

GEPHE SUMMARY

Agouti (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+Agouti+Gephebase-summary-title)	Gephebase Gene	GP00000058	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category+Morphology+Gephebase-summary-title)	Trait Category		
Coloration (coat; dorso-ventral) (https://www.gephebase.org/search-criteria?/and+Trait+Coloration+coat+dorso-ventral+Gephebase-summary-title)	Trait		
Sus scrofa- Mangalitza	Trait State in Taxon A		
Sus scrofa - Pi_strain	Trait State in Taxon B		
Data not curated	Ancestral State		
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Domesticated+Gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
	Latin Name		Latin Name
Sus scrofa (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Sus+scrofa+Gephebase-summary-title)	Latin Name	Sus scrofa domesticus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Sus+scrofa+domesticus+Gephebase-summary-title)	Latin Name
	Common Name		Common Name
pig	Common Name	domestic pig	Common Name
	Synonyms		Synonyms
pig; pigs; swine; wild boar; Sus scrofa Linnaeus, 1758; Sus scrofa species	Synonyms	Sus domestica; Sus domesticus; Sus scrofa domestica; domestic pig	Synonyms
	Rank		Rank
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	Rank	subspecies	Rank
	Lineage		Lineage
	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; Sus scrofa	Lineage
	Parent		Parent
Sus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9822)	Parent	Sus scrofa (pig) - (Rank: species) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9825)	Parent
9823 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9823)	NCBI Taxonomy ID	9825 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9825)	NCBI Taxonomy ID
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
	Taxon A Description		Taxon B Description
Sus scrofa- Mangalitza	Taxon A Description	Sus scrofa - Pi_strain	Taxon B Description

GENOTYPIC CHANGE

Asip	Generic Gene Name	Q03288 (http://www.uniprot.org/uniprot/Q03288)	UniProtKB Mus musculus
As; ASP; A<y>; ASIP; a	Synonyms	AAF22158 (https://www.ncbi.nlm.nih.gov/nucore/AAF22158)	GenebankID or UniProtKB
10090.ENSMUSP00000029123 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000029123)	String		
-	Sequence Similarities		
	GO - Molecular Function		
GO:0031779 : melanocortin receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0031779)	GO - Molecular Function		
GO:0031781 : type 3 melanocortin receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0031781)	GO - Molecular Function		
GO:0031782 : type 4 melanocortin receptor binding	GO - Molecular Function		

(<https://www.ebi.ac.uk/QuickGO/term/GO:0031782>)

GO - Biological Process

- GO:0008343 : adult feeding behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0008343>)
- GO:0006091 : generation of precursor metabolites and energy (<https://www.ebi.ac.uk/QuickGO/term/GO:0006091>)
- GO:0071514 : genetic imprinting (<https://www.ebi.ac.uk/QuickGO/term/GO:0071514>)
- GO:0009755 : hormone-mediated signaling pathway (<https://www.ebi.ac.uk/QuickGO/term/GO:0009755>)
- GO:0042438 : melanin biosynthetic process (<https://www.ebi.ac.uk/QuickGO/term/GO:0042438>)
- GO:0032438 : melanosome organization (<https://www.ebi.ac.uk/QuickGO/term/GO:0032438>)
- GO:0032402 : melanosome transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0032402>)
- GO:0043473 : pigmentation (<https://www.ebi.ac.uk/QuickGO/term/GO:0043473>)
- GO:0048023 : positive regulation of melanin biosynthetic process (<https://www.ebi.ac.uk/QuickGO/term/GO:0048023>)
- GO:0040030 : regulation of molecular function, epigenetic (<https://www.ebi.ac.uk/QuickGO/term/GO:0040030>)

GO - Cellular Component

- GO:0005576 : extracellular region (<https://www.ebi.ac.uk/QuickGO/term/GO:0005576>)
- GO:0005623 : cell (<https://www.ebi.ac.uk/QuickGO/term/GO:0005623>)

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

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

Experimental Evidence

The mutation causing the black-and-tan pigmentation phenotype of Mangalitza pigs maps to the porcine ASIP locus but does not affect its coding sequence. (2006) (<https://pubmed.ncbi.nlm.nih.gov/16416091>)

Main Reference

DrÄqgemÄyÄller C; Giese A; Martins-Wess F; Wiedemann S; Andersson L; Brenig B; Fries R; Leeb T

Authors

The gene for agouti signaling protein (ASIP) is centrally involved in the expression of coat color traits in animals. The Mangalitza pig breed is characterized by a black-and-tan phenotype with black dorsal pigmentation and yellow or white ventral pigmentation. We investigated a Mangalitza x PiÄ©train cross and observed a coat color segregation pattern in the F2 generation that can be explained by virtue of two alleles at the MC1R locus and two alleles at the ASIP locus. Complete linkage of the black-and-tan phenotype to microsatellite alleles at the ASIP locus on SSC 17q21 was observed. Corroborated by the knowledge of similar mouse coat color mutants, it seems therefore conceivable that the black-and-tan pigmentation of Mangalitza pigs is caused by an ASIP allele a(t), which is recessive to the wild-type allele A. Toward positional cloning of the a(t) mutation, a 200-kb genomic BAC/PAC contig of this chromosomal region has been constructed and subsequently sequenced. Full-length ASIP cDNAs obtained by RACE differed in their 5' untranslated regions, whereas they shared a common open reading frame. Comparative sequencing of all ASIP exons and ASIP cDNAs between Mangalitza and PiÄ©train pigs did not reveal any differences associated with the coat color phenotype. Relative qRT-PCR analyses showed different dorsoventral skin expression intensities of the five ASIP transcripts in black-and-tan Mangalitza. The a(t) mutation is therefore probably a regulatory ASIP mutation that alters its dorsoventral expression pattern.

Abstract

Additional References

RELATED GEPHE

3 (Kit (type III receptor protein-tyrosine kinase), MC1R, tyrosinase-related protein 1 (TYRP1)) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^9823^/and+Trait=Coloration/or+Taxon ID=^9825^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

