

GEPHE SUMMARY

	Gephebase Gene		GepheID
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)		GP00002061	Main curator
Published	Entry Status	Courtier	

PHENOTYPIC CHANGE

	Trait Category			
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)				
	Trait			
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)				
	Trait State in Taxon A			
winter-white				
	Trait State in Taxon B			
winter-gray				
	Ancestral State			
Taxon A				
	Taxonomic Status			
Intraspecific (<a +intraspecific^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific^#gephebase-summary-title)				
Taxon A		Taxon B		
	Latin Name		Latin Name	
Lepus timidus (<a +lepus+timidus^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Lepus+timidus^#gephebase-summary-title)		Lepus timidus (<a +lepus+timidus^#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Lepus+timidus^#gephebase-summary-title)		
	Common Name		Common Name	
Mountain hare		Mountain hare		
	Synonyms		Synonyms	
Lepus tanaiticus; Mountain hare; Lepus timidus Linnaeus, 1758		Lepus tanaiticus; Mountain hare; Lepus timidus Linnaeus, 1758		
	Rank		Rank	
species		species		
	Lineage		Lineage	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Glires; Lagomorpha; Leporidae; Lepus		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Glires; Lagomorpha; Leporidae; Lepus		
	Parent		Parent	
Lepus (hares) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9980)		Lepus (hares) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9980)		
	NCBI Taxonomy ID		NCBI Taxonomy ID	
62621 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=62621)		62621 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=62621)		
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No		No		

GENOTYPIC CHANGE

	Generic Gene Name			
Asip		Q03288 (http://www.uniprot.org/uniprot/Q03288)		UniProtKB Mus musculus
	Synonyms			GenebankID or UniProtKB
As; ASP; A<y>; ASIP; a		0		
	String			
10090.ENSMUSP00000029123 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000029123)				
	Sequence Similarities			
-				
	GO - Molecular Function			
GO:0031779 : melanocortin receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0031779)				
GO:0031781 : type 3 melanocortin receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0031781)				
GO:0031782 : type 4 melanocortin receptor binding (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
exact mutation(s) unknown	Molecular Details of the Mutation
Association Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence="Association Mapping"#gephebase-summary-title)	Experimental Evidence
Introgression drives repeated evolution of winter coat color polymorphism in hares. (2019) (https://pubmed.ncbi.nlm.nih.gov/31712446)	Main Reference
Giska I; Farelø L; Pimenta J; Seixas FA; Ferreira MS; Marques JP; Miranda I; Letty J; Jenny H; Hackl-Ånder K; Magnussen E; Melo-Ferreira J	Authors
Changing from summer-brown to winter-white pelage or plumage is a crucial adaptation to seasonal snow in more than 20 mammal and bird species. Many of these species maintain nonwhite winter morphs, locally adapted to less snowy conditions, which may have evolved independently. Mountain hares (<i>Lepus timidus</i>) from Fennoscandia were introduced into the Faroe Islands in 1855. While they were initially winter-white, within $\approx 1/465$ y all Faroese hares became winter-gray, a morph that occurs in the source population at low frequency. The documented population history makes this a valuable model for understanding the genetic basis and evolution of the seasonal trait polymorphism. Through whole-genome scans of differentiation and single-nucleotide polymorphism (SNP) genotyping, we associated winter coat color polymorphism to the genomic region of the pigmentation gene <i>Agouti</i> , previously linked to introgression-driven winter coat color variation in the snowshoe hare (<i>Lepus americanus</i>). Lower <i>Agouti</i> expression in the skin of winter-gray individuals during the autumn molt suggests that regulatory changes may underlie the color polymorphism. Variation in the associated genomic region shows signatures of a selective sweep in the Faroese population, suggesting that positive selection drove the fixation of the variant after the introduction. Whole-genome analyses of several hare species revealed that the winter-gray variant originated through introgression from a noncolor changing species, in keeping with the history of ancient hybridization between the species. Our findings show the recurrent role of introgression in generating winter coat color variation by repeatedly recruiting the regulatory region of <i>Agouti</i> to modulate seasonal coat color change.	Abstract
	Additional References

RELATED GEPHE

No matches found.	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

@Introgression of the winter-gray allele from Iberian hares (*Lepus granatensis*)

