

GEPHE SUMMARY

	Gephebase Gene		GepheID
FGF5 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~FGF5~#gephebase-summary-title)		GP00000310	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Morphology~#gephebase-summary-title)			
	Trait		
Hair length (https://www.gephebase.org/search-criteria?/and+Trait=~Hairlength~#gephebase-summary-title)			
	Trait State in Taxon A		
WT hair			
	Trait State in Taxon B		
various long-haired breeds including Afghan Hound; Border Collie; Cocker Spaniel; Collie; Corgi; Dachshund; German Shepherd Dog; Golden Retriever; Pomeranian; Samoyed			
	Ancestral State		
Taxon A			
	Taxonomic Status		
Domesticated (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Domesticated~#gephebase-summary-title)			
Taxon A		Taxon B	
	Latin Name		Latin Name
Canis lupus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Canislupus~#gephebase-summary-title)		Canis lupus familiaris (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Canislupusfamiliaris~#gephebase-summary-title)	
	Common Name		Common Name
gray wolf		dog	
	Synonyms		Synonyms
gray wolf; grey wolf; Canis lupus Linnaeus, 1758		Canis canis; Canis domesticus; Canis familiaris; dog; dogs; Canis familiaris Linnaeus, 1758; Canis lupus familiaris Linnaeus, 1758	
	Rank		Rank
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; Laurasiatheria; Carnivora; Caniformia; Canidae; Canis		subspecies	
	Parent		Parent
Canis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9611)		Canis lupus (gray wolf) - (Rank: species) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9612)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
9612 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9612)		9615 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9615)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Mus musculus
Fgf5		P15656 (http://www.uniprot.org/uniprot/P15656)	
	Synonyms		GenebankID or UniProtKB
go; Fgf-5; HBGF-5; angora		ABB87177 (https://www.ncbi.nlm.nih.gov/nucore/ABB87177)	
	String		
10090.ENSMUSP00000031280 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000031280)			
	Sequence Similarities		
Belongs to the heparin-binding growth factors family.			
	GO - Molecular Function		
GO:0008083 : growth factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0008083)			
GO:0005104 : fibroblast growth factor receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005104)			
	GO - Biological Process		
GO:0008283 : cell proliferation (https://www.ebi.ac.uk/QuickGO/term/GO:0008283)			

GO:0008284 : positive regulation of cell proliferation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008284>)
GO:0051781 : positive regulation of cell division
(<https://www.ebi.ac.uk/QuickGO/term/GO:0051781>)
GO:0008543 : fibroblast growth factor receptor signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008543>)
GO:0010001 : glial cell differentiation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010001>)
GO:0023019 : signal transduction involved in regulation of gene expression
(<https://www.ebi.ac.uk/QuickGO/term/GO:0023019>)

GO - Cellular Component

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

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

Cys95Phe

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	Cys	Phe	95

Main Reference

Coat variation in the domestic dog is governed by variants in three genes. (2009) (<https://pubmed.ncbi.nlm.nih.gov/19713490>)

Authors

Cadieu E; Neff MW; Quignon P; Walsh K; Chase K; Parker HG; Vonholdt BM; Rhue A; Boyko A; Byers A; Wong A; Mosher DS; Elkahoul AG; Spady TC; Andr   C; Lark KG; Cargill M; Bustamante CD; Wayne RK; Ostrander EA

Abstract

Coat color and type are essential characteristics of domestic dog breeds. Although the genetic basis of coat color has been well characterized, relatively little is known about the genes influencing coat growth pattern, length, and curl. We performed genome-wide association studies of more than 1000 dogs from 80 domestic breeds to identify genes associated with canine fur phenotypes. Taking advantage of both inter- and intrabreed variability, we identified distinct mutations in three genes, RSPO2, FGF5, and KRT71 (encoding R-spondin-2, fibroblast growth factor-5, and keratin-71, respectively), that together account for most coat phenotypes in purebred dogs in the United States. Thus, an array of varied and seemingly complex phenotypes can be reduced to the combinatorial effects of only a few genes.

Additional References

RELATED GEPHE

Related Genes

1 (R-spondin-2 (RSPO2)) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~9612^/and+Trait=Hair length/or+Taxon ID=~9615^/and+Trait=Hair length/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

5 (<https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~FGF5^/and+Taxon ID=~9612^/or+Gene Gephebase=~FGF5^/and+Taxon ID=~9615^#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS

Allelic Heterogeneity @AllelicSeries <https://omia.org/OMIA000439/9615/>

