

## GEPHE SUMMARY

<p>srx-43 (<a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~srx-43">#srx-43</a>)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>GP00001319</p> <p>Entry Status</p> <p>Courtier</p>	<p>GepheID</p> <p>Main curator</p>
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## PHENOTYPIC CHANGE

<p>Physiology (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology">#Physiology</a>)</p> <p>Pheromone response (ascaroside) (<a href="https://www.gephebase.org/search-criteria?/and+Trait=~Pheromone+response+(ascaroside)#srx-43">#Pheromone response (ascaroside)</a>)</p> <p>C. elegans</p> <p>C. elegans - strains MY14; MY16; JU1171; MY6; JU360; ED3021; MY2 - less sensitive</p> <p>Taxon A</p> <p>Intraspecific (<a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific">#Intraspecific</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>Caenorhabditis elegans (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Caenorhabditis+elegans">#Caenorhabditis elegans</a>)</p> <p>-</p> <p>roundworm; Rhabditis elegans; Caenorhabditis elegans (Maupas, 1900); Rhabditis elegans Maupas, 1900</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis</p> <p>Caenorhabditis () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237</a>)</p> <p>6239 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239</a>)</p> <p>No is Taxon A an Intraspecies?</p>	<p>Taxon B</p> <p>Caenorhabditis elegans (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Caenorhabditis+elegans">#Caenorhabditis elegans</a>)</p> <p>-</p> <p>roundworm; Rhabditis elegans; Caenorhabditis elegans (Maupas, 1900); Rhabditis elegans Maupas, 1900</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis</p> <p>Caenorhabditis () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237</a>)</p> <p>6239 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239</a>)</p> <p>Yes is Taxon B an Intraspecies?</p> <p>Taxon B Description</p> <p>C. elegans - strains MY14; MY16; JU1171; MY6; JU360; ED3021; MY2 - less sensitive</p>	<p>Latin Name</p> <p>Latin Name</p> <p>Common Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Synonyms</p> <p>Rank</p> <p>Rank</p> <p>Lineage</p> <p>Lineage</p> <p>Parent</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>NCBI Taxonomy ID</p>
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## GENOTYPIC CHANGE

<p>srx-43</p> <p>T10C6.3</p> <p>6239.T10C6.3 (<a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.T10C6.3">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.T10C6.3</a>)</p> <p>Belongs to the G-protein coupled receptor 1 family.</p> <p>GO:0016503 : pheromone receptor activity (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0016503">https://www.ebi.ac.uk/QuickGO/term/GO:0016503</a>)</p> <p>GO:0035641 : locomotory exploration behavior (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0035641">https://www.ebi.ac.uk/QuickGO/term/GO:0035641</a>)</p> <p>GO:0019722 : calcium-mediated signaling</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>O45767 (<a href="http://www.uniprot.org/uniprot/O45767">http://www.uniprot.org/uniprot/O45767</a>)</p> <p>GenebankID or UniProtKB</p> <p>NM_074621.2 (<a href="https://www.ncbi.nlm.nih.gov/nuccore/NM_074621.2">https://www.ncbi.nlm.nih.gov/nuccore/NM_074621.2</a>)</p>
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(<https://www.ebi.ac.uk/QuickGO/term/GO:0019722>)  
GO:0071444 : cellular response to pheromone  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0071444>)

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>)  
GO:0043204 : perikaryon (<https://www.ebi.ac.uk/QuickGO/term/GO:0043204>)  
GO:0097730 : non-motile cilium (<https://www.ebi.ac.uk/QuickGO/term/GO:0097730>)

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

Cis-regulatory (<https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#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

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

Balancing selection shapes density-dependent foraging behaviour. (2016) (<https://pubmed.ncbi.nlm.nih.gov/27799655>) Main Reference

Greene JS; Brown M; Dobosiewicz M; Ishida IG; Macosko EZ; Zhang X; Butcher RA; Cline DJ; McGrath PT; Bargmann CI Authors

The optimal foraging strategy in a given environment depends on the number of competing individuals and their behavioural strategies. Little is known about the genes and neural circuits that integrate social information into foraging decisions. Here we show that ascaroside pheromones, small glycolipids that signal population density, suppress exploratory foraging in *Caenorhabditis elegans*, and that heritable variation in this behaviour generates alternative foraging strategies. We find that natural *C. elegans* isolates differ in their sensitivity to the potent ascaroside *icas#9* (IC-asc-C5). A quantitative trait locus (QTL) regulating *icas#9* sensitivity includes *srx-43*, a G-protein-coupled *icas#9* receptor that acts in the ASI class of sensory neurons to suppress exploration. Two ancient haplotypes associated with this QTL confer competitive growth advantages that depend on ascaroside secretion, its detection by *srx-43* and the distribution of food. These results suggest that balancing selection at the *srx-43* locus generates alternative density-dependent behaviours, fulfilling a prediction of foraging game theory. Abstract

Regulatory changes in two chemoreceptor genes contribute to a *Caenorhabditis elegans* QTL for foraging behavior. (2016) (<https://pubmed.ncbi.nlm.nih.gov/27893361>) Additional References

## RELATED GEPHE

1 (*srx-44*) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^6239^/and+Trait=Pheromone response/and+groupHaplotypes=true#gephebase-summary-title>) Related Genes

No matches found. Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

@GxE @Epistasis @BalancingSelection - The *srx-43* gene is expressed at a level fivefold lower in strain MY14 than in strain N2. Both the ascaroside insensitivity phenotype and the *srx-43* haplotype are found in 7 strains with different geographical origins and genetic backgrounds. Phylogenetic analysis suggests a single mutational event. Data is consistent with balancing selection; with two co-existing haplotypes in *C. elegans* that are 30kb long; GxE effect (food distribution and addition of pheromones to the medium); GxG interaction with *daf-22* mutation; loss-of-function; not null; The underlying QTL is actually multigenic and includes alternative alleles of a second chemoreceptor gene that modifies pheromone sensitivity: *srx-44*. GxG interaction with *srx-44*.