.ebi.ac.uk/QuickGO/term/GO:0042078)		
GO:0036335 : intestinal stem cell homeostasis (https://www.ebi.ac.uk/QuickGO/term/GO:0036335)		
GO:0048103 : somatic stem cell division (https://www.ebi.ac.uk/QuickGO/term/GO:0048103)		
GO:0007442 : hindgut morphogenesis (https://www.ebi.ac.uk/QuickGO/term/GO:0007442)		
GO:0001745 : compound eye morphogenesis (https://www.ebi.ac.uk/QuickGO/term/GO:0001745)		
GO:0003383 : apical constriction (https://www.ebi.ac.uk/QuickGO/term/GO:0003383)		
GO:0007350 : blastoderm segmentation (https://www.ebi.ac.uk/QuickGO/term/GO:0007350)		
GO:0007440 : foregut morphogenesis (https://www.ebi.ac.uk/QuickGO/term/GO:0007440)		
GO:0060729 : intestinal epithelial structure maintenance (https://www.ebi.ac.uk/QuickGO/term/GO:0060729)		
GO:0060031 : mediolateral intercalation (https://www.ebi.ac.uk/QuickGO/term/GO:0060031)		
GO:0045824 : negative regulation of innate immune response (https://www.ebi.ac.uk/QuickGO/term/GO:0045824)		
GO:0038001 : paracrine signaling (https://www.ebi.ac.uk/QuickGO/term/GO:0038001)		
GO:0007538 : primary sex determination (https://www.ebi.ac.uk/QuickGO/term/GO:0007538)		
GO:0016476 : regulation of embryonic cell shape (https://www.ebi.ac.uk/QuickGO/term/GO:0016476)		
GO:0044719 : regulation of imaginal disc-derived wing size (https://www.ebi.ac.uk/QuickGO/term/GO:0044719)		
GO:0017145 : stem cell division (https://www.ebi.ac.uk/QuickGO/term/GO:0017145)		
GO:0008039 : synaptic target recognition (https://www.ebi.ac.uk/QuickGO/term/GO:0008039)		
	GO - Cellular Component	
GO:0005576 : extracellular region (https://www.ebi.ac.uk/QuickGO/term/GO:0005576)		
GO:0031012 : extracellular matrix (https://www.ebi.ac.uk/QuickGO/term/GO:0031012)		
GO:0005615 : extracellular space (https://www.ebi.ac.uk/QuickGO/term/GO:0005615)		
GO:0045177 : apical part of cell (https://www.ebi.ac.uk/QuickGO/term/GO:0045177)		
		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
three regions		
		Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title)		
		Main Reference
Evolution of shape by multiple regulatory changes to a growth gene. (2012) (https://pubmed.ncbi.nlm.nih.gov/22363002)		

The genetic changes responsible for morphological differences between species are largely unidentified. Such changes can involve modifications of growth that are relevant to understanding evolution, development, and disease. We identified a gene that induces male-specific wing size and shape differences between *Nasonia* wasp species. Fine-scale mapping and in situ hybridization reveal that changes in at least three regions (two strictly in noncoding sequence) around the gene unpaired-like (upd-like) cause changes in spatial and temporal expression of upd-like in the developing wing and corresponding changes in wing width. Upd-like shows homology to the *Drosophila* unpaired gene, a well-studied signaling protein that regulates cell proliferation and differentiation. Our results indicate how multiple changes in the regulation of upd-like are involved in microevolution of morphological and sex-specific differences between species.

Additional References

RELATED GEPHE

Related Genes

1 (Doublesex (or neighbouring gene prospero)) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~7425~/and+Trait=Wing shape/or+Taxon ID=~7425~/and+Trait=Wing size/or+Taxon ID=~7426~/and+Trait=Wing shape/or+Taxon ID=~7426~/and+Trait=Wing size/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@SexualTrait