

Mfsd4a Cas9-KO Strategy

Designer: Lingyan Wu

Reviewer: Miaomiao Cui

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Project Overview

Project Name

Mfsd4a

Project type

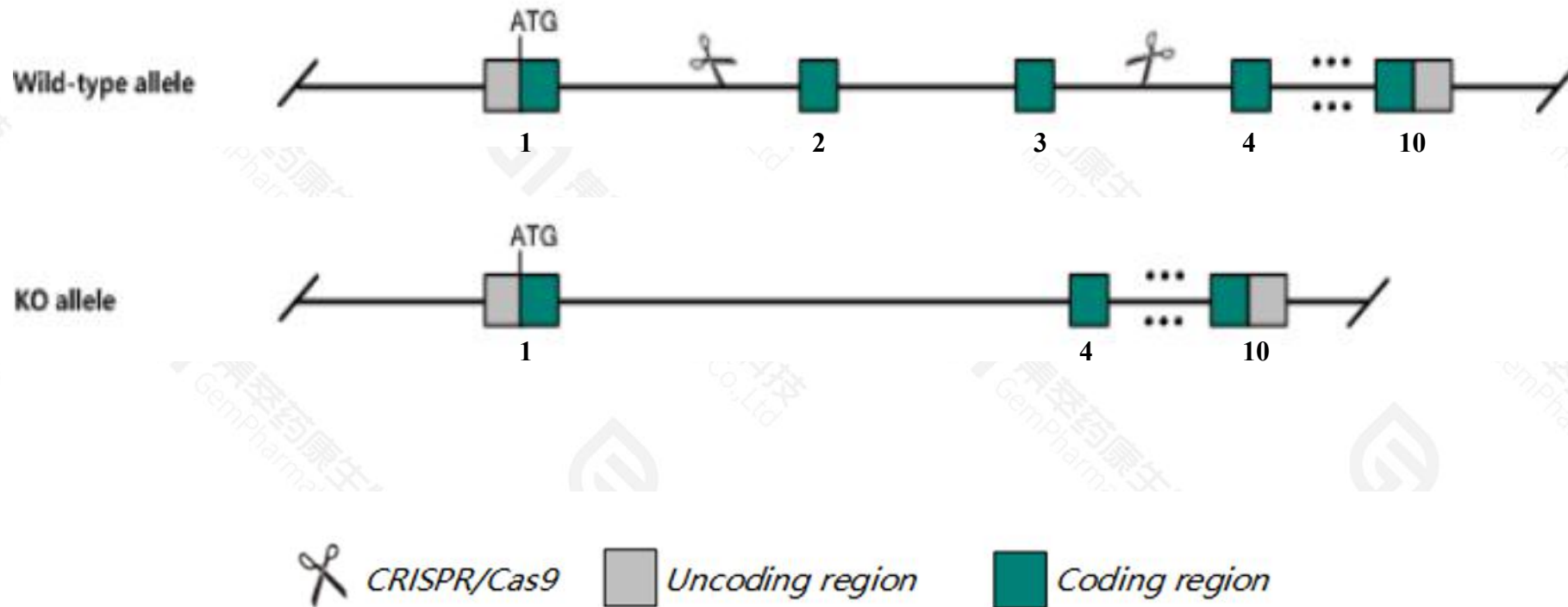
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mfsd4a* gene. The schematic diagram is as follows:



- The *Mfsd4a* gene has 13 transcripts. According to the structure of *Mfsd4a* gene, exon2-exon3 of *Mfsd4a*-205(ENSMUST00000144548.9) transcript is recommended as the knockout region. The region contains 451bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mfsd4a* gene. The brief process is as follows: CRISPR/Cas9 system 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 sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.

- The *Mfsd4a* gene is located on the Chr1. 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.
- Transcript *Mfsd4a*-211 may not be affected.
- 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.

Mfsd4a major facilitator superfamily domain containing 4A [Mus musculus (house mouse)]

Gene ID: 213006, updated on 17-Dec-2020

Summary



Official Symbol Mfsd4a provided by [MGI](#)

Official Full Name major facilitator superfamily domain containing 4A provided by [MGI](#)

Primary source [MGI:MGI:2442786](#)

See related [Ensembl:ENSMUSG00000059149](#)

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 A230072B04, A930031D07Rik, AI850289, Mfsd, Mfsd4

Expression Broad expression in colon adult (RPKM 40.5), adrenal adult (RPKM 15.7) and 17 other tissues [See more](#)

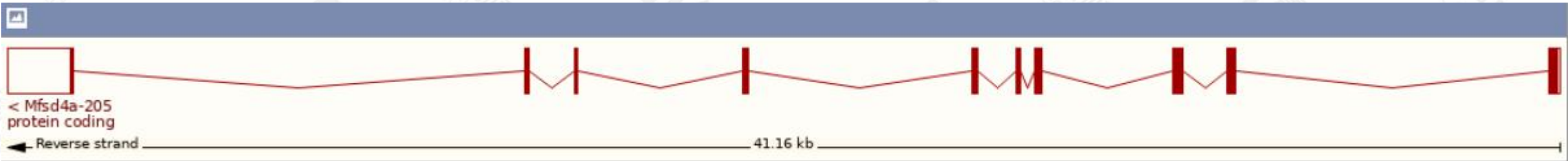
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

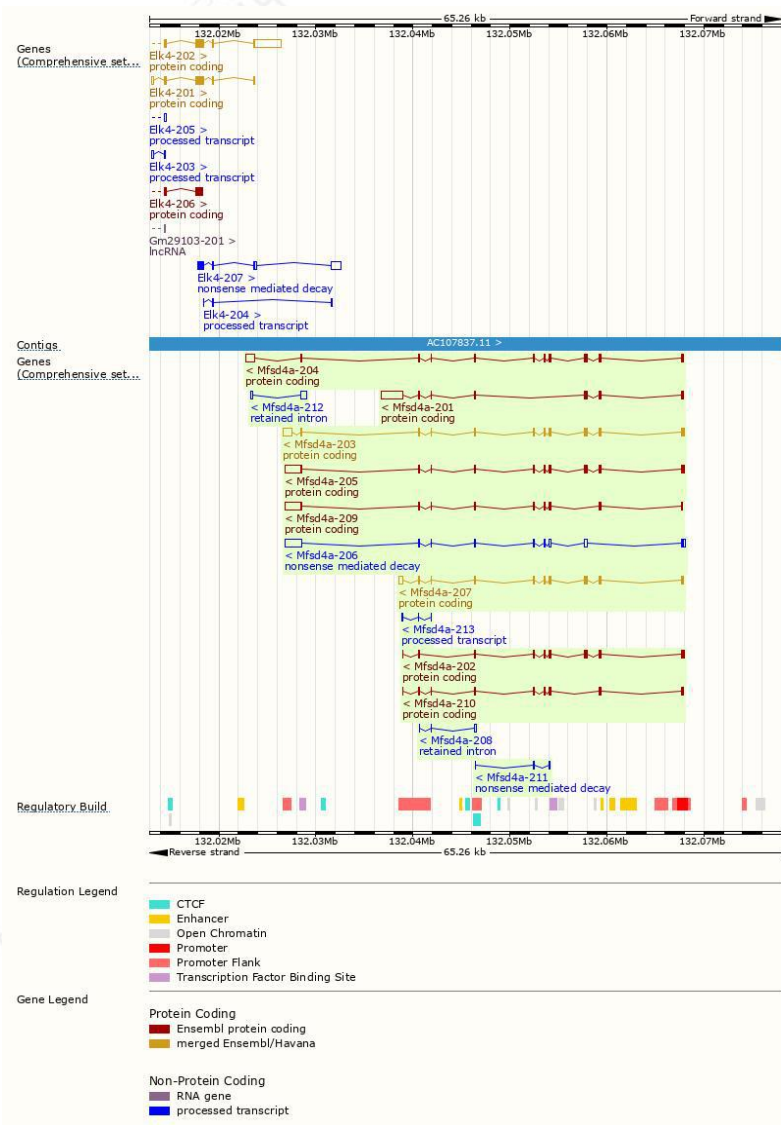
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mfsd4a-205	ENSMUST00000144548.9	3288	512aa	Protein coding	CCDS15280		TSL:1 , GENCODE basic ,
Mfsd4a-203	ENSMUST00000112370.9	2565	512aa	Protein coding	CCDS15280		TSL:1 , GENCODE basic ,
Mfsd4a-204	ENSMUST00000126927.8	2422	512aa	Protein coding	CCDS15280		TSL:1 , GENCODE basic ,
Mfsd4a-207	ENSMUST00000159038.8	1957	510aa	Protein coding	CCDS48357		TSL:5 , GENCODE basic ,
Mfsd4a-201	ENSMUST00000046658.10	3252	358aa	Protein coding	-		TSL:1 , GENCODE basic ,
Mfsd4a-209	ENSMUST00000160656.8	2899	406aa	Protein coding	-		CDS 5' incomplete , TSL:5 ,
Mfsd4a-202	ENSMUST00000112365.9	1536	464aa	Protein coding	-		TSL:5 , GENCODE basic , APPRIS P1 ,
Mfsd4a-210	ENSMUST00000161864.2	1285	425aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Mfsd4a-206	ENSMUST00000146267.8	3161	88aa	Nonsense mediated decay	-		TSL:1 ,
Mfsd4a-211	ENSMUST00000162628.2	310	67aa	Nonsense mediated decay	-		CDS 5' incomplete , TSL:5 ,
Mfsd4a-213	ENSMUST00000189227.2	238	No protein	Processed transcript	-		TSL:1 ,
Mfsd4a-212	ENSMUST00000163016.2	814	No protein	Retained intron	-		TSL:3 ,
Mfsd4a-208	ENSMUST00000159382.2	337	No protein	Retained intron	-		TSL:5 ,

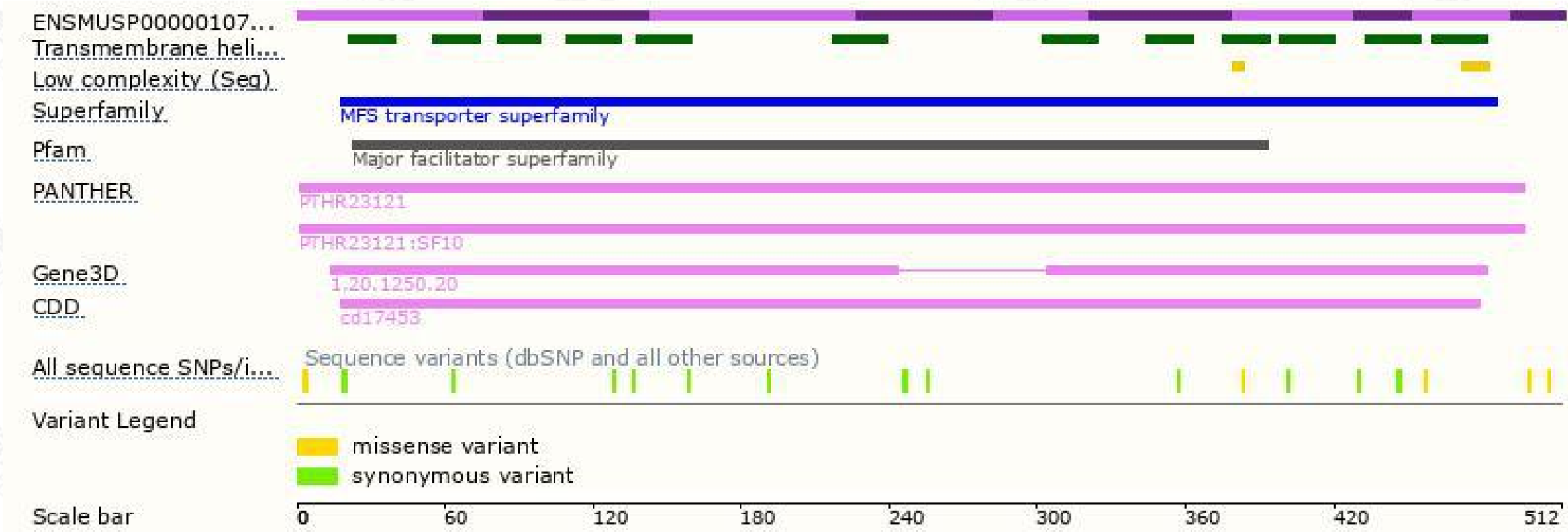
The strategy is based on the design of *Mfsd4a-205* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

Tel: 400-9660890

