

## GEPHE SUMMARY

<p>srx-44 (<a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^srx-44+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^srx-44+^#gephebase-summary-title</a>)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>GP00001504</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+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category+^Physiology+^#gephebase-summary-title</a>)</p> <p>Pheromone response (ascaroside) (<a href="https://www.gephebase.org/search-criteria?/and+Trait+^Pheromone+response+(ascaroside)+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+^Pheromone+response+(ascaroside)+^#gephebase-summary-title</a>)</p> <p>C. elegans roam-1 behavior (pheromone sensitive)</p> <p>C. elegans - strain MY14 (pheromone insensitive)</p> <p>Taxon A</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>Caenorhabditis elegans (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Caenorhabditis+elegans+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Caenorhabditis+elegans+^#gephebase-summary-title</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>is Taxon A an Intraspecies?</p> <p>Yes</p> <p>C. elegans - N2 strain</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> <p>is Taxon B an Intraspecies?</p> <p>Taxon B Description</p>	<p>Taxon B</p> <p>Caenorhabditis elegans (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Caenorhabditis+elegans+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Caenorhabditis+elegans+^#gephebase-summary-title</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>is Taxon B an Intraspecies?</p> <p>Yes</p> <p>C. elegans - strain MY14</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> <p>is Taxon B an Intraspecies?</p> <p>Taxon B Description</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>0</p> <p>GenebankID or UniProtKB</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>)

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

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

Aberration Type

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

Molecular Details of the Mutation

Phenotypic change mapped to a small region located between 34bp and 72 bp upstream of the *srx-44* start codon. This DNA region contains 9 changes between N2 strain and MY14 strain.

Experimental Evidence

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

Main Reference

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

Authors

Greene JS; Dobosiewicz M; Butcher RA; McGrath PT; Bargmann CI

Abstract

Natural isolates of *C. elegans* differ in their sensitivity to pheromones that inhibit exploratory behavior. Previous studies identified a QTL for pheromone sensitivity that includes alternative alleles of *srx-43*, a chemoreceptor that inhibits exploration through its activity in ASI sensory neurons. Here we show that the QTL is multigenic and includes alternative alleles of *srx-44*, a second chemoreceptor gene that modifies pheromone sensitivity. *srx-44* either promotes or inhibits exploration depending on its expression in the ASJ or ADL sensory neurons, respectively. Naturally occurring pheromone insensitivity results in part from previously described changes in *srx-43* expression levels, and in part from increased *srx-44* expression in ASJ, which antagonizes ASI and ADL. Antagonism between the sensory neurons results in cellular epistasis that is reflected in their transcription of insulin genes that regulate exploration. These results and genome-wide evidence suggest that chemoreceptor genes may be preferred sites of adaptive variation in *C. elegans*.

Additional References

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

## RELATED GEPHE

Related Genes

1 (*srx-43*) ([https://www.gephebase.org/search-criteria?/or+Taxon ID="+6239^/and+Trait=Pheromone response/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=))

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS

@Epistasis Depending on its site of expression in either ADL or ASJ *srx-44* enhances or inhibits the response to pheromones. The roam-1 QTL for pheromone regulation of foraging behavior reflects changes in at least two genes: *srx-44* and *srx-43*. GxG interaction: The activity of *srx-44* is only detectable in the presence of a functional *srx-43* gene. Roam-1 QTL is under balancing selection such that both alleles are actively maintained in wild populations