

Fzd4 Cas9-KO Strategy

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Project Overview

Project Name

Fzd4

Project type

Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fzd4* gene. The schematic diagram is as follows:



- The *Fzd4* gene has 1 transcript. According to the structure of *Fzd4* gene, exon2 of *Fzd4-201* (ENSMUST00000058755.4) transcript is recommended as the knockout region. The region contains 6103bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fzd4* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6J mice.

- According to the existing MGI data, Mice homozygous for disruptions in this gene display abnormalities in hearing, locomotion, retinal morphology, and degeneration of the cerebellum.
- The *Fzd4* gene is located on the Chr7. 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)

Fzd4 frizzled class receptor 4 [*Mus musculus* (house mouse)]

Gene ID: 14366, updated on 2-Jul-2019

Summary

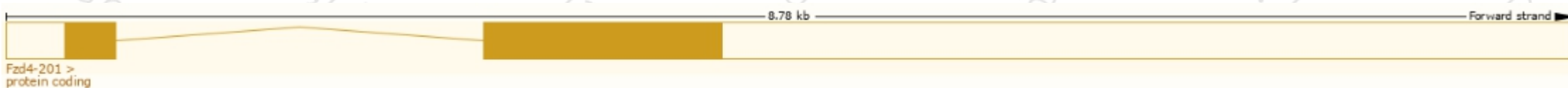
Official Symbol	Fzd4 provided by MGI
Official Full Name	frizzled class receptor 4 provided by MGI
Primary source	MGI:MGI:108520
See related	Ensembl:ENSMUSG00000049791
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Fz4
Expression	Broad expression in subcutaneous fat pad adult (RPKM 32.3), genital fat pad adult (RPKM 28.0) and 16 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

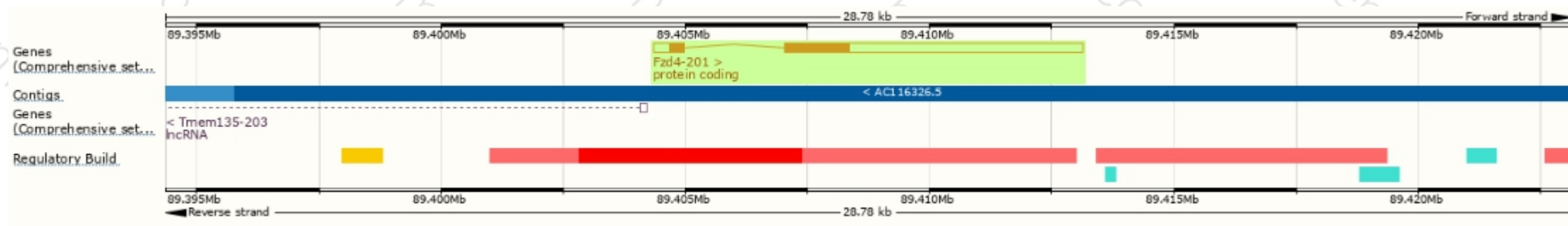
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fzd4-201	ENSMUST00000058755.4	6720	537aa	Protein coding	CCDS21441	Q3V1B2 Q61088	TSL:1 Gencode basic APPRIS P1

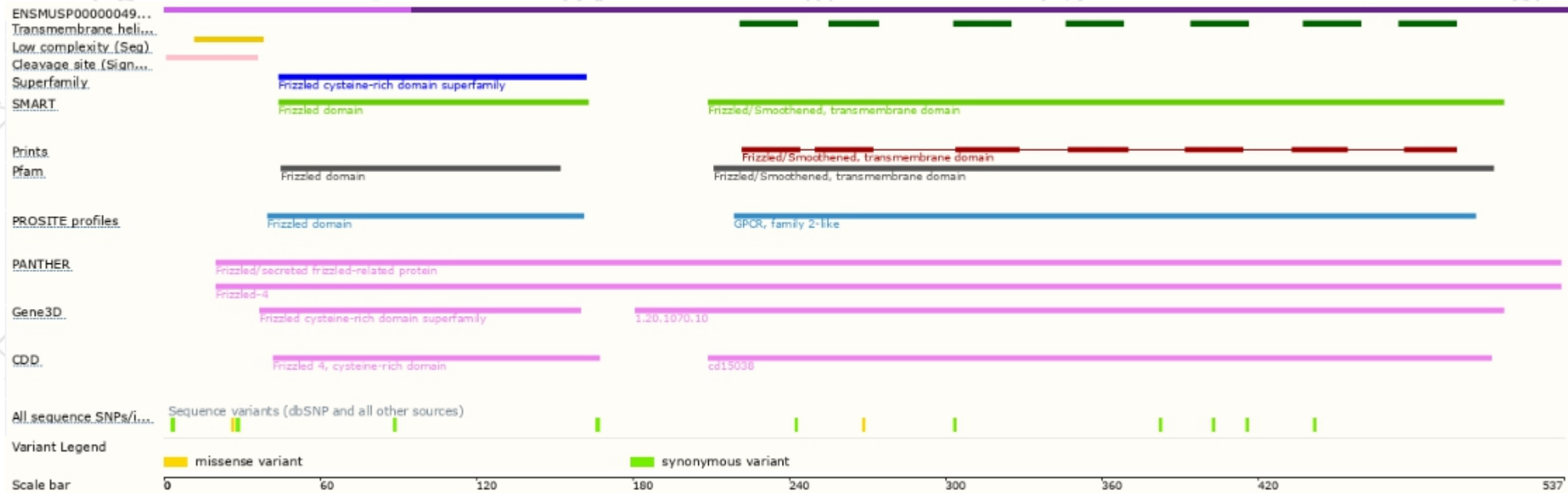
The strategy is based on the design of *Fzd4-201* transcript, The transcription is shown below



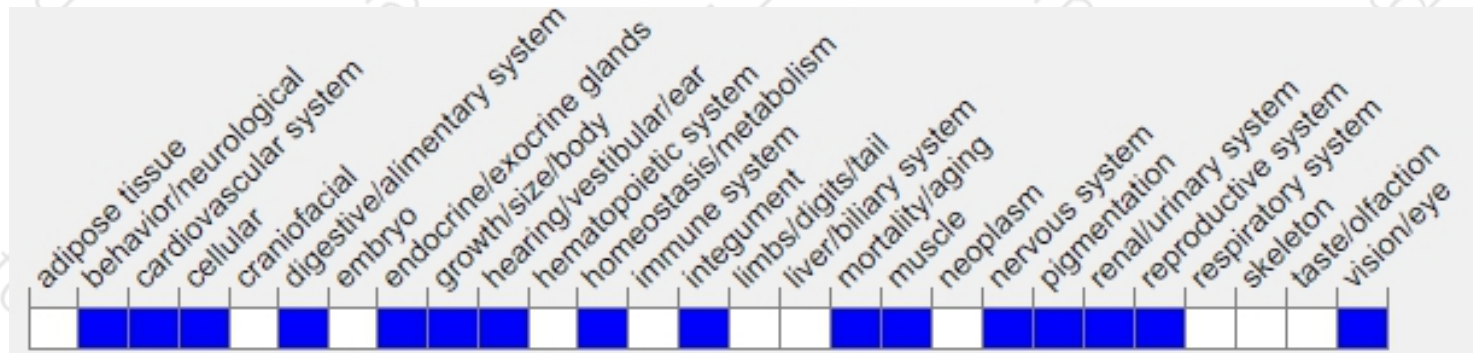
Genomic location distribution



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, Mice homozygous for disruptions in this gene display abnormalities in hearing, locomotion, retinal morphology, and degeneration of the cerebellum.

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

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