

GEPHE SUMMARY

	Gephebase Gene	GepheID
arcp-1 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^arcp-1+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^arcp-1+^#gephebase-summary-title</a> )	GP00002067	Main curator
	Entry Status	Courtier
Published		

PHENOTYPIC CHANGE

Trait #1	Trait Category
Behavior ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category+^Behavior+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category+^Behavior+^#gephebase-summary-title</a> )	
	Trait
CO2 avoidance ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+^CO2+avoidance+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+^CO2+avoidance+^#gephebase-summary-title</a> )	
	Trait State in Taxon A
inhibited after exposure to high oxygen levels	
	Trait State in Taxon B
not inhibited after exposure to high oxygen levels	

Trait #2	Trait Category
Behavior ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category+^Behavior+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category+^Behavior+^#gephebase-summary-title</a> )	
	Trait
Aggregation behavior ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+^Aggregation+behavior+^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+^Aggregation+behavior+^#gephebase-summary-title</a> )	
	Trait State in Taxon A
does not suppress aggregation behavior of npr-1(null) animals	
	Trait State in Taxon B
suppress aggregation behavior of npr-1(null) animals	

	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 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
	French JU1249 strain

GENOTYPIC CHANGE

CELE_F34D10.6	Generic Gene Name	C6KRH4 ( <a href="http://www.uniprot.org/uniprot/C6KRH4">http://www.uniprot.org/uniprot/C6KRH4</a> )	UniProtKB <i>Caenorhabditis elegans</i>
CELE_F34D10.6; F34D10.6	Synonyms	0	GenebankID or UniProtKB
6239.F34D10.6a ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.F34D10.6a">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=6239.F34D10.6a</a> )	String		
-	Sequence Similarities		
-	GO - Molecular Function		
-	GO - Biological Process		
-	GO - Cellular Component		
Yes ( <a href="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</a> )			Presumptive Null
Coding ( <a href="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</a> )			Molecular Type
Deletion ( <a href="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</a> )			Aberration Type
1-9 bp			Deletion Size
8 bp deletion (mfP22) in the open reading frame			Molecular Details of the Mutation
Linkage Mapping ( <a href="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</a> )			Experimental Evidence
Natural Variation in a Dendritic Scaffold Protein Remodels Experience-Dependent Plasticity by Altering Neuropeptide Expression. (2019) ( <a href="https://pubmed.ncbi.nlm.nih.gov/31757604">https://pubmed.ncbi.nlm.nih.gov/31757604</a> )			Main Reference
Beets I; Zhang G; Fenk LA; Chen C; Nelson GM; FÄ©lix MA; de Bono M			Authors
The extent to which behavior is shaped by experience varies between individuals. Genetic differences contribute to this variation, but the neural mechanisms are not understood. Here, we dissect natural variation in the behavioral flexibility of two <i>Caenorhabditis elegans</i> wild strains. In one strain, a memory of exposure to 21% O <sub>2</sub> suppresses CO <sub>2</sub> -evoked locomotory arousal; in the other, CO <sub>2</sub> evokes arousal regardless of previous O <sub>2</sub> experience. We map that a variation to a polymorphic dendritic scaffold protein, ARCP-1, expressed in sensory neurons. ARCP-1 binds the Ca <sup>2+</sup> -dependent phosphodiesterase PDE-1 and co-localizes PDE-1 with molecular sensors for CO <sub>2</sub> at dendritic ends. Reducing ARCP-1 or PDE-1 activity promotes CO <sub>2</sub> escape by altering neuropeptide expression in the BAG CO <sub>2</sub> sensors. Variation in ARCP-1 alters behavioral plasticity in multiple paradigms. Our findings are reminiscent of genetic accommodation, an evolutionary process by which phenotypic flexibility in response to environmental variation is reset by genetic change.			Abstract
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## RELATED GEPHE

3 (glb-5, exp-1, npr-1) ( <a href="https://www.gephebase.org/search-criteria?/or+Taxon+ID=~6239^/and+Trait=CO2+avoidance/or+Taxon+ID=~6239^/and+Trait=Aggregation+behavior/and+groupHaplotypes=true#gephebase-summary-title">https://www.gephebase.org/search-criteria?/or+Taxon+ID=~6239^/and+Trait=CO2+avoidance/or+Taxon+ID=~6239^/and+Trait=Aggregation+behavior/and+groupHaplotypes=true#gephebase-summary-title</a> )	Related Genes
No matches found.	Related Haplotypes

## EXTERNAL LINKS

## COMMENTS