GEPHE SUMMARY

Gephebase Gene
mab-23 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^mab-23^#gephebase-summary-title)

GepheID
GP00001323

Entry Status
Published

Main curator
Courtier

PHENOTYPIC CHANGE

Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Morphology^#gephebase-summary-title)

Trait
Male genitalia (https://www.gephebase.org/search-criteria?/and+Trait=^Male genitalia^#gephebase-summary-title)

Trait State in Taxon A
C. elegans

Trait State in Taxon B
C. elegans - Vancouver strain KR314

Ancestral State
Taxon A

Taxonomic Status
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Intraspecific^#gephebase-summary-title)

Taxon A

Latin Name
Caenorhabditis elegans (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Caenorhabditis elegans^#gephebase-summary-title)

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) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6237)

NCBI Taxonomy ID
6239 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6239)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Caenorhabditis elegans (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Caenorhabditis elegans^#gephebase-summary-title)

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) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6237)

NCBI Taxonomy ID
6239 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6239)

is Taxon B an Infraspecies?
Yes

Taxon B Description
C. elegans - Vancouver strain KR314

GENOTYPIC CHANGE

Generic Gene Name
mab-23

Synonyms
C32C4.5; CELE_C32C4.5

String
6239.C32C4.5a (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 6239.C32C4.5a)

Sequence Similarities
-

GO - Molecular Function
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)
GO:0043565 : sequence-specific DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043565)
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)

GO - Biological Process

UniProtKB Caenorhabditis elegans
G5ECK3 (http://www.uniprot.org/uniprot/G5ECK3)

GenebankID or UniProtKB
AF535153.1 (https://www.ncbi.nlm.nih.gov/nuccore/AF535153.1)

-

GO - Cellular Component

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

Presumptive Null

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

TGC>TTC - cysteine of the DM motif transformed into phenylalanine; so is likely to disrupt DNA-binding function

Experimental Evidence

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

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

Main Reference

Regulation of sex-specific differentiation and mating behavior in C. elegans by a new member of the DM domain transcription factor family. (2002) (https://pubmed.ncbi.nlm.nih.gov/12231628)

Authors

Lints R; Emmons SW

Abstract

Mutations in Caenorhabditis elegans gene mab-23 cause abnormal male tail morphology and abolish male fecundity but have no obvious effect in the hermaphrodite. Here we show that mab-23 encodes a DM (Doublesex/MAB-3) domain transcription factor necessary for specific aspects of differentiation in sex-specific tissues of the male. mab-23 is required for the patterning of posterior sensory neurons in the male nervous system, sex muscle differentiation, and morphogenesis of the posterior hypodermis, spicules, and proctodeum. Failure of mab-23 mutant males to sire progeny is due primarily to defective sex muscle-mediated turning during copulatory behavior and likely compounded by impairment of sperm passage through the proctodeum. In the male nervous system, mab-23 refines ray neuron subtype distribution by restricting expression of dopaminergic neurotransmitter identity through interactions with the Hox gene egl-5 and a TGF-beta-related signaling pathway. mab-23 has distinct roles and functions independent of mab-3, indicating different aspects of C. elegans male sexual differentiation are coordinated among DM domain family members. Our results support the hypothesis that DM domain genes derive from an ancestral male sexual regulator and suggest how regulation of sexual development has evolved in distinct ways in different phyla.

Additional References

Natural variation and copulatory plug formation in Caenorhabditis elegans. (1997) (https://pubmed.ncbi.nlm.nih.gov/9136008)

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@SexualTrait - Presumptive Null Mutation