Mfsd7a Cas9-CKO Strategy

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Project Overview

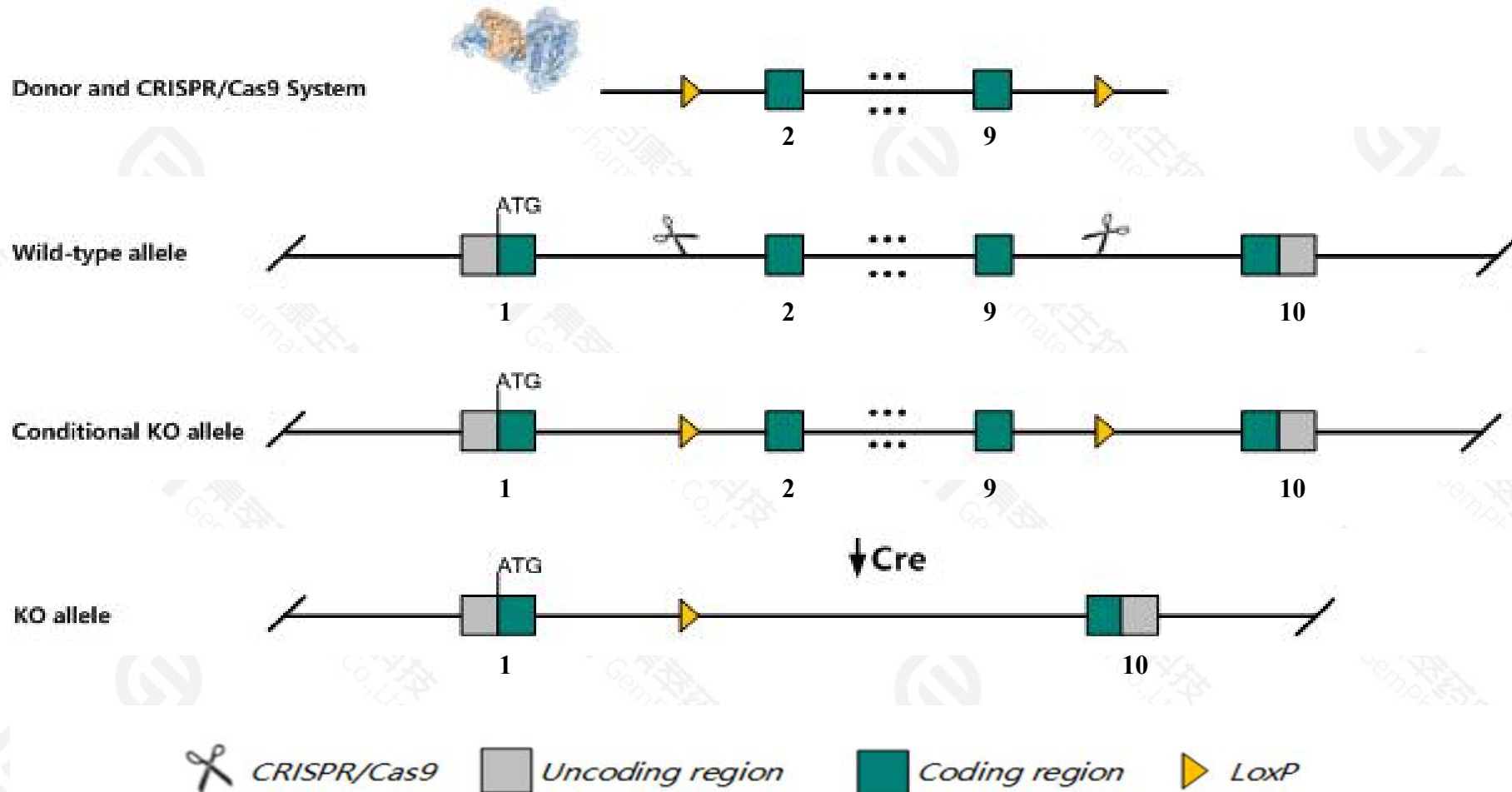|	
Project Name	*Mfsd7a*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mfsd7a* gene. The schematic diagram is as follows:

Technical routes

➢ The *Mfsd7a* gene has 4 transcripts. According to the structure of *Mfsd7a* gene, exon2-exon9 of *Mfsd7a-201*(ENSMUST00000031455.5) transcript is recommended as the knockout region.The region contains Ens 1126bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Mfsd7a* gene. The brief process is as follows:CRISPR/Cas9 system and Donor 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 flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

➢ Transcript *Mfsd7a-204* may be destroyed directly.

➢ The *Mfsd7a* gene is located on the Chr5. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

Mfsd7a major facilitator superfamily domain containing 7A [Mus musculus (house mouse)]

Gene ID: 243197, updated on 17-Dec-2020

▲ Summary

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Official Symbol	Mfsd7a provided by MGI
Official Full Name	major facilitator superfamily domain containing 7A provided by MGI
Primary source	MGI:MGI:2442629
See related	Ensembl:ENSMUSG00000029490
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	4732482E20Rik, Mfsd, Mfsd7, Slc49a3
Expression	Broad expression in stomach adult (RPKM 8.0), colon adult (RPKM 6.6) and 19 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mfsd7a-201	ENSMUST00000031455.5	2717	516aa	Protein coding	CCDS19511		TSL:1 , GENCODE basic , APPRIS P1 ,
Mfsd7a-203	ENSMUST00000238510.2	2111	64aa	Nonsense mediated decay	-		
Mfsd7a-202	ENSMUST00000238429.2	720	No protein	Processed transcript	-		
Mfsd7a-204	ENSMUST00000238630.2	4591	No protein	Retained intron	-		

The strategy is based on the design of *Mfsd7a-201* transcript,the transcription is shown below:

< Mfsd7a-201
protein coding

◄ Reverse strand

8.05 kb
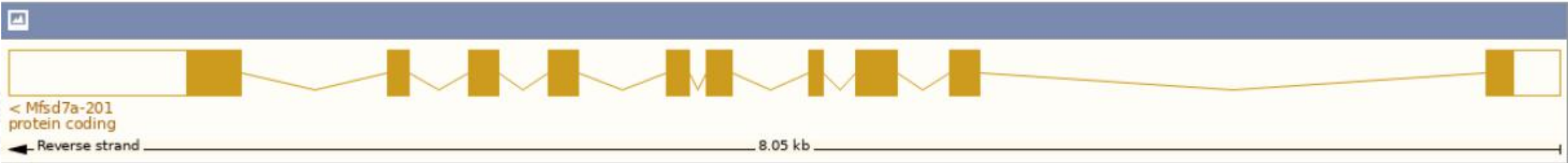
Genomic location distribution
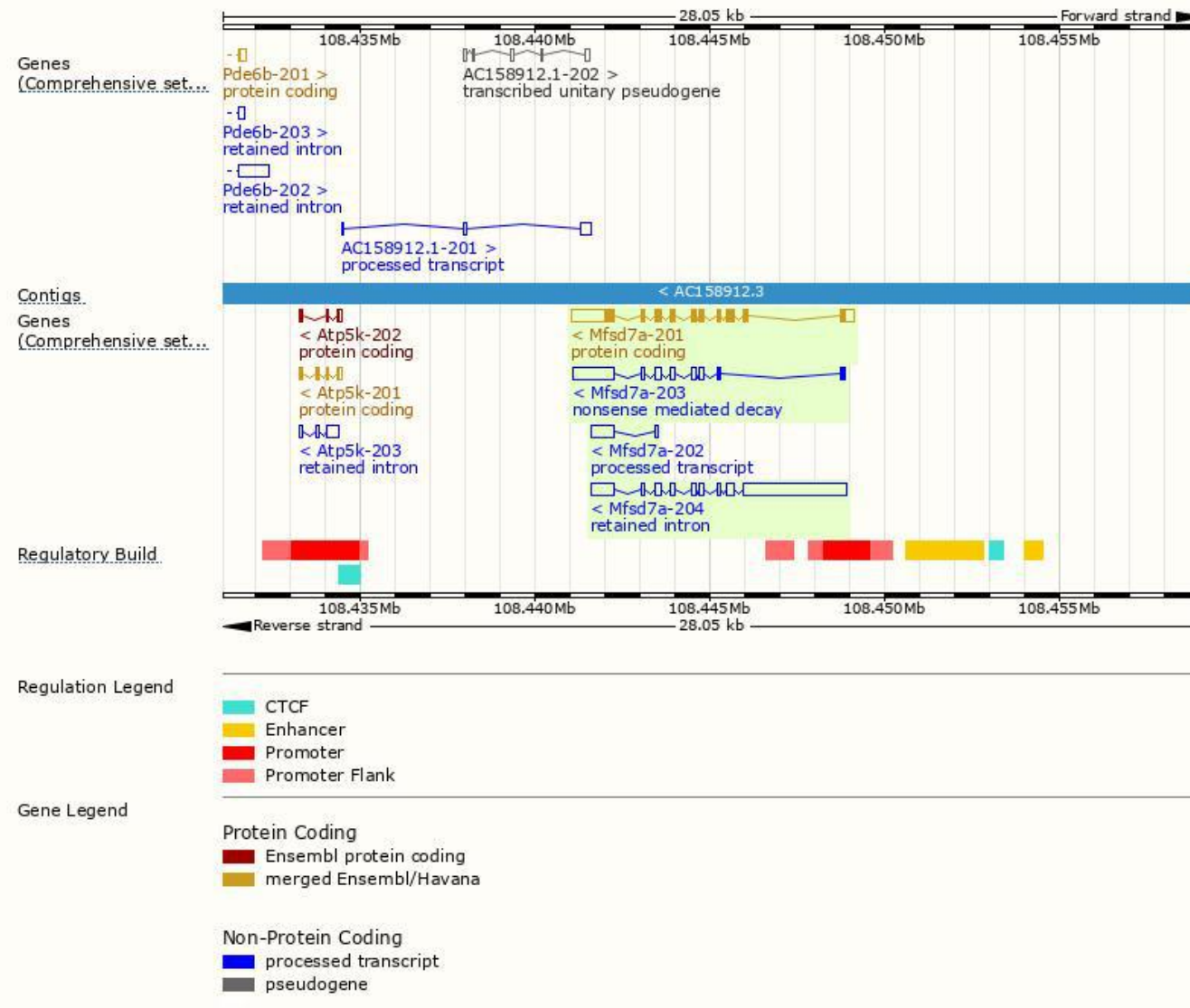
Protein domain
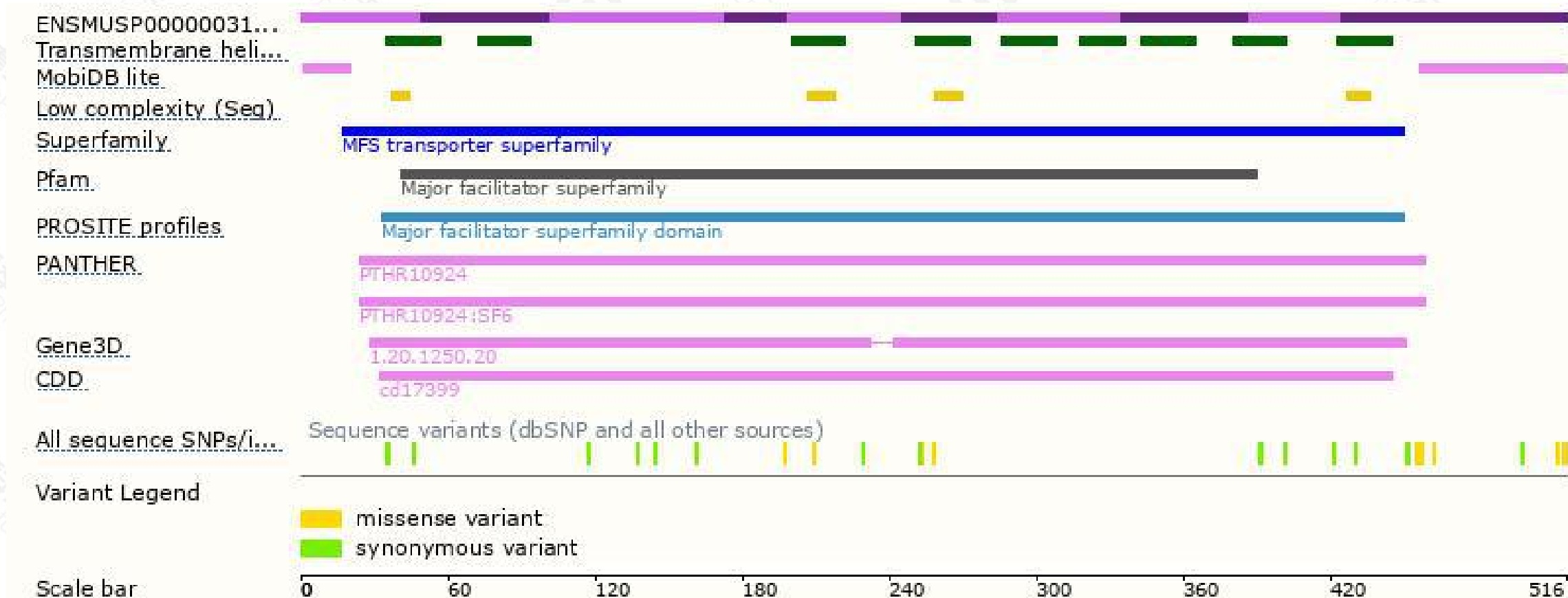
If you have any questions, you are welcome to inquire.
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