GEPHE SUMMARY

Gephebase Gene

FGF5 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^FGF5^#gephebase-summary-title)

GepheID

GP00002441

Entry Status

Published

Main curator

Courtier

PHENOTYPIC CHANGE

Trait Category

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

Trait

Hair length (https://www.gephebase.org/search-criteria?/and+Trait=^Hair length^#gephebase-summary-title)

Trait State in Taxon A

normal hair length

Trait State in Taxon B

Angora mouse: abnormally long hair; altered hair cycle; follicular dystrophy; phenotypic maintenance of skin grafts and changes in keratin expression

Ancestral State

Taxon A

Taxonomic Status

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

Taxon A

Latin Name

Mus musculus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Mus musculus^#gephebase-summary-title)

Common Name

house mouse

Synonyms

house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid

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; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Parent

Mus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 862507)

NCBI Taxonomy ID

10090 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 10090)

is Taxon A an Infraspecies?

No

Taxon B

Latin Name

Mus musculus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Mus musculus^#gephebase-summary-title)

Common Name

house mouse

Synonyms

house mouse; mouse; Mus musculus Linnaeus, 1758; mice C57BL/6xCBA/CaJ hybrid

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; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Parent

Mus () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 862507)

NCBI Taxonomy ID

10090 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 10090)

is Taxon B an Infraspecies?

No

GENOTYPIC CHANGE

Generic Gene Name

Fgf5

Synonyms

go; Fgf-5; HBGF-5; angora

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

UniProtKB Mus musculus

P15656 (http://www.uniprot.org/uniprot/P15656)

GenebankID or UniProtKB

()

(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

Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Yes^#gephebase-summary-title)

Molecular Type

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

Aberration Type

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

Deletion Size

1-10 kb

Molecular Details of the Mutation

Deletion which extends at least 2kb upstream of the Fgf5 translational start site and terminates at the end of the first exon or beginning of the first intron.

Experimental Evidence

Candidate Gene (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene^#gephebase-summary-title)

Main Reference

FGF5 as a regulator of the hair growth cycle: evidence from targeted and spontaneous mutations. (1994) (https://pubmed.ncbi.nlm.nih.gov/7923352)

Authors

HÃ©bert JM; Rosenquist T; GÃ¶tz J; Martin GR

Abstract

Fibroblast growth factor 5 (FGF5) is a secreted signaling protein. Mice homozygous for a predicted null allele of the Fgf5 gene, fgf5neo, produced by gene targeting in embryonic stem cells, have abnormally long hair. This phenotype appears identical to that of mice homozygous for the spontaneous mutation angora (go). The fgf5neo and go mutations fail to complement one another, and exon 1 of Fgf5 is deleted in DNA from go homozygotes, demonstrating that go is a mutant allele of Fgf5. Expression of Fgf5 is detected in hair follicles from wild-type mice and is localized to the outer root sheath during the anagen VI phase of the hair growth cycle. These findings provide evidence that FGF5 functions as an inhibitor of hair elongation, thus identifying a molecule whose normal function is apparently to regulate one step in the progression of the follicle through the hair growth cycle.

Additional References

Angora mouse mutation: altered hair cycle, follicular dystrophy, phenotypic maintenance of skin grafts, and changes in keratin expression. (1997) (https://pubmed.ncbi.nlm.nih.gov/9163872)

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

1 (https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^FGF5^/and+Taxon ID=^10090^/or+Gene Gephebase=^FGF5^/and+Taxon ID=^10090^#gephebase-summary-title)

EXTERNAL LINKS

COMMENTS

Angora is a spontaneous mutation.