

Fgf13 Cas9-KO Strategy

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Project Overview

Project Name

Fgf13

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fgf13* gene. The schematic diagram is as follows:



- The *Fgf13* gene has 9 transcripts. According to the structure of *Fgf13* gene, exon3 of *Fgf13-201* (ENSMUST00000033473.11) transcript is recommended as the knockout region. The region contains 104bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fgf13* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, males hemizygous for a null allele die by e12.5. heterozygous females for this allele develop spontaneous seizures and have increased susceptibility to hyperthermia-induced seizures and epilepsy.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- Transcript *Fgf13-205*, *Fgf13-206*, *Fgf13-208* may not be affected.
- The *Fgf13* gene is located on the ChrX. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Fgf13 fibroblast growth factor 13 [Mus musculus (house mouse)]

Gene ID: 14168, updated on 13-Mar-2020

Summary



Official Symbol Fgf13 provided by [MGI](#)

Official Full Name fibroblast growth factor 13 provided by [MGI](#)

Primary source [MGI:MGI:109178](#)

See related [Ensembl:ENSMUSG00000031137](#)

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 Fhf2

Expression Biased expression in CNS E18 (RPKM 22.7), frontal lobe adult (RPKM 16.1) and 11 other tissues [See more](#)

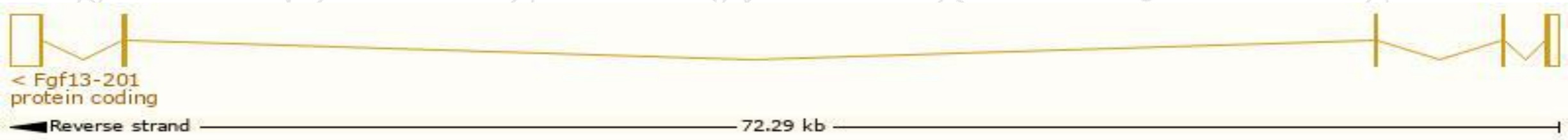
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

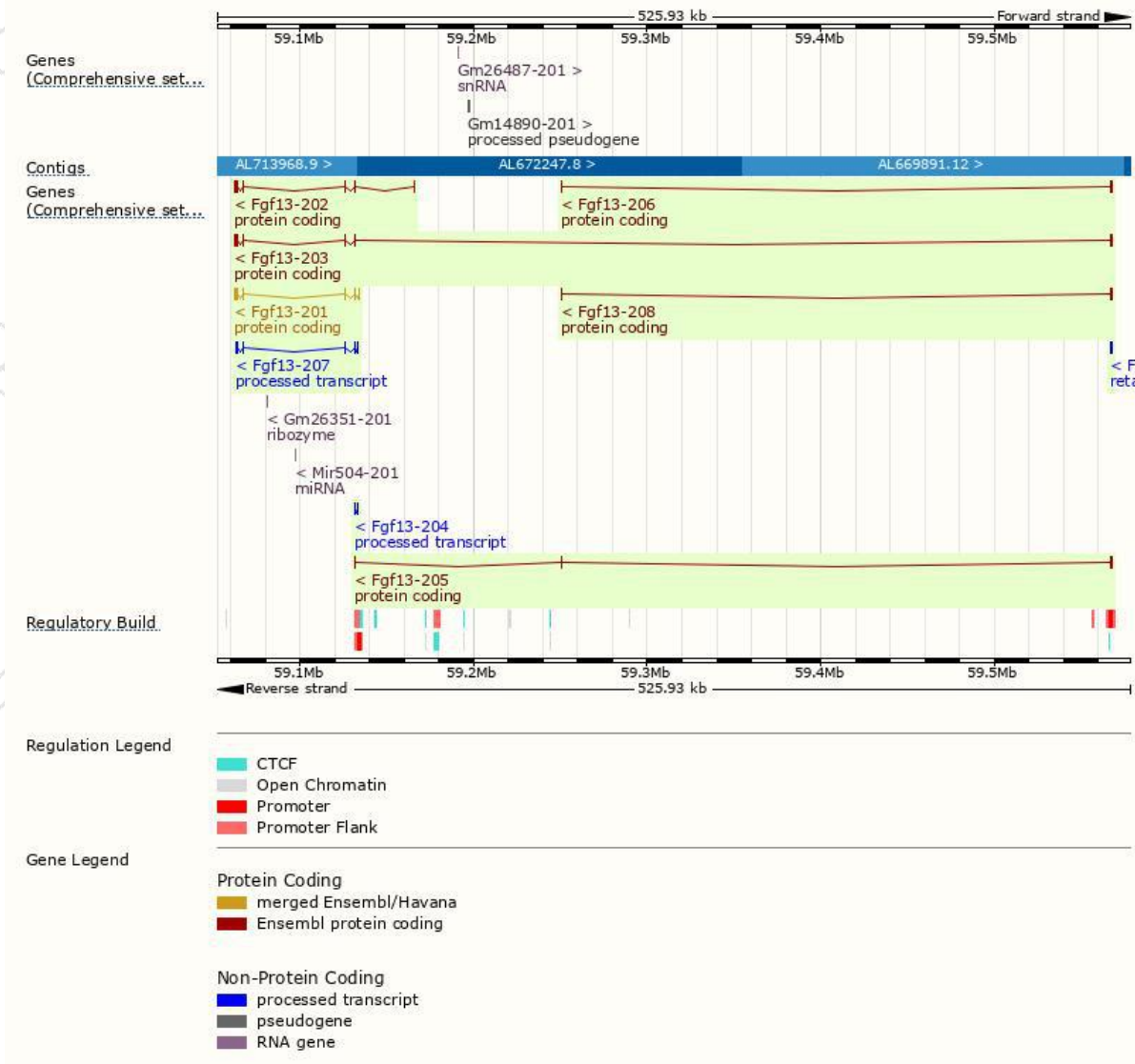
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fgf13-201	ENSMUST00000033473.11	2499	245aa	Protein coding	CCDS30157	P70377	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P3
Fgf13-202	ENSMUST00000119306.1	2091	192aa	Protein coding	CCDS72383	P70377	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS ALT1
Fgf13-203	ENSMUST00000119833.7	2237	187aa	Protein coding	-	B1AU20	TSL:5 GENCODE basic
Fgf13-208	ENSMUST00000145767.1	617	43aa	Protein coding	-	B1AU22	CDS 3' incomplete TSL:2
Fgf13-205	ENSMUST00000124402.1	575	97aa	Protein coding	-	A0A067XG51	CDS 3' incomplete TSL:2
Fgf13-206	ENSMUST00000131319.7	456	69aa	Protein coding	-	B1AU23	CDS 3' incomplete TSL:3
Fgf13-207	ENSMUST00000138503.1	666	No protein	Processed transcript	-	-	TSL:3
Fgf13-204	ENSMUST00000123660.1	151	No protein	Processed transcript	-	-	TSL:1
Fgf13-209	ENSMUST00000150413.1	600	No protein	Retained intron	-	-	TSL:3

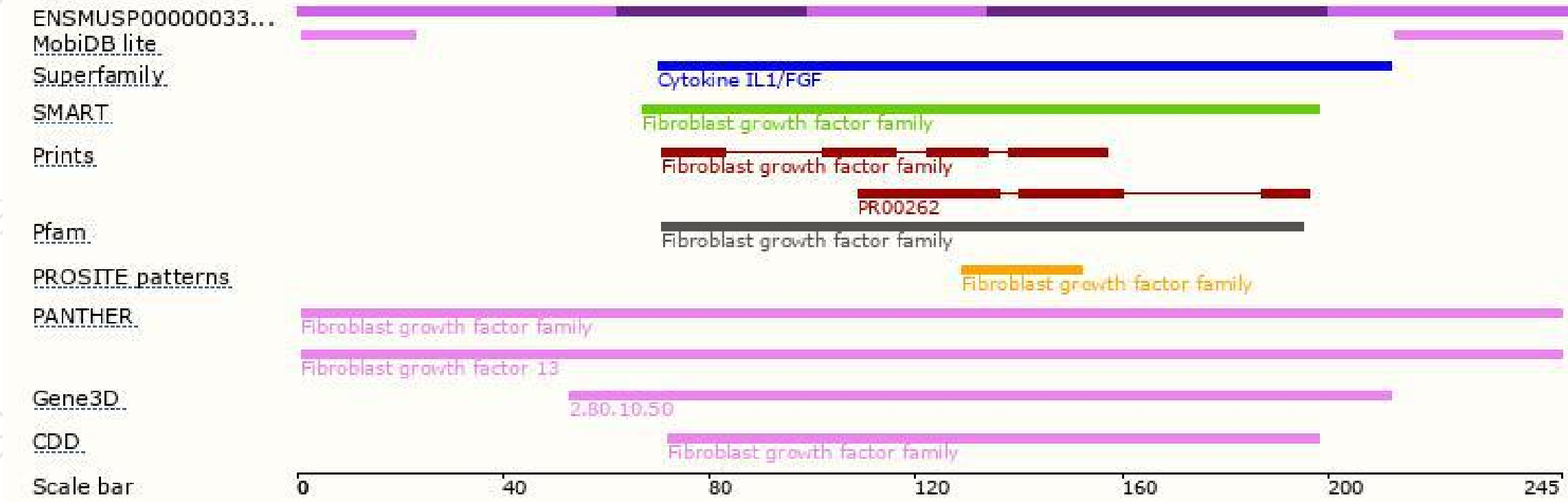
The strategy is based on the design of *Fgf13-201* transcript,the transcription is shown below:



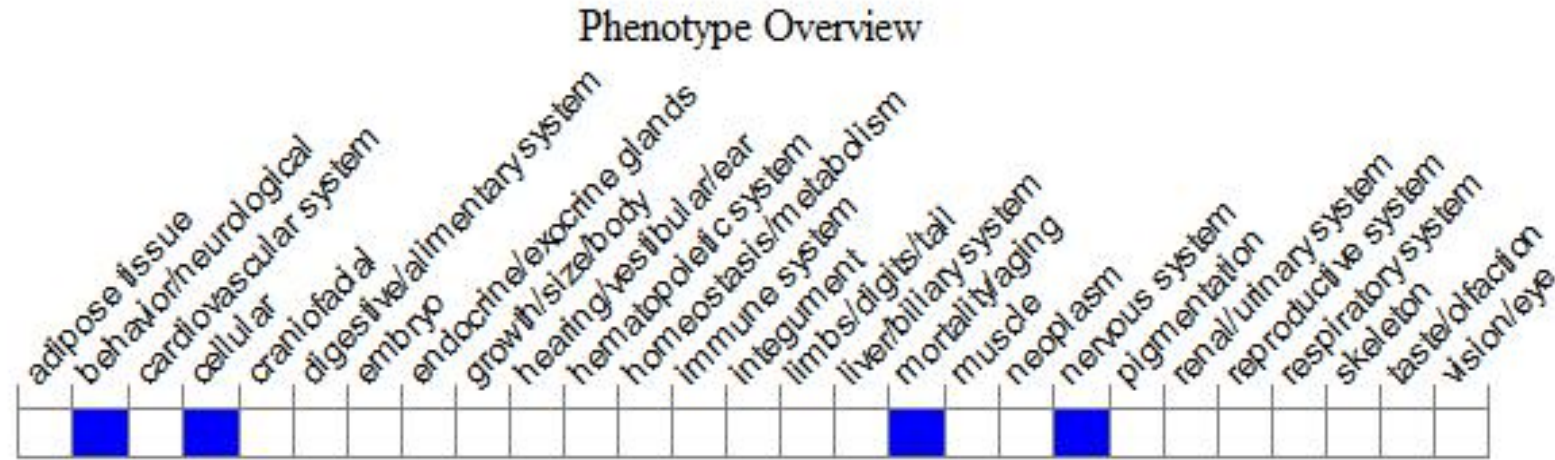
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, males hemizygous for a null allele die by E12.5. Heterozygous females for this allele develop spontaneous seizures and have increased susceptibility to hyperthermia-induced seizures and epilepsy.

If you have any questions, you are welcome to inquire.

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