

## GEPHE SUMMARY

	Gephebase Gene		GepheID
peel-1/zeel-1 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^peel-1/zeel-1^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^peel-1/zeel-1^#gephebase-summary-title</a> )		GP00001320	
	Entry Status	Courtier	Main curator
Published			

## PHENOTYPIC CHANGE

	Trait Category		
Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title</a> )			
	Trait		
Hybrid incompatibility ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=^Hybrid+incompatibility^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=^Hybrid+incompatibility^#gephebase-summary-title</a> )			
	Trait State in Taxon A		
C. elegans			
	Trait State in Taxon B		
C. elegans - Hawaii strain CB4856 and 16 other strains			
	Ancestral State		
Taxon A			
	Taxonomic Status		
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title</a> )			
Taxon A		Taxon B	
	Latin Name		Latin Name
Caenorhabditis elegans ( <a href="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</a> )		Caenorhabditis elegans ( <a href="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</a> )	
	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) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237</a> )		Caenorhabditis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6237</a> )	
	NCBI Taxonomy ID		NCBI Taxonomy ID
6239 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239</a> )		6239 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6239</a> )	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		Yes	
			Taxon B Description
		C. elegans - Hawaii strain CB4856 and 16 other strains	

## GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Caenorhabditis elegans
peel-1		G5EGC6 ( <a href="http://www.uniprot.org/uniprot/G5EGC6">http://www.uniprot.org/uniprot/G5EGC6</a> )	
	Synonyms		GenebankID or UniProtKB
CELE_Y39G10AR.25; Y39G10AR.25		HQ291556.1 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/HQ291556.1">https://www.ncbi.nlm.nih.gov/nuccore/HQ291556.1</a> )	
	String		
6239.Y39G10AR.25 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.Y39G10AR.25">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.Y39G10AR.25</a> )			
	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

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

Molecular Type

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

Aberration Type

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

Deletion Size

10-100 kb

Molecular Details of the Mutation

19kb deletion

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))

Main Reference

Widespread genetic incompatibility in *C. elegans* maintained by balancing selection. (2008) (<https://pubmed.ncbi.nlm.nih.gov/18187622>)

Authors

Seidel HS; Rockman MV; Kruglyak L

Abstract

Natural selection is expected to eliminate genetic incompatibilities from interbreeding populations. We have discovered a globally distributed incompatibility in the primarily selfing species *Caenorhabditis elegans* that has been maintained despite its negative consequences for fitness. Embryos homozygous for a naturally occurring deletion of the zygotically acting gene *zeel-1* arrest if their sperm parent carries an incompatible allele of a second, paternal-effect locus, *peel-1*. The two interacting loci are tightly linked, with incompatible alleles occurring in linkage disequilibrium in two common haplotypes. These haplotypes exhibit elevated sequence divergence, and population genetic analyses of this region indicate that natural selection is preserving both haplotypes in the population. Our data suggest that long-term maintenance of a balanced polymorphism has permitted the incompatibility to persist despite gene flow across the rest of the genome.

Additional References

A novel sperm-delivered toxin causes late-stage embryo lethality and transmission ratio distortion in *C. elegans*. (2011) (<https://pubmed.ncbi.nlm.nih.gov/21814493>)

## RELATED GEPHE

Related Genes

1 (*peel-1*) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=^6239^/and+Trait=Hybrid incompatibility/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^6239^/and+Trait=Hybrid+incompatibility/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS

@BalancingSelection - The 19-kb deletion removes 2 genes; *zeel-1* and *peel-1*. Signature of balancing selection. The large haplotype region spans 33 kb of Bristol sequence and includes four full genes and part of a fifth. Sequencing of multiple strains suggests a single deletion event ; Null mutation