

GEPHE SUMMARY

lin-48 (https://www.gephbase.org/search-criteria/?and+Gene Gephebase=^lin-48^#gephbase-summary-title)	Gephebase Gene	GP00000544	GephelD
Published	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

	Trait Category
Morphology (https://www.gephbase.org/search-criteria/?and+Trait+Category=^Morphology^#gephbase-summary-title)	Trait
Excretory duct position (https://www.gephbase.org/search-criteria/?and+Trait=^Excretory+duct+position^#gephbase-summary-title)	Trait State in Taxon A
C. briggsae; C. remanei; C. japonica; C. sp CB5161	Trait State in Taxon B
C. elegans	Ancestral State
Taxon A	Taxonomic Status
Interspecific (https://www.gephbase.org/search-criteria/?and+Taxonomic+Status=^Interspecific^#gephbase-summary-title)	

Taxon A #1		Taxon B	
	Latin Name		Latin Name
Caenorhabditis briggsae (https://www.gephbase.org/search-criteria/?and+Taxon+and+Synonyms=^Caenorhabditis+briggsae^#gephbase-summary-title)	Common Name	Caenorhabditis elegans (https://www.gephbase.org/search-criteria/?and+Taxon+and+Synonyms=^Caenorhabditis+elegans^#gephbase-summary-title)	Common Name
-	Synonyms	-	Synonyms
Caenorhabditis briggsae Dougherty & Nigon, 1949	Rank	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	Lineage
Caenorhabditis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6237)	Parent	Caenorhabditis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6237)	Parent
6238 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6238)	NCBI Taxonomy ID	6239 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6239)	NCBI Taxonomy ID
No	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

Taxon A #2	
	Latin Name
Caenorhabditis remanei (https://www.gephbase.org/search-criteria/?and+Taxon+and+Synonyms=^Caenorhabditis+remanei^#gephbase-summary-title)	Common Name
-	Synonyms
Caenorhabditis vulgaris; Caenorhabditis remanei (Sudhaus, 1974); Caenorhabditis vulgaris Baird, Fitch & Emmons, 1994; Caenorhabditis vulgarensis; Caenorhabditis vulgariensis	Rank
species	Lineage
Caenorhabditis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 6237)	Parent
31234	NCBI Taxonomy ID

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=31234>)
is Taxon A an Infraspecies?

No

Taxon A #3

Latin Name

Caenorhabditis japonica

(<https://www.gephbase.org/search-criteria?/and+Taxon+and+Synonyms=%Caenorhabditis+japonica%#gephbase-summary-title>)

Common Name

-

Synonyms

-

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

281687

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=281687>)

is Taxon A an Infraspecies?

No

GENOTYPIC CHANGE

Generic Gene Name

lin-48

Synonyms

CELE_F34D10.5; F34D10.5

String

6239.F34D10.5

(http://string-db.org/newstring_cgi/show_network_section.pl?identifier=6239.F34D10.5)

Sequence Similarities

-

GO - Molecular Function

GO:0001228 : DNA-binding transcription activator activity, RNA polymerase II-specific

(<https://www.ebi.ac.uk/QuickGO/term/GO:0001228>)

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:0001078 : proximal promoter DNA-binding transcription repressor activity, RNA

polymerase II-specific (<https://www.ebi.ac.uk/QuickGO/term/GO:0001078>)

GO - Biological Process

GO:0006355 : regulation of transcription, DNA-templated

(<https://www.ebi.ac.uk/QuickGO/term/GO:0006355>)

GO:0045892 : negative regulation of transcription, DNA-templated

(<https://www.ebi.ac.uk/QuickGO/term/GO:0045892>)

GO:0009913 : epidermal cell differentiation

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009913>)

GO:0007442 : hindgut morphogenesis

(<https://www.ebi.ac.uk/QuickGO/term/GO:0007442>)

GO:0045138 : nematode male tail tip morphogenesis

(<https://www.ebi.ac.uk/QuickGO/term/GO:0045138>)

GO - Cellular Component

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

Mutation #1

Presumptive Null

No (<https://www.gephbase.org/search-criteria?/and+Presumptive+Null=%No%#gephbase-summary-title>)

Molecular Type

Cis-regulatory (<https://www.gephbase.org/search-criteria?/and+Molecular+Type=%Cis-regulatory%#gephbase-summary-title>)

Aberration Type

Unknown (<https://www.gephbase.org/search-criteria?/and+Aberration+Type=%Unknown%#gephbase-summary-title>)

Molecular Details of the Mutation

Exact mutations unknown - region 1 of 4 regions identified based on chimeric constructs

Candidate Gene ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Experimental%20Evidence=%22Candidate%20Gene%22))

Main Reference

Multiple regulatory changes contribute to the evolution of the *Caenorhabditis lin-48* ovo gene. (2002) (<https://pubmed.ncbi.nlm.nih.gov/12231624/>)

Authors

Wang X; Chamberlin HM

Abstract

Recent work points to the importance of changes in gene expression patterns in species-specific differences. Here, we investigate the evolution of the nematode *lin-48* ovo gene. *lin-48* is expressed in several cells in both *Caenorhabditis elegans* and *Caenorhabditis briggsae*, but acts in the excretory duct cell only in *C. elegans*. We find the differences result both from alterations in the cis-regulatory sequences and in proteins that mediate *lin-48* expression. One factor that contributes to the species differences is the bZip protein CES-2. Our results indicate the accumulation of several regulatory changes affecting one gene can contribute to evolutionary change.

Additional References

Evolutionary innovation of the excretory system in *Caenorhabditis elegans*. (2004) (<https://pubmed.ncbi.nlm.nih.gov/14758362/>)

Mutation #2

Presumptive Null

No ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Presumptive%20Null=%22No%22))

Molecular Type

Cis-regulatory ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Molecular%20Type=%22Cis-regulatory%22))

Aberration Type

Unknown ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Aberration%20Type=%22Unknown%22))

Molecular Details of the Mutation

Exact mutations unknown - region 2 of 4 regions identified based on chimeric constructs

Experimental Evidence

Candidate Gene ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Experimental%20Evidence=%22Candidate%20Gene%22))

Main Reference

Multiple regulatory changes contribute to the evolution of the *Caenorhabditis lin-48* ovo gene. (2002) (<https://pubmed.ncbi.nlm.nih.gov/12231624/>)

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Mutation #3

Presumptive Null

No ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Presumptive%20Null=%22No%22))

Molecular Type

Cis-regulatory ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Molecular%20Type=%22Cis-regulatory%22))

Aberration Type

Unknown ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Aberration%20Type=%22Unknown%22))

Molecular Details of the Mutation

Exact mutations unknown - region 3 of 4 regions identified based on chimeric constructs

Experimental Evidence

Candidate Gene ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Experimental%20Evidence=%22Candidate%20Gene%22))

Main Reference

Multiple regulatory changes contribute to the evolution of the *Caenorhabditis lin-48* ovo gene. (2002) (<https://pubmed.ncbi.nlm.nih.gov/12231624/>)

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Additional References

Evolutionary innovation of the excretory system in *Caenorhabditis elegans*. (2004) (<https://pubmed.ncbi.nlm.nih.gov/14758362/>)

Mutation #4

Presumptive Null

No ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Presumptive%20Null=%22No%22))

Molecular Type

Cis-regulatory ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Molecular%20Type=%22Cis-regulatory%22))

Aberration Type

Unknown ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Aberration%20Type=%22Unknown%22))

Molecular Details of the Mutation

Exact mutations unknown - region 4 of 4 regions identified based on chimeric constructs

Experimental Evidence

Candidate Gene ([#gephbase-summary-title](https://www.gephbase.org/search-criteria/?and+Experimental%20Evidence=%22Candidate%20Gene%22))

Main Reference

Wang X; Chamberlin HM

Recent work points to the importance of changes in gene expression patterns in species-specific differences. Here, we investigate the evolution of the nematode lin-48 ovo gene. lin-48 is expressed in several cells in both *Caenorhabditis elegans* and *Caenorhabditis briggsae*, but acts in the excretory duct cell only in *C. elegans*. We find the differences result both from alterations in the cis-regulatory sequences and in proteins that mediate lin-48 expression. One factor that contributes to the species differences is the bZip protein CES-2. Our results indicate the accumulation of several regulatory changes affecting one gene can contribute to evolutionary change.

Evolutionary innovation of the excretory system in *Caenorhabditis elegans*. (2004) (<https://pubmed.ncbi.nlm.nih.gov/14758362>)

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@SeveralMutationsWithEffect