

GEPHE SUMMARY

GPR133 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=GPR133#gephebase-summary-title)	Gephebase Gene	GP00000411	GepheID
	Entry Status	Martin	Main curator
	Published		

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=Physiology#gephebase-summary-title)		Trait Category	
Body size (weight) (https://www.gephebase.org/search-criteria?/and+Trait=Body size (weight)#gephebase-summary-title)		Trait	
Mus musculus		Trait State in Taxon A	
Mus musculus		Trait State in Taxon B	
Data not curated		Ancestral State	
Domesticated (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=Domesticated#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Mus musculus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=Mus musculus#gephebase-summary-title)		Mus musculus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=Mus musculus#gephebase-summary-title)	
house mouse		house mouse	
house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid		house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid	
species		species	
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	
Mus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 862507)		Mus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 862507)	
10090 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 10090)		10090 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 10090)	
No		No	

GENOTYPIC CHANGE

ADGRD1	Generic Gene Name	Q6QNK2 (http://www.uniprot.org/uniprot/Q6QNK2)	UniProtKB Homo sapiens
	Synonyms	AAI57995 (https://www.ncbi.nlm.nih.gov/nuccore/AAI57995)	GenebankID or UniProtKB
	String		
9606.ENSPP00000261654 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPP00000261654)			
Belongs to the G-protein coupled receptor 2 family. Adhesion G-protein coupled receptor (ADGR) subfamily.			
GO:0004930 : G protein-coupled receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004930)			
GO:0007186 : G protein-coupled receptor signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0007186)			
GO:0007166 : cell surface receptor signaling pathway			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0007166>)
GO:0007189 : adenylate cyclase-activating G protein-coupled receptor signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007189>)

GO - Cellular Component

GO:0016021 : integral component of membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)
GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)
GO:0005887 : integral component of plasma membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005887>)

Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#gephebase-summary-title)	Presumptive Null
Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown^#gephebase-summary-title)	Aberration Type
unknown	Molecular Details of the Mutation
Association Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Association Mapping^#gephebase-summary-title)	Experimental Evidence
Parallel selection mapping using artificially selected mice reveals body weight control loci. (2012) (https://pubmed.ncbi.nlm.nih.gov/22445301)	Main Reference
Chan YF; Jones FC; McConnell E; Bryk J; BÃ¼nger L; Tautz D	Authors

Abstract

Understanding how polygenic traits evolve under selection is an unsolved problem, because challenges exist for identifying genes underlying a complex trait and understanding how multilocus selection operates in the genome. Here we study polygenic response to selection using artificial selection experiments. Inbred strains from seven independent long-term selection experiments for extreme mouse body weight (“high” lines weigh 42-77 g versus 16-40 g in “control” lines) were genotyped at 527,572 SNPs to identify loci controlling body weight. We identified 67 parallel selected regions (PSRs) where high lines share variants rarely found among the controls. By comparing allele frequencies in one selection experiment against its unselected control, we found classical selective sweeps centered on the PSRs. We present evidence supporting two G protein-coupled receptors GPR133 and Prlhr as positional candidates controlling body weight. Artificial selection may mimic natural selection in the wild: compared to control loci, we detected reduced heterozygosity in PSRs in unusually large wild mice on islands. Many PSRs overlap loci associated with human height variation, possibly through evolutionary conserved functional pathways. Our data suggest that parallel selection on complex traits may evoke parallel responses at many genes involved in diverse but relevant pathways.

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Additional References

RELATED GEPHE

2 (Glypican-3 (Gpc3), Prolactin releasing hormone receptor (Prlhr/GPR10)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^10090^/and+Trait=Body size/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS