GEPHE SUMMARY

Gephebase Gene
VPS13A (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^VPS13A^#gephebase-summary-title)

GepheID
GP00001571

Entry Status
Published

Main curator
Prigent

PHENOTYPIC CHANGE

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

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

Trait State in Taxon A
Pig breed from Northern China

Trait State in Taxon B
Pig breed from Southern China

Ancestral State
Taxon A

Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)

Taxon A

Latin Name
Sus scrofa (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Sus scrofa^#gephebase-summary-title)

Common Name
pig

Synonyms
pig; pigs; swine; wild boar; Sus scrofa Linnaeus, 1758; Sus scrofus

Rank
species

Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Cetartiodactyla; Suina; Suidae; Sus

Parent
Sus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9822)

NCBI Taxonomy ID
9823 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9823)

is Taxon A an Infraspecies?
Yes

Taxon A Description
Pig breed from Northern China

Taxon B

Latin Name
Sus scrofa (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Sus scrofa^#gephebase-summary-title)

Common Name
pig

Synonyms
pig; pigs; swine; wild boar; Sus scrofa Linnaeus, 1758; Sus scrofus

Rank
species

Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Cetartiodactyla; Suina; Suidae; Sus

Parent
Sus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9822)

NCBI Taxonomy ID
9823 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9823)

is Taxon B an Infraspecies?
Yes

Taxon B Description
Pig breed from Southern China

GENOTYPIC CHANGE

Generic Gene Name
VPS13A

Synonyms
-

String
9823.ENSSSCP00000005673 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=9823.ENSSSCP00000005673)

Sequence Similarities
-

GO - Molecular Function
-

GO - Biological Process
GO:0007399 : nervous system development (https://www.ebi.ac.uk/QuickGO/term/GO:0007399)
GO:0035176 : social behavior (https://www.ebi.ac.uk/QuickGO/term/GO:0035176)

UniProtKB Sus scrofa
F1SIL5 (http://www.uniprot.org/uniprot/F1SIL5)

GenebankID or UniProtKB
()

GO:0007626 : locomotory behavior (https://www.ebi.ac.uk/QuickGO/term/GO:0007626)
GO:0006623 : protein targeting to vacuole
(https://www.ebi.ac.uk/QuickGO/term/GO:0006623)
GO:0006914 : autophagy (https://www.ebi.ac.uk/QuickGO/term/GO:0006914)
GO:0045053 : protein retention in Golgi apparatus
(https://www.ebi.ac.uk/QuickGO/term/GO:0045053)

GO - Cellular Component

GO:0019898 : extrinsic component of membrane
(https://www.ebi.ac.uk/QuickGO/term/GO:0019898)
GO:0031045 : dense core granule (https://www.ebi.ac.uk/QuickGO/term/GO:0031045)

Presumptive Null

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title)

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

two nonsynonymous substitutions V>G and F>Y - whether both or only one affects the phenotype is unknown

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Main Reference

Adaptation and possible ancient interspecies introgression in pigs identified by whole-genome sequencing. (2015) (https://pubmed.ncbi.nlm.nih.gov/25621459)

Authors

Ai H; Fang X; Yang B; Huang Z; Chen H; Mao L; Zhang F; Zhang L; Cui L; He W; Yang J; Yao X; Zhou L; Han L; Li J; Sun S; Xie X; Lai B; Su Y; Lu Y; Yang H; Huang T; Deng W; Nielsen R; Ren J; Huang L

Abstract

Domestic pigs have evolved genetic adaptations to their local environmental conditions, such as cold and hot climates. We sequenced the genomes of 69 pigs from 15 geographically divergent locations in China and detected 41 million variants, of which 21 million were absent from the dbSNP database. In a genome-wide scan, we identified a set of loci that likely have a role in regional adaptations to high- and low-latitude environments within China. Intriguingly, we found an exceptionally large (14-Mb) region with a low recombination rate on the X chromosome that appears to have two distinct haplotypes in the high- and low-latitude populations, possibly underlying their adaptation to cold and hot environments, respectively. Surprisingly, the adaptive sweep in the high-latitude regions has acted on DNA that might have been introgressed from an extinct Sus species. Our findings provide new insights into the evolutionary history of pigs and the role of introgression in adaptation.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Non-null mutation.