

## GEPHE SUMMARY

**Gephebase Gene**  
Agouti (ASIP)

**Entry Status**  
Published

**GepheID**  
GP00001978

**Main curator**  
Martin

## PHENOTYPIC CHANGE

**Trait Category**  
Morphology

**Trait**  
Coloration (coat)

**Trait State in Taxon A**  
light-brown and white individuals

**Trait State in Taxon B**  
black and dark-brown coat colors ; Magaheem and Sofor

**Ancestral State**  
Taxon A

**Taxonomic Status**  
Domesticated

### Taxon A

**Latin Name**  
*Camelus dromedarius*

**Common Name**  
Arabian camel

**Synonyms**  
Arabian camel; camel; dromedaries; dromedary; dromedary camel; one-humped camel;  
*Camelus dromedarius* Linnaeus, 1758

**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; Tylopoda; Camelidae; Camelus

**Parent**  
*Camelus* () - (Rank: genus)

**NCBI Taxonomy ID**  
9838

**is Taxon A an Intraspecies?**  
No

### Taxon B

**Latin Name**  
*Camelus dromedarius*

**Common Name**  
Arabian camel

**Synonyms**  
Arabian camel; camel; dromedaries; dromedary; dromedary camel; one-humped camel;  
*Camelus dromedarius* Linnaeus, 1758

**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; Tylopoda; Camelidae; Camelus

**Parent**  
*Camelus* () - (Rank: genus)

**NCBI Taxonomy ID**  
9838

**is Taxon B an Intraspecies?**  
No

## GENOTYPIC CHANGE

**Generic Gene Name**  
Asip

**Synonyms**  
As; ASP; A<sub>xy</sub>; ASIP; a

**String**  
10090.ENSMUSP00000029123

**Sequence Similarities**  
-

**GO - Molecular Function**  
GO:0031779 : melanocortin receptor binding  
GO:0031781 : type 3 melanocortin receptor binding  
GO:0031782 : type 4 melanocortin receptor binding

**GO - Biological Process**  
GO:0008343 : adult feeding behavior  
GO:0006091 : generation of precursor metabolites and energy  
GO:0071514 : genetic imprinting  
GO:0009755 : hormone-mediated signaling pathway  
GO:0042438 : melanin biosynthetic process

**UniProtKB Mus musculus**  
Q03288

**GenebankID or UniProtKB**

GO:0032438 : melanosome organization  
GO:0032402 : melanosome transport  
GO:0043473 : pigmentation  
GO:0048023 : positive regulation of melanin biosynthetic process  
GO:0040030 : regulation of molecular function, epigenetic

**GO - Cellular Component**

GO:0005576 : extracellular region  
GO:0005623 : cell

**Presumptive Null**

Yes

**Molecular Type**

Coding

**Aberration Type**

Deletion

**Deletion Size**

1-9 bp

**Molecular Details of the Mutation**

1-bp deletion at position 23 resulting in frameshift

**Experimental Evidence**

Candidate Gene

**Main Reference**

Polymorphisms in MC1R and ASIP Genes are Associated with Coat Color Variation in the Arabian Camel. (2018)

**Authors**

Almathen F; Elbir H; Bahbahani H; Mwacharo J; Hanotte O

**Abstract**

Pigmentation in mammals is primarily determined by the distribution of eumelanin and pheomelanin, the ratio of which is mostly controlled by the activity of melanocortin 1 receptor (MC1R) and agouti signaling protein (ASIP) genes. Using 91 animals from 10 Arabian camel populations, that included the 4 predominant coat color phenotypes observed in the dromedary (light brown, dark brown, black, and white), we investigated the effects of the MC1R and ASIP sequence variants and identified candidate polymorphisms associated with coat color variation. In particular, we identified a single nucleotide polymorphism (SNP), found in the coding region of MC1R (901C/T), linked to the white coat color, whereas a 1-bp deletion (23delT/T) and a SNP (25G/A) in exon 2 of ASIP are associated with both black and dark-brown coat colors. Our results also indicate support that the light-brown coat color is likely the ancestral coat color for the dromedary. These sequence variations at the MC1R and ASIP genes represent the first documented evidence of candidate polymorphisms associated with Mendelian traits in the dromedary.

**Additional References**

Comparative FISH-Mapping of MC1R, ASIP, and TYRP1 in New and Old World Camelids and Association Analysis With Coat Color Phenotypes in the Dromedary (Camelus dromedarius). (2019)

## RELATED GEPHE

**Related Genes**

No matches found.

**Related Haplotypes**

No matches found.

## EXTERNAL LINKS

## COMMENTS

<https://omia.org/OMIA000201/9838/>