

## GEPHE SUMMARY

|   |   |                                 |                                    |
|---|---|---------------------------------|------------------------------------|
| <p>egl-4 (Ppa-egl-4) (<a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+egl-4+(Ppa-egl-4)^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+egl-4+(Ppa-egl-4)^#gephebase-summary-title</a>)</p> <p>Published</p> | <p>Gephebase Gene</p> <p>Entry Status</p> | <p>GP00000260</p> <p>Martin</p> | <p>GepheID</p> <p>Main curator</p> |
|---|---|---------------------------------|------------------------------------|

## PHENOTYPIC CHANGE

|   |   |   |   |   |
|---|---|---|---|---|
| <p>Behavior (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Category+Behavior^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category+Behavior^#gephebase-summary-title</a>)</p> <p>Insect pheromone attraction (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Insect+pheromone+attraction^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Insect+pheromone+attraction^#gephebase-summary-title</a>)</p> <p>Pristionchus pacificus</p> <p>Pristionchus pacificus</p> <p>Data not curated</p> <p>Intraspecific (<a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Intraspecific^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Intraspecific^#gephebase-summary-title</a>)</p> | <p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p> | <p>Taxon A</p> <p>Latin Name</p> <p>Pristionchus pacificus<br/>(<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Pristionchus+pacificus^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Pristionchus+pacificus^#gephebase-summary-title</a>)</p> <p>-</p> <p>-</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Diplogasteromorpha; Diplogasteroidea; Neodiplogasteridae; Pristionchus</p> <p>Pristionchus () - (Rank: genus)<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54125">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54125</a>)</p> <p>54126<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54126">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54126</a>)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p> | <p>Taxon B</p> <p>Latin Name</p> <p>Pristionchus pacificus<br/>(<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Pristionchus+pacificus^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Pristionchus+pacificus^#gephebase-summary-title</a>)</p> <p>-</p> <p>-</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Diplogasteromorpha; Diplogasteroidea; Neodiplogasteridae; Pristionchus</p> <p>Pristionchus () - (Rank: genus)<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54125">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54125</a>)</p> <p>54126<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54126">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=54126</a>)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p> | <p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> |
|---|---|---|---|---|

## GENOTYPIC CHANGE

|   |   |  |
|---|---|--|
| <p>egl-4</p> <p>cgk-1; odr-9; F55A8.2</p> <p>6239.F55A8.2a.1<br/>(<a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.F55A8.2a.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.F55A8.2a.1</a>)</p> <p>Belongs to the protein kinase superfamily. AGC Ser/Thr protein kinase family. cGMP subfamily.</p> <p>GO:0005524 : ATP binding (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005524">https://www.ebi.ac.uk/QuickGO/term/GO:0005524</a>)</p> <p>GO:0046872 : metal ion binding (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0046872">https://www.ebi.ac.uk/QuickGO/term/GO:0046872</a>)</p> <p>GO:0030553 : cGMP binding (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030553">https://www.ebi.ac.uk/QuickGO/term/GO:0030553</a>)</p> <p>GO:0004692 : cGMP-dependent protein kinase activity<br/>(<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0004692">https://www.ebi.ac.uk/QuickGO/term/GO:0004692</a>)</p> <p>GO:0006468 : protein phosphorylation<br/>(<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0006468">https://www.ebi.ac.uk/QuickGO/term/GO:0006468</a>)</p> | <p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p> | <p>UniProtKB Caenorhabditis elegans</p> <p>O76360 (<a href="http://www.uniprot.org/uniprot/O76360">http://www.uniprot.org/uniprot/O76360</a>)</p> <p>()</p> <p>GenebankID or UniProtKB</p> |
|---|---|--|

GO:0006935 : chemotaxis (<https://www.ebi.ac.uk/QuickGO/term/GO:0006935>)  
 GO:0030308 : negative regulation of cell growth  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0030308>)  
 GO:0010468 : regulation of gene expression  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0010468>)  
 GO:1903998 : regulation of eating behavior  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:1903998>)  
 GO:0030431 : sleep (<https://www.ebi.ac.uk/QuickGO/term/GO:0030431>)  
 GO:0046662 : regulation of oviposition  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0046662>)  
 GO:0008340 : determination of adult lifespan  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0008340>)  
 GO:0008355 : olfactory learning (<https://www.ebi.ac.uk/QuickGO/term/GO:0008355>)  
 GO:0007635 : chemosensory behavior  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0007635>)  
 GO:0043577 : chemotropism (<https://www.ebi.ac.uk/QuickGO/term/GO:0043577>)  
 GO:0008286 : insulin receptor signaling pathway  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0008286>)  
 GO:0030536 : larval feeding behavior  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0030536>)  
 GO:0050849 : negative regulation of calcium-mediated signaling  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0050849>)  
 GO:0010754 : negative regulation of cGMP-mediated signaling  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0010754>)  
 GO:1902160 : negative regulation of cyclic nucleotide-gated ion channel activity  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:1902160>)  
 GO:0061067 : negative regulation of dauer larval development  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0061067>)  
 GO:0040015 : negative regulation of multicellular organism growth  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0040015>)  
 GO:0046621 : negative regulation of organ growth  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0046621>)  
 GO:0030512 : negative regulation of transforming growth factor beta receptor signaling pathway (<https://www.ebi.ac.uk/QuickGO/term/GO:0030512>)  
 GO:0018105 : peptidyl-serine phosphorylation  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0018105>)  
 GO:1905959 : positive regulation of cellular response to alcohol  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:1905959>)  
 GO:0010753 : positive regulation of cGMP-mediated signaling  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0010753>)  
 GO:0050921 : positive regulation of chemotaxis  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0050921>)  
 GO:0051343 : positive regulation of cyclic-nucleotide phosphodiesterase activity  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0051343>)  
 GO:1901046 : positive regulation of oviposition  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:1901046>)  
 GO:1990335 : process resulting in tolerance to alcohol  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:1990335>)  
 GO:0040014 : regulation of multicellular organism growth  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0040014>)  
 GO:0042542 : response to hydrogen peroxide  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0042542>)  
 GO:1990834 : response to odorant (<https://www.ebi.ac.uk/QuickGO/term/GO:1990834>)  
 GO:0070482 : response to oxygen levels  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0070482>)  
 GO:0050913 : sensory perception of bitter taste  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0050913>)

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

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

Natural variation in *Pristionchus pacificus* insect pheromone attraction involves the protein kinase EGL-4. (2008) (<https://pubmed.ncbi.nlm.nih.gov/18509055>)

Main Reference

Hong RL; Witte H; Sommer RJ

Authors

Abstract

The geographical mosaic theory of coevolution predicts that different local species interactions will shape population traits, but little is known about the molecular factors involved in mediating the specificity of these interactions. *Pristionchus* nematodes associate with different scarab beetles around the world, with *Pristionchus pacificus* isolated primarily from the oriental beetle in

Japan. In particular, the constituent populations of *P. pacificus* represent a rare opportunity to study multiple specialized interactions and the mechanisms that influence population traits at the genetic level. We identified a component of the cGMP signaling pathway to be involved in the natural variation for sensing the insect pheromone ETDA, using targeted introgression lines, exogenous cGMP treatment, and a null *egl-4* allele. Our data strongly implicate *egl-4* as one of several loci involved in behavioral variation in *P. pacificus* populations. That EGL-4 homologs have been independently implicated for behavioral variations in other invertebrate models suggests that EGL-4 may act as a modulator for interspecies behavioral repertoires across large phylogenetic distances.

Additional References

## RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

Evidence of genotype-phenotype relationship commented in Pubpeer: <https://pubpeer.com/publications/800D97630D57184AEA3531409128E1>