

GEPHE SUMMARY

Gephebase Gene		GepheID
npr-1 (<a +npr-1+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+npr-1+"#gephebase-summary-title)	GP00000739	Main curator
Entry Status		Courtier
Published		

PHENOTYPIC CHANGE

Trait #1	Trait Category
Behavior (<a +behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Behavior+"#gephebase-summary-title)	Trait
Aggregation behavior (<a +aggregation+behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Aggregation+behavior+"#gephebase-summary-title)	Trait State in Taxon A
C. elegans - RC301 - social	Trait State in Taxon B
C. elegans - N2 - solitary	

Trait #2	Trait Category
Behavior (<a +behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Behavior+"#gephebase-summary-title)	Trait
Foraging behavior (<a +foraging+behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Foraging+behavior+"#gephebase-summary-title)	Trait State in Taxon A
-	Trait State in Taxon B
-	

Trait #3	Trait Category
Behavior (<a +behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Behavior+"#gephebase-summary-title)	Trait
CO2 avoidance (<a +co2+avoidance+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+CO2+avoidance+"#gephebase-summary-title)	Trait State in Taxon A
-	Trait State in Taxon B
-	

Trait #4	Trait Category
Behavior (<a +behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Behavior+"#gephebase-summary-title)	Trait
Pathogen avoidance (<a +pathogen+avoidance+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Pathogen+avoidance+"#gephebase-summary-title)	Trait State in Taxon A
-	Trait State in Taxon B
-	

Trait #5	Trait Category
Behavior, Physiology (<a #gephebase-summary-title"="" +behavior+"="" and+trait+category="+Physiology+" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Behavior+"/and+Trait+Category="+Physiology+"#gephebase-summary-title)	Trait
Fertility (competitive fitness) (<a +fertility+(competitive+fitness)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Fertility+(competitive+fitness)+"#gephebase-summary-title)	

	Trait State in Taxon A
-	
	Trait State in Taxon B
higher	

	Ancestral State
Data not curated	
	Taxonomic Status
Intraspecific (#Intraspecific #gephebase-summary-title)	

Taxon A	Latin Name
Caenorhabditis elegans (#gephebase-summary-title)	
-	Common Name
-	Synonyms
roundworm; Rhabditis elegans; Caenorhabditis elegans (Maupas, 1900); Rhabditis elegans Maupas, 1900	
species	Rank
	Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis	
	Parent
Caenorhabditis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237)	
6239 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239)	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?
	Taxon A Description
C. elegans - RC301 and CB4856 (wild isolate)	

Taxon B	Latin Name
Caenorhabditis elegans (#gephebase-summary-title)	
-	Common Name
-	Synonyms
roundworm; Rhabditis elegans; Caenorhabditis elegans (Maupas, 1900); Rhabditis elegans Maupas, 1900	
species	Rank
	Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis	
	Parent
Caenorhabditis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237)	
6239 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239)	NCBI Taxonomy ID
Yes	is Taxon B an Intraspecies?
	Taxon B Description
C. elegans - N2 - solitary	

GENOTYPIC CHANGE

	Generic Gene Name
npr-1	
C39E6.6; CELE_C39E6.6	Synonyms
6239.C39E6.6 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.C39E6.6)	String
Belongs to the G-protein coupled receptor 1 family.	Sequence Similarities
	GO - Molecular Function
GO:0008188 : neuropeptide receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0008188)	
GO:0004983 : neuropeptide Y receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004983)	
	GO - Biological Process
GO:0043052 : thermotaxis (https://www.ebi.ac.uk/QuickGO/term/GO:0043052)	
GO:0070482 : response to oxygen levels (https://www.ebi.ac.uk/QuickGO/term/GO:0070482)	
GO:0045471 : response to ethanol (https://www.ebi.ac.uk/QuickGO/term/GO:0045471)	
GO:0007631 : feeding behavior (https://www.ebi.ac.uk/QuickGO/term/GO:0007631)	
GO:1904068 : G protein-coupled receptor signaling pathway involved in social behavior (https://www.ebi.ac.uk/QuickGO/term/GO:1904068)	
GO:0007218 : neuropeptide signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0007218)	
GO:0006937 : regulation of muscle contraction (https://www.ebi.ac.uk/QuickGO/term/GO:0006937)	
	GO - Cellular Component
GO:0005886 : plasma membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005886)	
GO:0005887 : integral component of plasma membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005887)	
GO:0030425 : dendrite (https://www.ebi.ac.uk/QuickGO/term/GO:0030425)	
GO:0043025 : neuronal cell body (https://www.ebi.ac.uk/QuickGO/term/GO:0043025)	
GO:0030424 : axon (https://www.ebi.ac.uk/QuickGO/term/GO:0030424)	

	UniProtKB Caenorhabditis elegans
Q18534 (http://www.uniprot.org/uniprot/Q18534)	
	GenebankID or UniProtKB
CCD67081 (https://www.ncbi.nlm.nih.gov/nuccore/CCD67081)	
	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=~No~#gephebase-summary-title))

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding~#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Coding~#gephebase-summary-title))

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

Nonsynonymous

Val215Phe (pleiotropic; see other entries)

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=~Linkage+Mapping~#gephebase-summary-title))

Molecular Type

Aberration Type

SNP Coding Change

Molecular Details of the Mutation

Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Natural variation in a neuropeptide Y receptor homolog modifies social behavior and food response in *C. elegans*. (1998) (<https://pubmed.ncbi.nlm.nih.gov/9741632>)

de Bono M; Bargmann CI

Natural isolates of *C. elegans* exhibit either solitary or social feeding behavior. Solitary foragers move slowly on a bacterial lawn and disperse across it, while social foragers move rapidly on bacteria and aggregate together. A loss-of-function mutation in the *npr-1* gene, which encodes a predicted G protein-coupled receptor similar to neuropeptide Y receptors, causes a solitary strain to take on social behavior. Two isoforms of NPR-1 that differ at a single residue occur in the wild. One isoform, NPR-1 215F, is found exclusively in social strains, while the other isoform, NPR-1 215V, is found exclusively in solitary strains. An NPR-1 215V transgene can induce solitary feeding behavior in a wild social strain. Thus, isoforms of a putative neuropeptide receptor generate natural variation in *C. elegans* feeding behavior.

npr-1 Regulates foraging and dispersal strategies in *Caenorhabditis elegans*. (2008) (<https://pubmed.ncbi.nlm.nih.gov/18993077>)

A variant in the neuropeptide receptor *npr-1* is a major determinant of *Caenorhabditis elegans* growth and physiology. (2014) (<https://pubmed.ncbi.nlm.nih.gov/24586193>)

Quantitative mapping of a digenic behavioral trait implicates globin variation in *C. elegans* sensory behaviors. (2009) (<https://pubmed.ncbi.nlm.nih.gov/19285466>)

A variant in the neuropeptide receptor *npr-1* is a major determinant of *Caenorhabditis elegans* growth and physiology. (2014) (<https://pubmed.ncbi.nlm.nih.gov/24586193>)

A polymorphism in *npr-1* is a behavioral determinant of pathogen susceptibility in *C. elegans*. (2009) (<https://pubmed.ncbi.nlm.nih.gov/19150845>)

Fast genetic mapping of complex traits in *C. elegans* using millions of individuals in bulk. (2019) (<https://pubmed.ncbi.nlm.nih.gov/31213597>)

Main Reference

Authors

Abstract

Additional References

RELATED GEPHE

8 ([https://www.gephebase.org/search-criteria?/or+Taxon ID=~6239~/and+Trait=Aggregation behavior/or+Taxon ID=~6239~/and+Trait=Foraging behavior/or+Taxon ID=~6239~/and+Trait=CO2 avoidance/or+Taxon ID=~6239~/and+Trait=Pathogen avoidance/or+Taxon ID=~6239~/and+Trait=Fertility/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~6239~/and+Trait=Aggregation+behavior/or+Taxon+ID=~6239~/and+Trait=Foraging+behavior/or+Taxon+ID=~6239~/and+Trait=CO2+avoidance/or+Taxon+ID=~6239~/and+Trait=Pathogen+avoidance/or+Taxon+ID=~6239~/and+Trait=Fertility/and+groupHaplotypes=true#gephebase-summary-title))

No matches found.

Related Genes

Related Haplotypes

EXTERNAL LINKS

COMMENTS

@Pleiotropy