

plep-1 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^plep-1^#gephebase-summary-title)	Gephebase Gene	GP00000897	GepheID
Published	Entry Status	Martin	Main curator

Trait Category	
Behavior (https://www.gephebase.org/search-criteria?/and+TraitCategory=^Behavior^#gephebase-summary-title)	
Trait	
Male-male copulatory behavior (https://www.gephebase.org/search-criteria?/and+Trait=^Male-male copulatory behavior^#gephebase-summary-title)	
Trait State in Taxon A	
Caenorhabditis elegans - CB4856 (no plug behavior)	
Trait State in Taxon B	
Caenorhabditis elegans - CB4856 (no plug behavior)	
Ancestral State	
Taxon A	
Taxonomic Status	
Intraspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=^Intraspecific^#gephebase-summary-title)	
Taxon A	Taxon B
Caenorhabditis elegans	Caenorhabditis elegans
(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)
Common Name	Common Name
-	-
Synonyms	Synonyms
roundworm; Rhabditis elegans; Caenorhabditis elegans (Maupas, 1900); Rhabditis elegans Maupas, 1900	roundworm; Rhabditis elegans; Caenorhabditis elegans (Maupas, 1900); Rhabditis elegans Maupas, 1900
Rank	Rank
species	species
Lineage	Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis
Parent	Parent
Caenorhabditis () - (Rank: genus)	Caenorhabditis () - (Rank: genus)
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237)	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237)
NCBI Taxonomy ID	NCBI Taxonomy ID
6239	6239
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239)	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239)
is Taxon A an Intraspecies?	is Taxon B an Intraspecies?
Yes	Yes
Taxon A Description	Taxon B Description
Caenorhabditis elegans - CB4856 (no plug behavior)	Caenorhabditis elegans - CB4856 (no plug behavior)

	Generic Gene Name	UniProtKB <i>Caenorhabditis elegans</i>
plep-1		A0A0K3AR66 (http://www.uniprot.org/uniprot/A0A0K3AR66)
CELE_Y52E8A.4; Y52E8A.4	Synonyms	GenebankID or UniProtKB
	String	CTQ86544 (https://www.ncbi.nlm.nih.gov/nuccore/CTQ86544)
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
GO:0016021 : integral component of membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0016021)		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))

Molecular Type

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))

Aberration Type

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))

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

V278D

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

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

Natural Variation in plep-1 Causes Male-Male Copulatory Behavior in *C.Â elegans*. (2015) (<https://pubmed.ncbi.nlm.nih.gov/26455306>)

Main Reference

Noble LM; Chang AS; McNelis D; Kramer M; Yen M; Nicodemus JP; Riccardi DD; Ammerman P; Phillips M; Islam T; Rockman MV

Authors

Abstract

In sexual species, gametes have to find and recognize one another. Signaling is thus central to sexual reproduction and involves a rapidly evolving interplay of shared and divergent interests [1-4]. Among *Caenorhabditis* nematodes, three species have evolved self-fertilization, changing the balance of intersexual relations [5]. Males in these androdioecious species are rare, and the evolutionary interests of hermaphrodites dominate. Signaling has shifted accordingly, with females losing behavioral responses to males [6, 7] and males losing competitive abilities [8, 9]. Males in these species also show variable same-sex and autocopulatory mating behaviors [6, 10]. These behaviors could have evolved by relaxed selection on male function, accumulation of sexually antagonistic alleles that benefit hermaphrodites and harm males [5, 11], or neither of these, because androdioecy also reduces the ability of populations to respond to selection [12-14]. We have identified the genetic cause of a male-male mating behavior exhibited by geographically dispersed *C.Â elegans* isolates, wherein males mate with and deposit copulatory plugs on one another’s excretory pores. We find a single locus of major effect that is explained by segregation of a loss-of-function mutation in an uncharacterized gene, *plep-1*, expressed in the excretory cell in both sexes. Males homozygous for the *plep-1* mutation have excretory pores that are attractive or receptive to copulatory behavior of other males. Excretory pore plugs are injurious and hermaphrodite activity is compromised in *plep-1* mutants, so the allele might be unconditionally deleterious, persisting in the population because the species’ androdioecious mating system limits the reach of selection.

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Additional References

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Related Haplotypes

EXTERNAL LINKS

COMMENTS

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