

GEPHE SUMMARY

	Gephebase Gene	GepheID
FGF3; FGF4; FGF19; ORAOV1 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~FGF3; FGF4; FGF19; ORAOV1~#gephebase-summary-title)	GP00000308	
	Entry Status	Main curator
Published	Martin	

PHENOTYPIC CHANGE

	Trait Category		
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Morphology~#gephebase-summary-title)			
	Trait		
Coloration (coat; dog Ridgeback phenotype) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration (coat; dog Ridgeback phenotype)~#gephebase-summary-title)			
	Trait State in Taxon A		
Canis familiaris			
	Trait State in Taxon B		
Canis familiaris - Ridgeback			
	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		Canis lupus familiaris	
(https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Canis lupus~#gephebase-summary-title)		(https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Canis lupus familiaris~#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		subspecies	
	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		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	
	Parent		Parent
Canis () - (Rank: genus)		Canis lupus (gray wolf) - (Rank: species)	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9611)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9612)	
9612	NCBI Taxonomy ID	9615	NCBI Taxonomy ID
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9612)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9615)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		Yes	
			Taxon B Description
		Canis familiaris - Ridgeback	

GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Canis lupus familiaris
FGF4		J9P3l7 (http://www.uniprot.org/uniprot/J9P3l7)
	Synonyms	GenebankID or UniProtKB
-		AAEX03011592 (https://www.ncbi.nlm.nih.gov/nuccore/AAEX03011592)
	String	
9615.ENSACFP00000040116		
(http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9615.ENSACFP00000040116)		
	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:0043066 : negative regulation of apoptotic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043066>)
GO:0045944 : positive regulation of transcription by RNA polymerase II
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045944>)
GO:0001502 : cartilage condensation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001502>)
GO:0070374 : positive regulation of ERK1 and ERK2 cascade
(<https://www.ebi.ac.uk/QuickGO/term/GO:0070374>)
GO:0008284 : positive regulation of cell proliferation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008284>)
GO:0042475 : odontogenesis of dentin-containing tooth
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042475>)
GO:0019827 : stem cell population maintenance
(<https://www.ebi.ac.uk/QuickGO/term/GO:0019827>)
GO:0060561 : apoptotic process involved in morphogenesis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060561>)
GO:1990830 : cellular response to leukemia inhibitory factor
(<https://www.ebi.ac.uk/QuickGO/term/GO:1990830>)
GO:0060591 : chondroblast differentiation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060591>)
GO:0060363 : cranial suture morphogenesis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060363>)
GO:0035116 : embryonic hindlimb morphogenesis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0035116>)
GO:0008543 : fibroblast growth factor receptor signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008543>)
GO:0010463 : mesenchymal cell proliferation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010463>)
GO:2000544 : regulation of endothelial cell chemotaxis to fibroblast growth factor
(<https://www.ebi.ac.uk/QuickGO/term/GO:2000544>)

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](https://www.gephebase.org/search-criteria?/and+Presumptive Null=))

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

Gene duplication

Experimental Evidence

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

Main Reference

Duplication of FGF3, FGF4, FGF19 and ORAOV1 causes hair ridge and predisposition to dermoid sinus in Ridgeback dogs. (2007) (<https://pubmed.ncbi.nlm.nih.gov/17906623>)

Authors

Salmon Hillbertz NH; Isaksson M; Karlsson EK; Hellm  n E; Pielberg GR; Savolainen P; Wade CM; von Euler H; Gustafson U; Hedhammar A; Nilsson M; Lindblad-Toh K; Andersson L; Andersson G

Abstract

The dorsal hair ridge in Rhodesian and Thai Ridgeback dogs is caused by a dominant mutation that also predisposes to the congenital developmental disorder dermoid sinus. Here we show that the causative mutation is a 133-kb duplication involving three fibroblast growth factor (FGF) genes. FGFs play a crucial role in development, suggesting that the ridge and dermoid sinus are caused by dysregulation of one or more of the three FGF genes during development.

Additional References

RELATED GEPHE

Related Genes

13 (Agouti (ASIP), GPR22, MFSD12, PMEL17, SLC45A2=MATP, 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 Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Cluster of paralogous genes

