GemPharmatech™

Fgf17 Cas9-KO Strategy

Designer: Yang Yang

Reviewer: Xueting Zhang

Design Date: 2023-4-19

Overview

Target Gene Name

- Fgf17

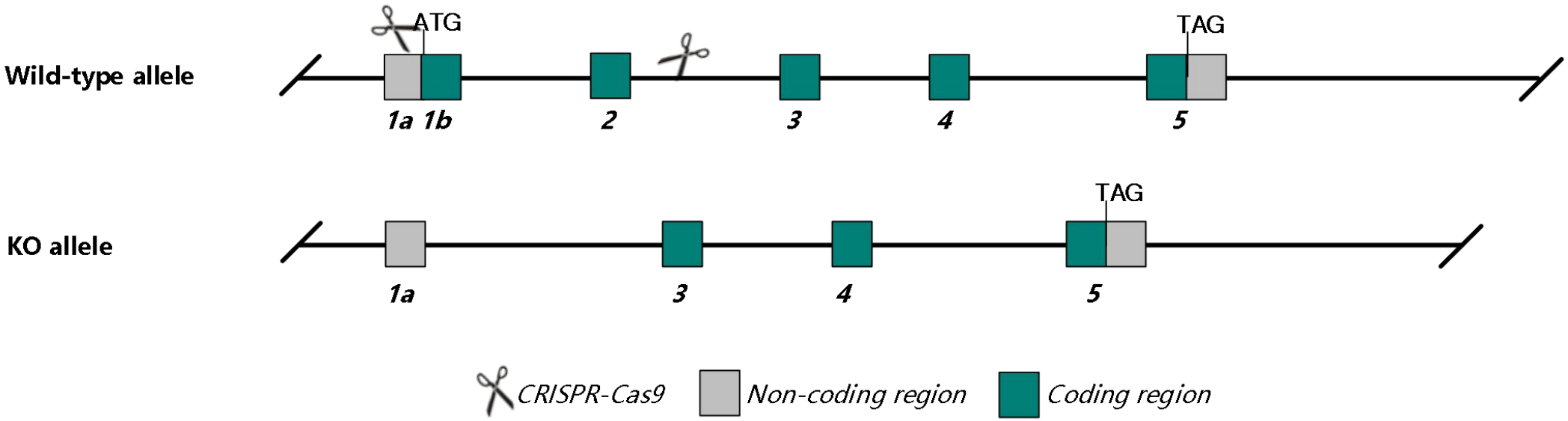
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Fgf17* gene.

Technical Information

- The *Fgf17* gene has 2 transcripts. According to the structure of *Fgf17* gene, encoding region of exon 1 and exon2 of *Fgf17*-201 (ENSMUST00000022697.7) transcript is recommended as the knockout region. The region contains start codon ATG. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Fgf17* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

Gene Information

Fgf17 fibroblast growth factor 17 [Mus musculus (house mouse)]

Gene ID: 14171, updated on 12-Apr-2023

Summary

Official Symbol	Fgf17 provided by MGI
Official Full Name	fibroblast growth factor 17 provided by MGI
Primary source	MGI:MGI:1202401
See related	Ensembl:ENSMUSG00000022101
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Fgf6b
Expression	Biased expression in CNS E11.5 (RPKM 2.3), CNS E14 (RPKM 0.7) and 6 other tissues See more
Orthologs	human all

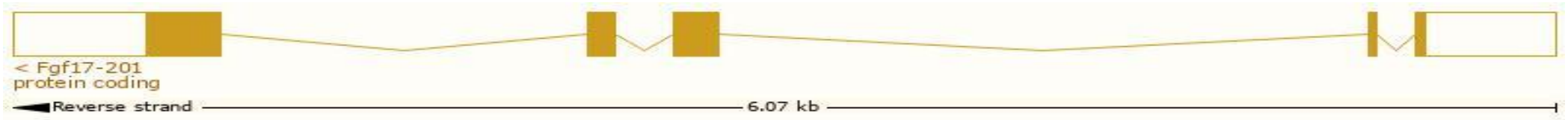
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

The gene has 2 transcripts,all transcripts are shown below:

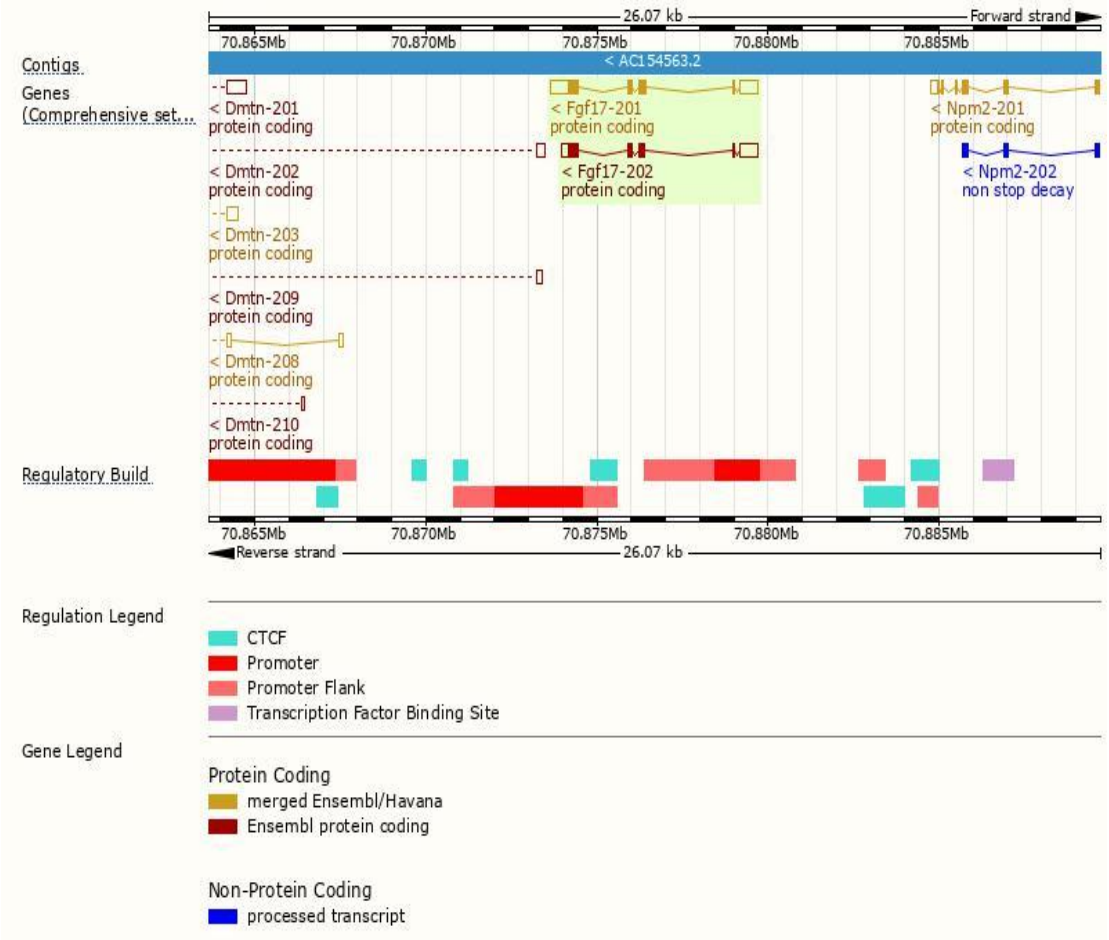
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000022697.7	Fgf17-201	1689	216aa	Protein coding	CCDS27260	P63075 Q0VF19	Ensembl Canonical GENCODE basic APPRIS P2 TSL:1
ENSMUST00000227123.2	Fgf17-202	1336	205aa	Protein coding		B7ZMS7	GENCODE basic APPRIS ALT1

The strategy is based on the design of *Fgf17*-201 transcript, the transcription is shown below:



Source: https://www.ensembl.org

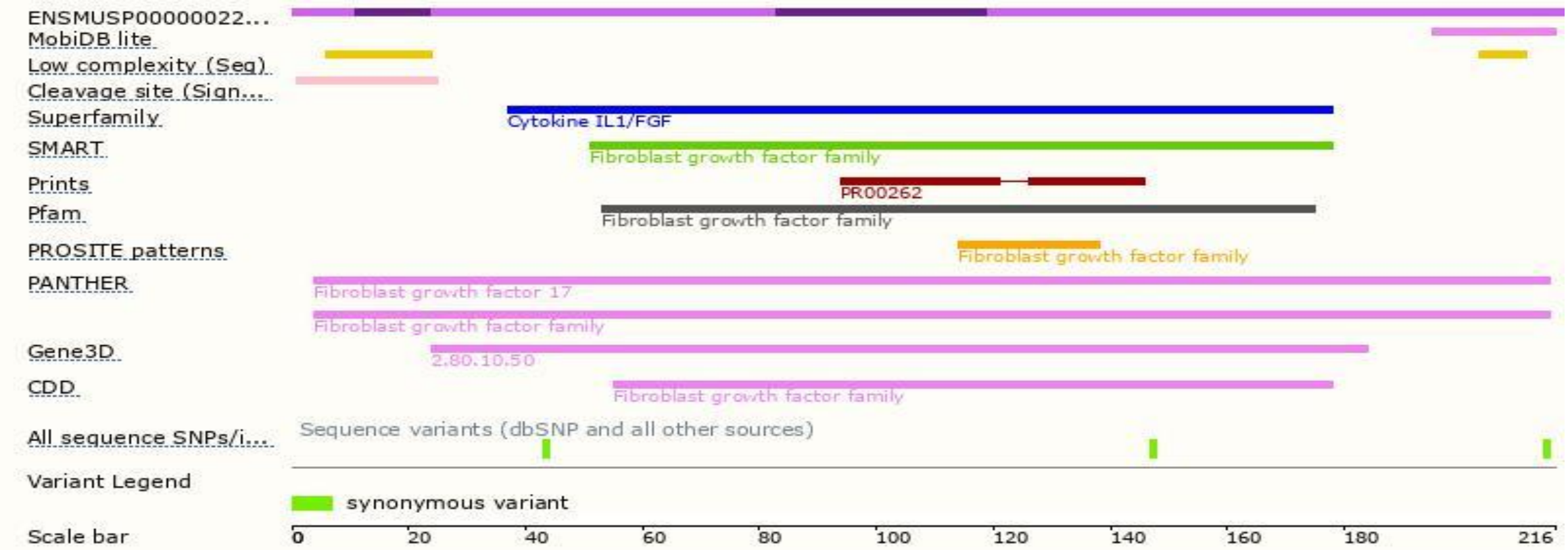
Genomic Information



GemPharmatech™

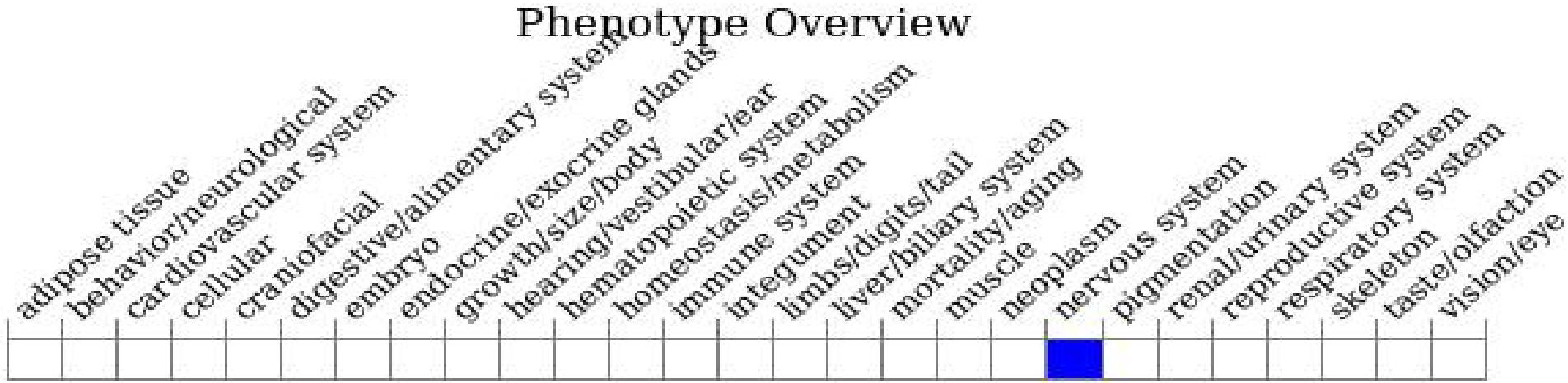
Source: : https://www.ensembl.org

Protein Information



Source: : https://www.ensembl.org

Mouse Phenotype Information (MGI)



- Mice homozygous for disruptions in this gene are grossly normal at birth and apparently healthy at birth. However, there are tissue losses in the inferior colliculus and the anterior vermis of the brain.

Source: https://www.informatics.jax.org

Important Information

- According to the existing MGI data, mice homozygous for disruptions in this gene are grossly normal at birth and apparently healthy at birth. However, there are tissue losses in the inferior colliculus and the anterior vermis of the brain.
- After deleting the exon containing the starting codon ATG in this strategy, there is a risk of restarting translation.
- *Fgf17* is located on Chr14. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.