

GEPHE SUMMARY

<p>Agouti (ASIP) (<a +agouti+(asip)^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+Agouti+(ASIP)^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001336</p> <p>Prigent</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

<p>Morphology (<a +morphology^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology^#gephebase-summary-title)</p> <p>Coloration (coat) (<a +coloration+(coat)^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Coloration+(coat)^#gephebase-summary-title)</p> <p>Dog-wolf sable</p> <p>Dog black-and-tan + saddle phenotypes</p> <p>Taxon A</p> <p>Domesticated (<a +domesticated^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated^#gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Canis lupus (<a +canis+lupus^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Canis+lupus^#gephebase-summary-title)</p> <p>gray wolf</p> <p>gray wolf; grey wolf; Canis lupus Linnaeus, 1758</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Carnivora; Caniformia; Canidae; Canis</p> <p>Canis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9611)</p> <p>9612 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9612)</p> <p>No is Taxon A an Intraspecies?</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p>	<p>Taxon B</p> <p>Canis lupus familiaris (<a +canis+lupus+familiaris^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Canis+lupus+familiaris^#gephebase-summary-title)</p> <p>dog</p> <p>Canis canis; Canis domesticus; Canis familiaris; dog; dogs; Canis familiaris Linnaeus, 1758; Canis lupus familiaris Linnaeus, 1758</p> <p>subspecies</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Carnivora; Caniformia; Canidae; Canis; Canis lupus</p> <p>Canis lupus (gray wolf) - (Rank: species) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9612)</p> <p>9615 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9615)</p> <p>No is Taxon B an Intraspecies?</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p>
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GENOTYPIC CHANGE

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

Cis-regulatory ([https://www.gephebase.org/search-criteria?/and+Molecular Type="Cis-regulatory" #gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular Type=)) Molecular Type

Insertion ([https://www.gephebase.org/search-criteria?/and+Aberration Type="Insertion" #gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration Type=)) Aberration Type

100-999 bp Insertion Size

A 239bp SINE insertion in reverse orientation in intron 1 Molecular Details of the Mutation

Candidate Gene ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence="Candidate Gene" #gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental Evidence=)) Experimental Evidence

A SINE insertion causes the black-and-tan and saddle tan phenotypes in domestic dogs. (2011 Sep-Oct) (<https://pubmed.ncbi.nlm.nih.gov/21846741>) Main Reference

Dreger DL; Schmutz SM Authors

Agouti Signaling Protein (ASIP) controls the localized expression of red and black pigment in the domestic dog through interaction with other genes, such as Melanocortin 1 Receptor and Beta-Defensin 103. Specific ASIP alleles are necessary for many of the coat color patterns, such as black-and-tan and saddle tan. Mutations in 2 ASIP alleles, a(y) and a, have previously been identified. Here, we characterize a mutation consisting of a short interspersed nuclear element (SINE) insertion in intron 1 of ASIP that allows for the differentiation of the a(w) wolf sable and a(t) black-and-tan alleles. The SINE insertion is present in dogs with the a(t) and a alleles but absent from dogs with the a(w) and a(y) alleles. Dogs with the saddle tan phenotype were all a(t)/a(t). Schnauzers were all a(w)/a(w). Genotypes of 201 dogs of 35 breeds suggest that there are only 4 ASIP alleles, as opposed to the 5 or 6 predicted in previous literature. These data demonstrate that the dominance hierarchy of ASIP is a(y) > a(w) > a(t) > a. Abstract

Additional References

RELATED GEPHE

13 (GPR22, MFSD12, PMEL17, SLC45A2=MATP, FGF3; FGF4; FGF19; ORAOV1, Kit, MC1R, Melanophilin (MLPH), Microphthalmia-associated transcription factor, PSMB7, tyrosinase-related protein 1 (TYRP1), beta-defensin 103 (CBD103), RALY (hnRNP associated with lethal yellow)) ([https://www.gephebase.org/search-criteria?/or+Taxon ID="9612"/and+Trait=Coloration/or+Taxon ID="9615"/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon ID=)) Related Genes

2 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase="Agouti \(ASIP\)" /and+Taxon ID="9612"/or+Gene Gephebase="Agouti \(ASIP\)" /and+Taxon ID="9615" #gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=)) Related Haplotypes

EXTERNAL LINKS

COMMENTS

this mutation might be involved in the solid hair color (versus banded hair color) and the black and tan phenotype. Dreger and Schmutz (2011) "characterize[d] a mutation consisting of a short interspersed nuclear element (SINE) insertion in intron 1 of ASIP that allows for the differentiation of the a(w) wolf sable and a(t) black-and-tan alleles. The SINE insertion is present in dogs with the a(t) and a alleles but absent from dogs with the a(w) and a(y) alleles. Dogs with the saddle tan phenotype were all a(t)/a(t). Schnauzers were all a(w)/a(w)." <https://omia.org/OMIA000201/9615/>

