

GEPHE SUMMARY

|                                                                                                                                                                                                                                                                                                                                         |                |  |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|--------------|
|                                                                                                                                                                                                                                                                                                                                         | Gephebase Gene |  | GepheID      |
| Regulator of G-protein signaling 2 (RGS2) ( <a +regulator+of+g-protein+signaling+2+(rgs2)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+Regulator+of+G-protein+signaling+2+(RGS2)+"#gephebase-summary-title</a> ) | GP00000967     |  |              |
|                                                                                                                                                                                                                                                                                                                                         | Martin         |  | Main curator |
|                                                                                                                                                                                                                                                                                                                                         | Entry Status   |  |              |
| Published                                                                                                                                                                                                                                                                                                                               |                |  |              |

PHENOTYPIC CHANGE

|                                                                                                                                                                                                                                                                                                                                                             |                             |                                                                                                                                                                                                                                                                                                                                                             |                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|                                                                                                                                                                                                                                                                                                                                                             | Trait Category              |                                                                                                                                                                                                                                                                                                                                                             |                             |
| Behavior ( <a +behavior+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Behavior+"#gephebase-summary-title</a> )                                                                                                                        |                             | Trait                                                                                                                                                                                                                                                                                                                                                       |                             |
| Anxiety ( <a +anxiety+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Anxiety+"#gephebase-summary-title</a> )                                                                                                                                             |                             |                                                                                                                                                                                                                                                                                                                                                             |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Trait State in Taxon A      |                                                                                                                                                                                                                                                                                                                                                             |                             |
| Mus musculus -MF1 outbred                                                                                                                                                                                                                                                                                                                                   |                             | Trait State in Taxon B                                                                                                                                                                                                                                                                                                                                      |                             |
| Mus musculus - inbred strains                                                                                                                                                                                                                                                                                                                               |                             |                                                                                                                                                                                                                                                                                                                                                             |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Ancestral State             |                                                                                                                                                                                                                                                                                                                                                             |                             |
| Data not curated                                                                                                                                                                                                                                                                                                                                            |                             | Taxonomic Status                                                                                                                                                                                                                                                                                                                                            |                             |
| Intraspecific ( <a +intraspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific+"#gephebase-summary-title</a> )                                                                                                     |                             |                                                                                                                                                                                                                                                                                                                                                             |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Taxon A                     |                                                                                                                                                                                                                                                                                                                                                             | Taxon B                     |
|                                                                                                                                                                                                                                                                                                                                                             | Latin Name                  |                                                                                                                                                                                                                                                                                                                                                             | Latin Name                  |
| Mus musculus ( <a +mus+musculus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Mus+musculus+"#gephebase-summary-title</a> )                                                                                                    |                             | Mus musculus ( <a +mus+musculus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Mus+musculus+"#gephebase-summary-title</a> )                                                                                                    |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Common Name                 |                                                                                                                                                                                                                                                                                                                                                             | Common Name                 |
| house mouse                                                                                                                                                                                                                                                                                                                                                 |                             | house mouse                                                                                                                                                                                                                                                                                                                                                 |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Synonyms                    |                                                                                                                                                                                                                                                                                                                                                             | Synonyms                    |
| house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid                                                                                                                                                                                                                                                                                |                             | house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid                                                                                                                                                                                                                                                                                |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Rank                        |                                                                                                                                                                                                                                                                                                                                                             | Rank                        |
| species                                                                                                                                                                                                                                                                                                                                                     |                             | species                                                                                                                                                                                                                                                                                                                                                     |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Lineage                     |                                                                                                                                                                                                                                                                                                                                                             | Lineage                     |
| cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |                             | cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Parent                      |                                                                                                                                                                                                                                                                                                                                                             | Parent                      |
| Mus () - (Rank: subgenus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=862507">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=862507</a> )                                                                                                                                                                           |                             | Mus () - (Rank: subgenus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=862507">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=862507</a> )                                                                                                                                                                           |                             |
|                                                                                                                                                                                                                                                                                                                                                             | NCBI Taxonomy ID            |                                                                                                                                                                                                                                                                                                                                                             | NCBI Taxonomy ID            |
| 10090 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=10090">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=10090</a> )                                                                                                                                                                                                 |                             | 10090 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=10090">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=10090</a> )                                                                                                                                                                                                 |                             |
|                                                                                                                                                                                                                                                                                                                                                             | is Taxon A an Intraspecies? |                                                                                                                                                                                                                                                                                                                                                             | is Taxon B an Intraspecies? |
| Yes                                                                                                                                                                                                                                                                                                                                                         |                             | Yes                                                                                                                                                                                                                                                                                                                                                         |                             |
|                                                                                                                                                                                                                                                                                                                                                             | Taxon A Description         |                                                                                                                                                                                                                                                                                                                                                             | Taxon B Description         |
| Mus musculus -MF1 outbred                                                                                                                                                                                                                                                                                                                                   |                             | Mus musculus - inbred strains                                                                                                                                                                                                                                                                                                                               |                             |

GENOTYPIC CHANGE

|                                                                                                                                                                                                                                          |                         |                                                                                                                        |                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                                                                                                                                                                                                                                          | Generic Gene Name       |                                                                                                                        | UniProtKB Mus musculus  |
| Rgs2                                                                                                                                                                                                                                     |                         | O08849 ( <a href="http://www.uniprot.org/uniprot/O08849">http://www.uniprot.org/uniprot/O08849</a> )                   |                         |
|                                                                                                                                                                                                                                          | Synonyms                |                                                                                                                        | GenebankID or UniProtKB |
| GOS8                                                                                                                                                                                                                                     |                         | AK077922 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/AK077922">https://www.ncbi.nlm.nih.gov/nuccore/AK077922</a> ) |                         |
|                                                                                                                                                                                                                                          | String                  |                                                                                                                        |                         |
| 10090.ENSMUSP00000115558 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000115558">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000115558</a> ) |                         |                                                                                                                        |                         |
|                                                                                                                                                                                                                                          | Sequence Similarities   |                                                                                                                        |                         |
| -                                                                                                                                                                                                                                        |                         |                                                                                                                        |                         |
|                                                                                                                                                                                                                                          | GO - Molecular Function |                                                                                                                        |                         |
| GO:0005096 : GTPase activator activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005096">https://www.ebi.ac.uk/QuickGO/term/GO:0005096</a> )                                                                                     |                         |                                                                                                                        |                         |
| GO:0048487 : beta-tubulin binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0048487">https://www.ebi.ac.uk/QuickGO/term/GO:0048487</a> )                                                                                          |                         |                                                                                                                        |                         |
| GO:0001965 : G-protein alpha-subunit binding                                                                                                                                                                                             |                         |                                                                                                                        |                         |

(<https://www.ebi.ac.uk/QuickGO/term/GO:0001965>)

GO - Biological Process

GO:0007186 : G protein-coupled receptor signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007186>)  
GO:0043407 : negative regulation of MAP kinase activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043407>)  
GO:0010976 : positive regulation of neuron projection development  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010976>)  
GO:0007283 : spermatogenesis (<https://www.ebi.ac.uk/QuickGO/term/GO:0007283>)  
GO:0017148 : negative regulation of translation  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0017148>)  
GO:0007420 : brain development (<https://www.ebi.ac.uk/QuickGO/term/GO:0007420>)  
GO:0045471 : response to ethanol (<https://www.ebi.ac.uk/QuickGO/term/GO:0045471>)  
GO:0061052 : negative regulation of cell growth involved in cardiac muscle cell development (<https://www.ebi.ac.uk/QuickGO/term/GO:0061052>)  
GO:0030728 : ovulation (<https://www.ebi.ac.uk/QuickGO/term/GO:0030728>)  
GO:0060452 : positive regulation of cardiac muscle contraction  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060452>)  
GO:0050873 : brown fat cell differentiation  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0050873>)  
GO:0007049 : cell cycle (<https://www.ebi.ac.uk/QuickGO/term/GO:0007049>)  
GO:0060135 : maternal process involved in female pregnancy  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060135>)  
GO:0140194 : negative regulation of adenylate cyclase-inhibiting adrenergic receptor signaling pathway involved in heart process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0140194>)  
GO:0043951 : negative regulation of cAMP-mediated signaling  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043951>)  
GO:0010614 : negative regulation of cardiac muscle hypertrophy  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010614>)  
GO:0045744 : negative regulation of G protein-coupled receptor signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045744>)  
GO:1900924 : negative regulation of glycine import across plasma membrane  
(<https://www.ebi.ac.uk/QuickGO/term/GO:1900924>)  
GO:0010519 : negative regulation of phospholipase activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010519>)  
GO:0008277 : regulation of G protein-coupled receptor signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008277>)  
GO:0055119 : relaxation of cardiac muscle  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0055119>)  
GO:0060087 : relaxation of vascular smooth muscle  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060087>)  
GO:0001975 : response to amphetamine  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001975>)

GO - Cellular Component

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)  
GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)  
GO:0005829 : cytosol (<https://www.ebi.ac.uk/QuickGO/term/GO:0005829>)  
GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)  
GO:0043005 : neuron projection (<https://www.ebi.ac.uk/QuickGO/term/GO:0043005>)  
GO:0009898 : cytoplasmic side of plasma membrane  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009898>)  
GO:0005730 : nucleolus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005730>)

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Presumptive Null                  |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown^#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Molecular Type                    |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=~Unknown^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Molecular Type=~Unknown^#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Aberration Type                   |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown^#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                   |
| unknown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Molecular Details of the Mutation |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Experimental Evidence             |
| 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> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Main Reference                    |
| Genetic dissection of a behavioral quantitative trait locus shows that Rgs2 modulates anxiety in mice. (2004) ( <a href="https://pubmed.ncbi.nlm.nih.gov/15489855">https://pubmed.ncbi.nlm.nih.gov/15489855</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Authors                           |
| Yalcin B; Willis-Owen SA; Fullerton J; Meesaq A; Deacon RM; Rawlins JN; Copley RR; Morris AP; Flint J; Mott R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Abstract                          |
| Here we present a strategy to determine the genetic basis of variance in complex phenotypes that arise from natural, as opposed to induced, genetic variation in mice. We show that a commercially available strain of outbred mice, MF1, can be treated as an ultrafine mosaic of standard inbred strains and accordingly used to dissect a known quantitative trait locus influencing anxiety. We also show that this locus can be subdivided into three regions, one of which contains Rgs2, which encodes a regulator of G protein signaling. We then use quantitative complementation to show that Rgs2 is a quantitative trait gene. This combined genetic and functional approach should be applicable to the analysis of any quantitative trait. |                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Additional References             |

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS