

***Tmem41b* Cas9-KO Strategy**

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Project Overview

Project Name

Tmem41b

Project type

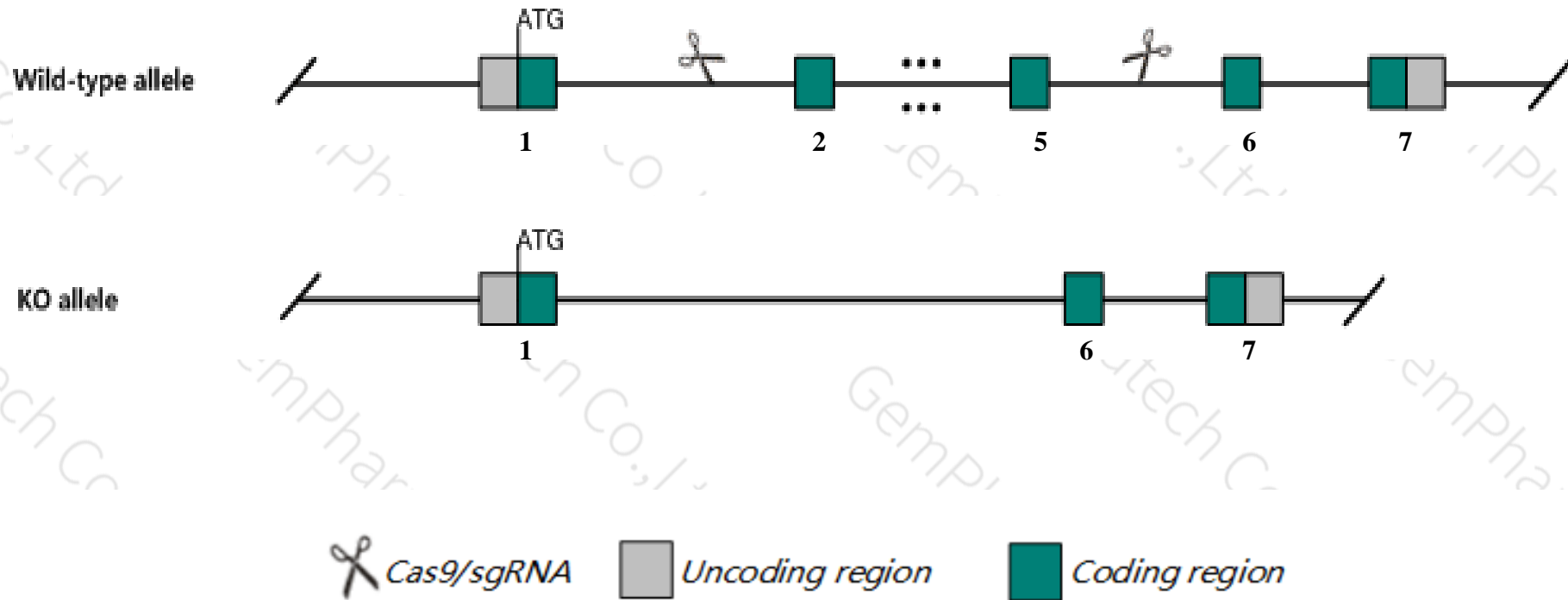
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tmem41b* gene. The schematic diagram is as follows:



- The *Tmem41b* gene has 9 transcripts. According to the structure of *Tmem41b* gene, exon2-exon5 of *Tmem41b*-201(ENSMUST00000094097.11) transcript is recommended as the knockout region. The region contains 446bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tmem41b* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, mice homozygous for a gene trapped allele exhibit embryonic growth arrest and complete embryonic lethality between implantation and placentation.
- The *Tmem41b* 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)

Tmem41b transmembrane protein 41B [Mus musculus (house mouse)]

Gene ID: 233724, updated on 13-Mar-2020

Summary



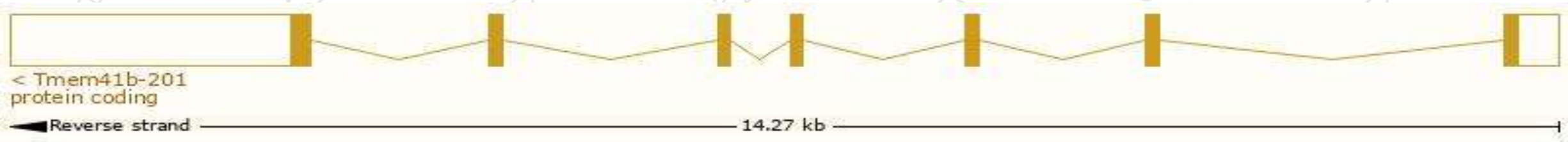
Official Symbol	Tmem41b provided by MGI
Official Full Name	transmembrane protein 41B provided by MGI
Primary source	MGI:MGI:1289225
See related	Ensembl:ENSMUSG00000047554
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1500015G02Rik, 1500031M19Rik, AU018901, D7Ertd70e, D7Ertd743e
Expression	Ubiquitous expression in placenta adult (RPKM 10.3), cerebellum adult (RPKM 8.5) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

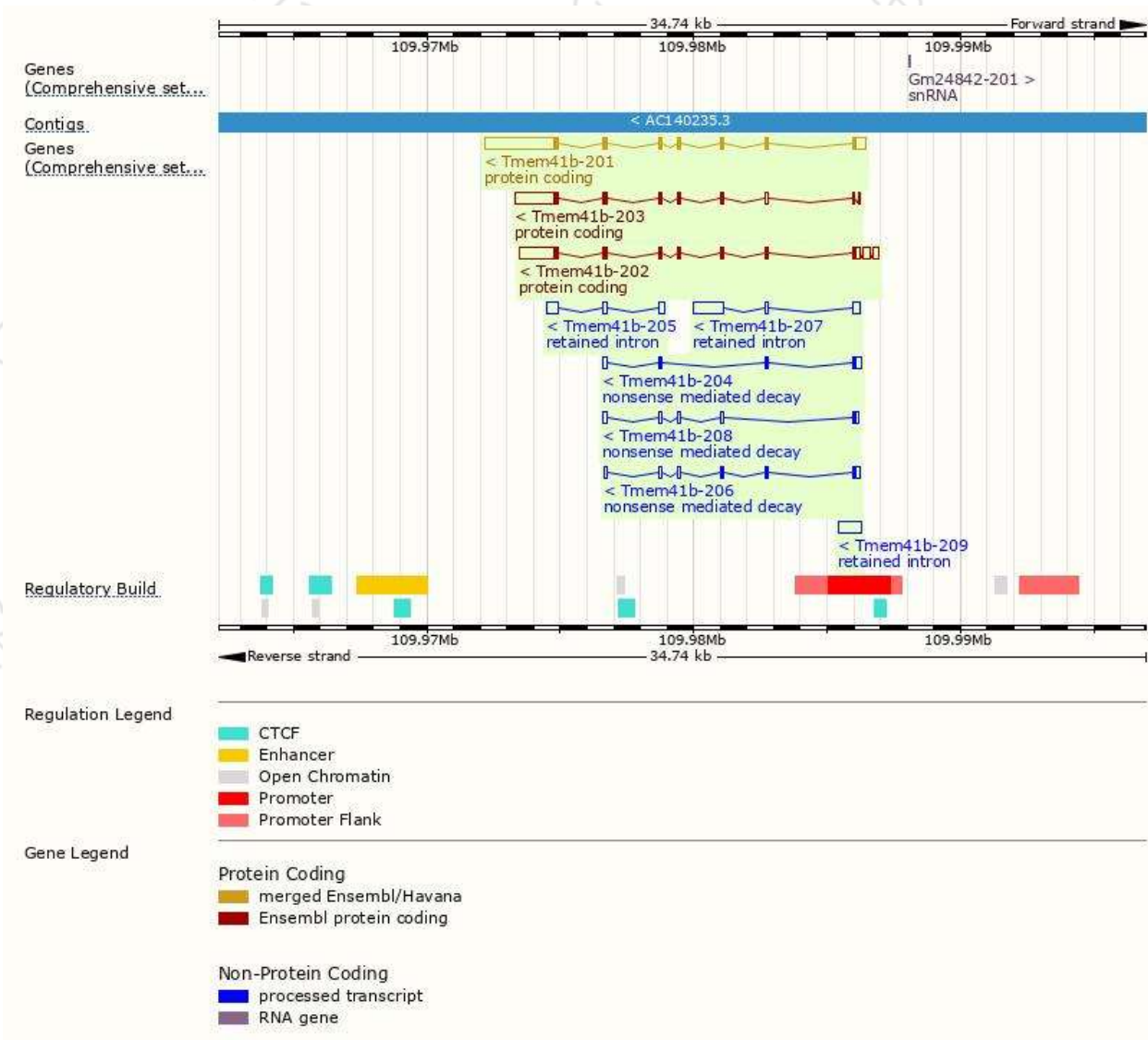
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tmem41b-201	ENSMUST00000094097.11	3840	291aa	Protein coding	CCDS21742	Q8K1A5	TSL:1 GENCODE basic APPRIS P1
Tmem41b-202	ENSMUST00000118429.7	2774	291aa	Protein coding	CCDS21742	Q8K1A5	TSL:1 GENCODE basic APPRIS P1
Tmem41b-203	ENSMUST00000119929.7	2346	224aa	Protein coding	-	Q8K1A5	TSL:1 GENCODE basic
Tmem41b-206	ENSMUST00000135565.1	815	123aa	Nonsense mediated decay	-	D6RFP3	TSL:5
Tmem41b-204	ENSMUST00000124821.8	676	94aa	Nonsense mediated decay	-	D6RIR0	TSL:3
Tmem41b-208	ENSMUST00000154831.8	668	44aa	Nonsense mediated decay	-	D6RDC1	TSL:3
Tmem41b-207	ENSMUST00000151587.1	1544	No protein	Retained intron	-	-	TSL:1
Tmem41b-209	ENSMUST00000207300.1	884	No protein	Retained intron	-	-	TSL:NA
Tmem41b-205	ENSMUST00000125703.1	839	No protein	Retained intron	-	-	TSL:2

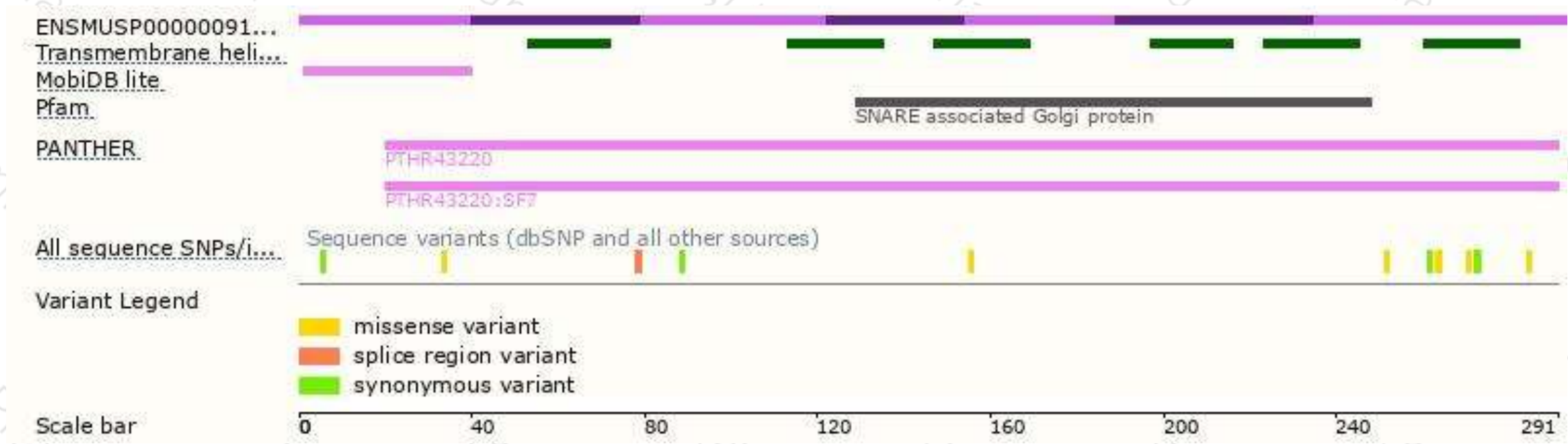
The strategy is based on the design of *Tmem41b-201* transcript,the transcription is shown below:



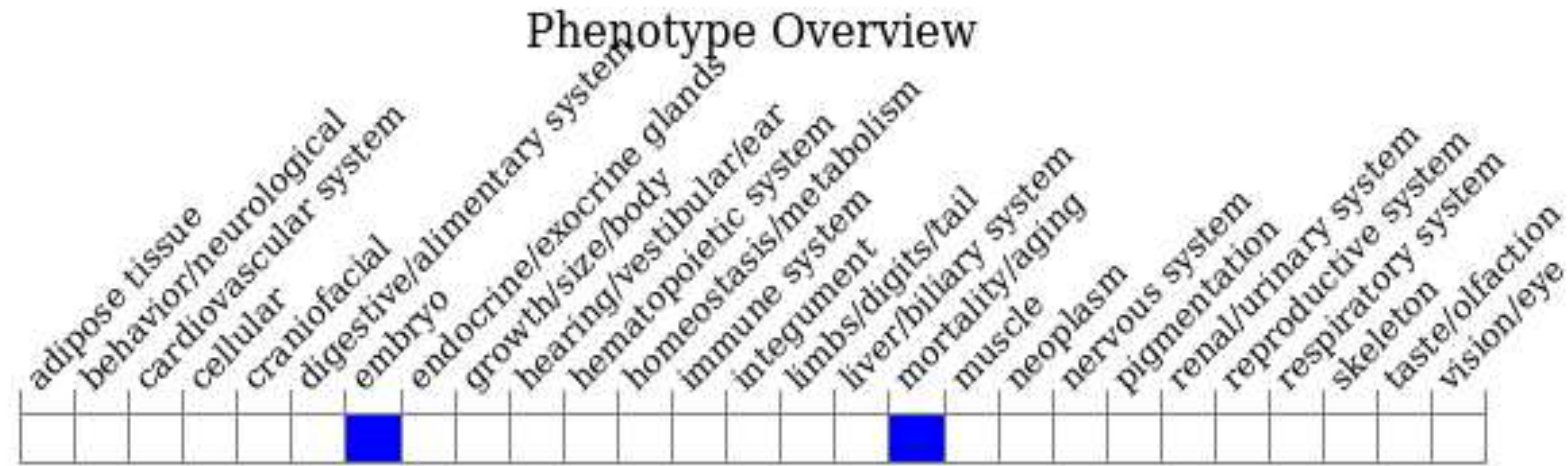
Genomic location distribution



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 a gene trapped allele exhibit embryonic growth arrest and complete embryonic lethality between implantation and placentation.

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

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