GEPHE SUMMARY

Gephebase Gene
Tyramine receptor 3 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Tyramine receptor 3^#gephebase-summary-title)

GepheID
GP00001141

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

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

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

Trait State in Taxon A
C. elegans

Trait State in Taxon B
C. elegans

Ancestral State
Data not curated

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?
No

GENOTYPIC CHANGE

Generic Gene Name
tyra-3

Synonyms
CELE_M03F4.3; M03F4.3

String
6239.M03F4.3b (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 6239.M03F4.3b)

Sequence Similarities
Belongs to the G-protein coupled receptor 1 family.

GO - Molecular Function
GO:0004930 : G protein-coupled receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004930)
GO:0030594 : neurotransmitter receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0030594)
GO:0004993 : G protein-coupled serotonin receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004993)

GO - Biological Process
GO:0007268 : chemical synaptic transmission

UniProtKB Caenorhabditis elegans
Q7JNP9 (http://www.uniprot.org/uniprot/Q7JNP9)

GenebankID or UniProtKB
BX284606 (https://www.ncbi.nlm.nih.gov/nuccore/BX284606)

(https://www.ebi.ac.uk/QuickGO/term/GO:0007268)
GO:0007187 : G protein-coupled receptor signaling pathway, coupled to cyclic nucleotide second messenger (https://www.ebi.ac.uk/QuickGO/term/GO:0007187)

GO - Cellular Component

GO:0005887 : integral component of plasma membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0005887)
GO:0030425 : dendrite (https://www.ebi.ac.uk/QuickGO/term/GO:0030425)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

Non-coding

Experimental Evidence

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

Main Reference

Catecholamine receptor polymorphisms affect decision-making in C. elegans. (2011) (https://pubmed.ncbi.nlm.nih.gov/21412235)

Authors

Bendesky A; Tsunozaki M; Rockman MV; Kruglyak L; Bargmann CI

Abstract

Innate behaviours are flexible: they change rapidly in response to transient environmental conditions, and are modified slowly by changes in the genome. A classical flexible behaviour is the exploration-exploitation decision, which describes the time at which foraging animals choose to abandon a depleting food supply. We have used quantitative genetic analysis to examine the decision to leave a food patch in Caenorhabditis elegans. Here we show that patch-leaving is a multigenic trait regulated in part by naturally occurring non-coding polymorphisms in tyra-3 (tyramine receptor 3), which encodes a G-protein-coupled catecholamine receptor related to vertebrate adrenergic receptors. tyra-3 acts in sensory neurons that detect environmental cues, suggesting that the internal catecholamines detected by tyra-3 regulate responses to external conditions. These results indicate that genetic variation and environmental cues converge on common circuits to regulate behaviour, and suggest that catecholamines have an ancient role in regulating behavioural decisions.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS