GEPHE SUMMARY

Gephebase Gene
FGF3; FGF4; FGF19; ORAOV1 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^FGF3; FGF4; FGF19; ORAOV1^#gephebase-summary-title)

GepheID
GP00000308

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=^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+Taxonomic Status=^Domesticated^#gephebase-summary-title)

Taxon A

Latin Name
Canis lupus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Canis lupus^#gephebase-summary-title)

Common Name
gray wolf

Synonyms
gray wolf; grey wolf; Canis lupus 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; Carnivora; Caniformia; Canidae; Canis

Parent
Canis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9611)

NCBI Taxonomy ID
9612 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9612)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Canis lupus familiaris (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Canis lupus familiaris^#gephebase-summary-title)

Common Name
dog

Synonyms
Canis canis; Canis domesticus; Canis familiaris; dog; dogs; Canis familiaris Linnaeus, 1758; Canis lupus familiaris Linnaeus, 1758

Rank
subspecies

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; Canis lupus

Parent
Canis lupus (gray wolf) - (Rank: species) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9612)

NCBI Taxonomy ID
9615 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9615)

is Taxon B an Infraspecies?
Yes

Taxon B Description
Canis familiaris - Ridgeback

GENOTYPIC CHANGE

Generic Gene Name
FGF4

Synonyms
-

String
9615.ENSCAFP00000040116 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=9615.ENSCAFP00000040116)

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)

UniProtKB Canis lupus familiaris
J9P3I7 (http://www.uniprot.org/uniprot/J9P3I7)

GenebankID or UniProtKB
AAEX03011592 (https://www.ncbi.nlm.nih.gov/nuccore/AAEX03011592)

GO - Biological Process

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)

Molecular Type

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

Aberration Type

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

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)

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; HellmÃ©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), Microphtalmia-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)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Cluster of paralogous genes