



## GO - Biological Process

GO:0007186 : G protein-coupled receptor signaling pathway

(<https://www.ebi.ac.uk/QuickGO/term/GO:0007186>)GO:0007565 : female pregnancy (<https://www.ebi.ac.uk/QuickGO/term/GO:0007565>)GO:0007631 : feeding behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0007631>)

GO:0042445 : hormone metabolic process

(<https://www.ebi.ac.uk/QuickGO/term/GO:0042445>)

## GO - Cellular Component

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

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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), GPR133) (<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