

GEPHE SUMMARY

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

PHENOTYPIC CHANGE

	Trait Category
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)	Trait
Body size (weight) (https://www.gephebase.org/search-criteria?/and+Trait=^Body size (weight)^#gephebase-summary-title)	Trait State in Taxon A
Mus musculus	Trait State in Taxon B
Mus musculus	Ancestral State
Data not curated	Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)	

Taxon A	Latin Name	Taxon B	Latin Name
Mus musculus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Mus musculus^#gephebase-summary-title)	Common Name	Mus musculus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Mus musculus^#gephebase-summary-title)	Common Name
house mouse	Synonyms	house mouse	Synonyms
house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid	Rank	house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid	Rank
species	Lineage	species	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	Parent	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
Mus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 862507)	NCBI Taxonomy ID	Mus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 862507)	NCBI Taxonomy ID
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	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

ADGRD1	Generic Gene Name	UniProtKB Homo sapiens
PGR25; GPR133	Synonyms	GenebankID or UniProtKB
9606.ENSP00000261654 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=9606.ENSP00000261654)	String	AA157995 (https://www.ncbi.nlm.nih.gov/nuccore/AA157995)
Belongs to the G-protein coupled receptor 2 family. Adhesion G-protein coupled receptor (ADGR) subfamily.	Sequence Similarities	
GO:0004930 : G protein-coupled receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004930)	GO - Molecular Function	
GO:0007186 : G protein-coupled receptor signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0007186)	GO - Biological Process	
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>)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

unknown

Experimental Evidence

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

Main Reference

Parallel selection mapping using artificially selected mice reveals body weight control loci. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22445301>)

Authors

Chan YF; Jones FC; McConnell E; Bryk J; BÄ¼anger L; Tautz D

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

Related Genes

2 (Glycan-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 Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS