

GEPHE SUMMARY

Gephebase Gene

[tra-2](#)

Entry Status

Published

GepheID

GP00001132

Main curator

Martin

PHENOTYPIC CHANGE

Trait Category

Physiology

Trait

Fertility (self-fertility; hermaphrodite spermatogenesis)

Trait State in Taxon A

Caenorhabditis briggsae

Trait State in Taxon B

Caenorhabditis elegans

Ancestral State

Data not curated

Taxonomic Status

Interspecific

Taxon A

Latin Name

Caenorhabditis briggsae

Common Name

-

Synonyms

Caenorhabditis briggsae Dougherty & Nigon, 1949

Rank

species

Lineage

cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis

Parent

Caenorhabditis () - (Rank: genus)

NCBI Taxonomy ID

6238

is Taxon A an Intraspecies?

No

Taxon B

Latin Name

Caenorhabditis elegans

Common Name

-

Synonyms

roundworm; Rhabditis elegans; Caenorhabditis elegans (Maupas, 1900); Rhabditis elegans Maupas, 1900

Rank

species

Lineage

cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis

Parent

Caenorhabditis () - (Rank: genus)

NCBI Taxonomy ID

6239

is Taxon B an Intraspecies?

No

GENOTYPIC CHANGE

Generic Gene Name

[tra-2](#)

Synonyms

C15F1.3

String

6239.C15F1.3a

Sequence Similarities

-

GO - Molecular Function

GO:0004888 : transmembrane signaling receptor activity

GO:0038023 : signaling receptor activity

GO - Biological Process

GO:0007530 : sex determination

GO:0030154 : cell differentiation

GO:0007548 : sex differentiation

GO:0007283 : spermatogenesis

GO:0040021 : hermaphrodite germ-line sex determination

GO:0042001 : hermaphrodite somatic sex determination

GO - Cellular Component

UniProtKB *Caenorhabditis elegans*

[P34709](#)

GenebankID or UniProtKB

[AF491500](#)

GO:0016021 : integral component of membrane
GO:0005886 : plasma membrane
GO:0005737 : cytoplasm
GO:0005634 : nucleus
GO:0048471 : perinuclear region of cytoplasm
GO:0044214 : spanning component of plasma membrane

Presumptive Null

Unknown

Molecular Type

Cis-regulatory

Aberration Type

Insertion

Insertion Size

-

Molecular Details of the Mutation

Tandem duplication of GLD-1 binding sites in 3'UTR; see also fog-2 entry

Experimental Evidence

Candidate Gene

Main Reference

Interspecies comparison reveals evolution of control regions in the nematode sex-determining gene tra-2. (1996)

Authors

Kuwabara PE

Abstract

The *Caenorhabditis elegans* sex-determining gene *tra-2* promotes female development and expresses 4.7-, 1.9- and 1.8-kb mRNAs. The 4.7-kb mRNA encodes the major feminizing activity of the locus, a predicted membrane receptor that mediates cell-to-cell communication, named TRA-2A. The *tra-2* gene was characterized from a close relative, *C. briggsae*. The *Cb-tra-2* gene expresses only a 4.7-kb mRNA and alternatively spliced variants, which encode TRA-2A homologues. The *Cb-TRA-2A* and *Ce-TRA-2A* sequences are highly diverged, sharing only 43% identity, although their hydropathy profiles remain remarkably similar. Three potential regulatory sites of *Ce-tra-2* activity were previously identified by analyzing *tra-2(eg)*, *tra-2(gf)*, and *tra-2(mx)* mutations. Two of these sites, the EG site and MX region, are conserved in *Cb-tra-2*. By contrast, the two direct repeat elements in the *Ce-tra-2* 3' untranslated region, which are disrupted in *tra-2(gf)* mutants, are absent. Injection of *Cb-tra-2* antisense RNA into *C. briggsae* mimics the *Ce-tra-2* loss-of-function phenotype. Thus, antisense RNA permits studies of gene activity in nematodes that lack extensive genetics.

Additional References

Regulatory elements required for development of *caenorhabditis elegans* hermaphrodites are conserved in the *tra-2* homologue of *C. remanei*, a male/female sister species. (2000)

Independent recruitments of a translational regulator in the evolution of self-fertile nematodes. (2011)

RELATED GEPHE

Related Genes

1 (*fog-2*)

Related Haplotypes

No matches found.

COMMENTS