Tm9sf1 Cas9-KO Strategy

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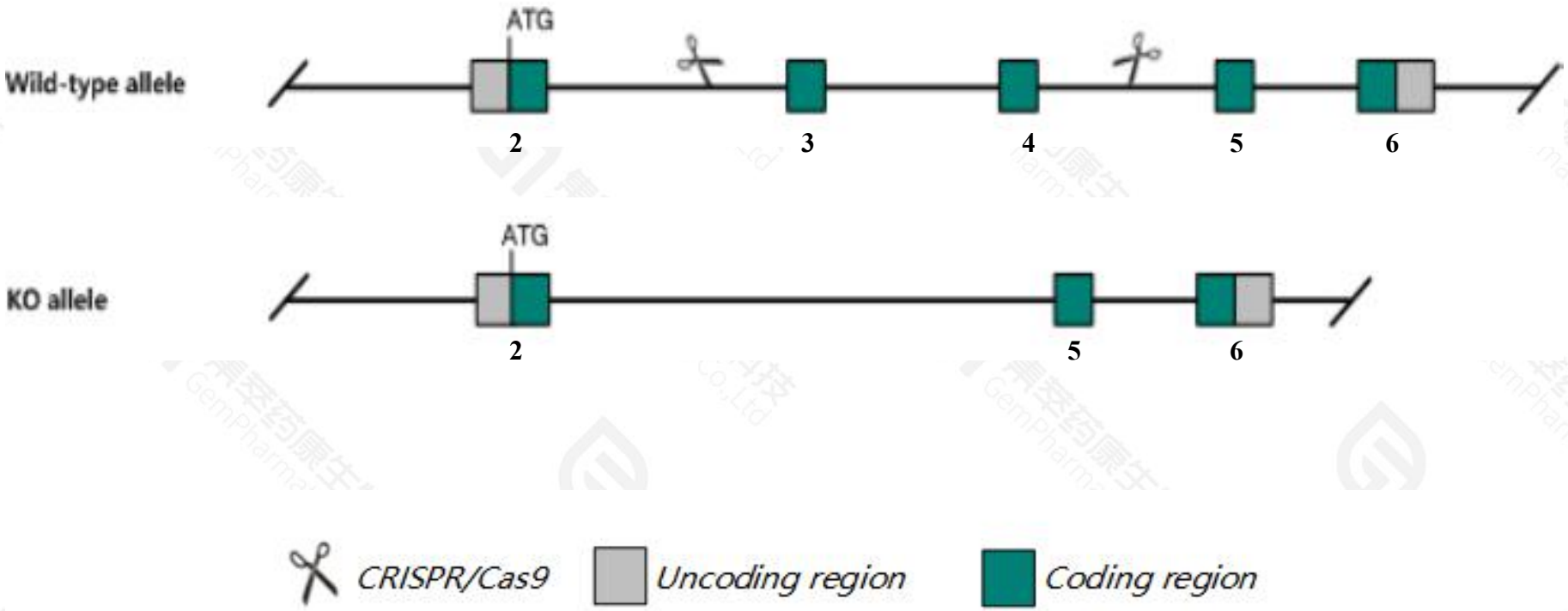
Design Date: 2021-8-2

Project Overview

Project Name	***Tm9sf1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tm9sf1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Tm9sf1* gene has 13 transcripts. According to the structure of *Tm9sf1* gene, exon3-exon4 of *Tm9sf1-205*(ENSMUST00000122358.8) transcript is recommended as the knockout region.The region contains 808bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Tm9sf1* 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.

Notice

➢ The *Tm9sf1* gene is located on the Chr14. 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）

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Tm9sf1 transmembrane 9 superfamily member 1 [Mus musculus (house mouse)]

Gene ID: 74140, updated on 17-Dec-2020

Summary

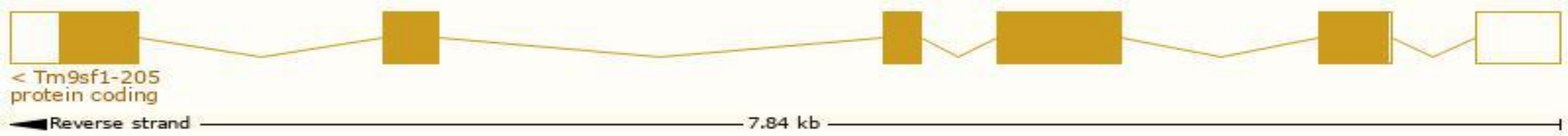
Official Symbol	Tm9sf1 provided by MGI
Official Full Name	transmembrane 9 superfamily member 1 provided by MGI
Primary source	MGI:MGI:1921390
See related	Ensembl:ENSMUSG00000002320
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200014D02Rik, AI893436, MP7, MP70
Expression	Ubiquitous expression in colon adult (RPKM 42.3), adrenal adult (RPKM 39.5) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

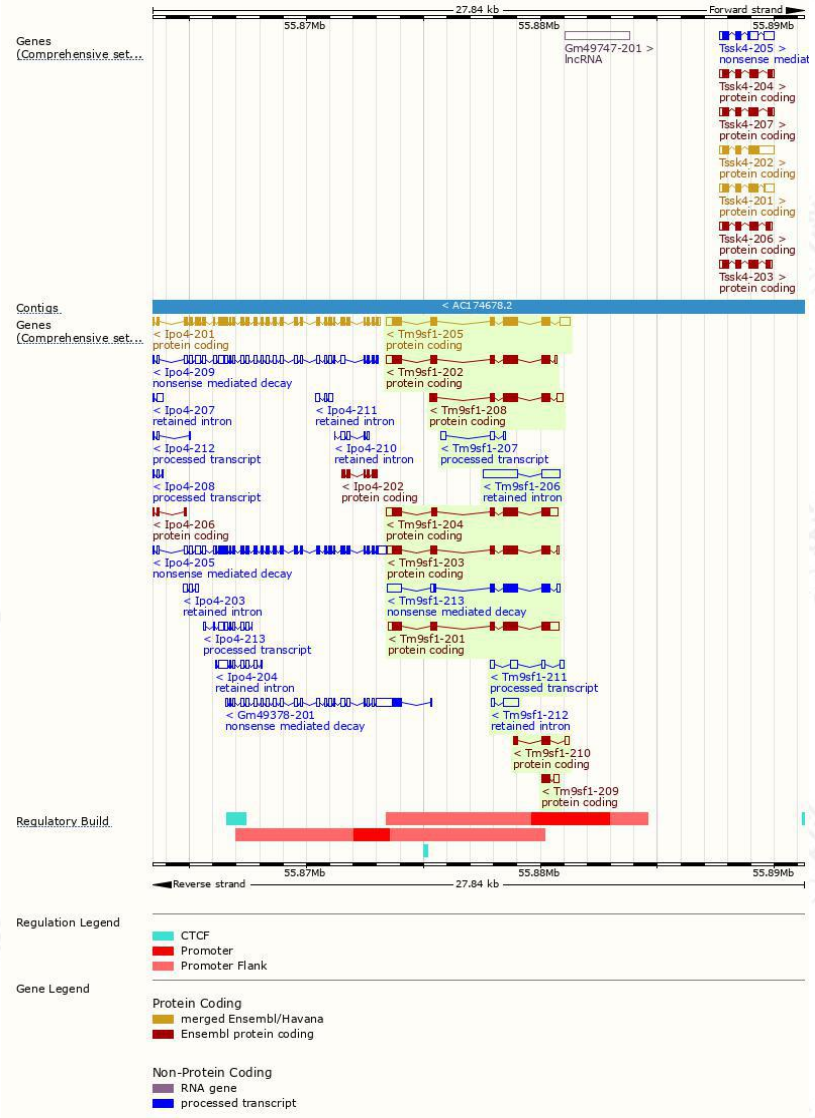
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tm9sf1-205	ENSMUST00000122358.8	2517	606aa	Protein coding	CCDS27122		TSL:1 , GENCODE basic , APPRIS P1 ,
Tm9sf1-201	ENSMUST00000002391.15	2382	606aa	Protein coding	CCDS27122		TSL:1 , GENCODE basic , APPRIS P1 ,
Tm9sf1-202	ENSMUST00000120041.8	2164	606aa	Protein coding	CCDS27122		TSL:5 , GENCODE basic , APPRIS P1 ,
Tm9sf1-203	ENSMUST00000121791.8	2148	606aa	Protein coding	CCDS27122		TSL:5 , GENCODE basic , APPRIS P1 ,
Tm9sf1-204	ENSMUST00000121937.8	2398	589aa	Protein coding	-		TSL:5 , GENCODE basic ,
Tm9sf1-208	ENSMUST00000132338.8	1742	484aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Tm9sf1-210	ENSMUST00000138085.2	708	172aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Tm9sf1-209	ENSMUST00000133707.2	576	118aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Tm9sf1-213	ENSMUST00000149726.8	2089	417aa	Nonsense mediated decay	-		TSL:5 ,
Tm9sf1-211	ENSMUST00000139313.2	840	No protein	Processed transcript	-		TSL:3 ,
Tm9sf1-207	ENSMUST00000130167.8	485	No protein	Processed transcript	-		TSL:3 ,
Tm9sf1-206	ENSMUST00000127473.2	2271	No protein	Retained intron	-		TSL:1 ,
Tm9sf1-212	ENSMUST00000146588.2	760	No protein	Retained intron	-		TSL:2 ,

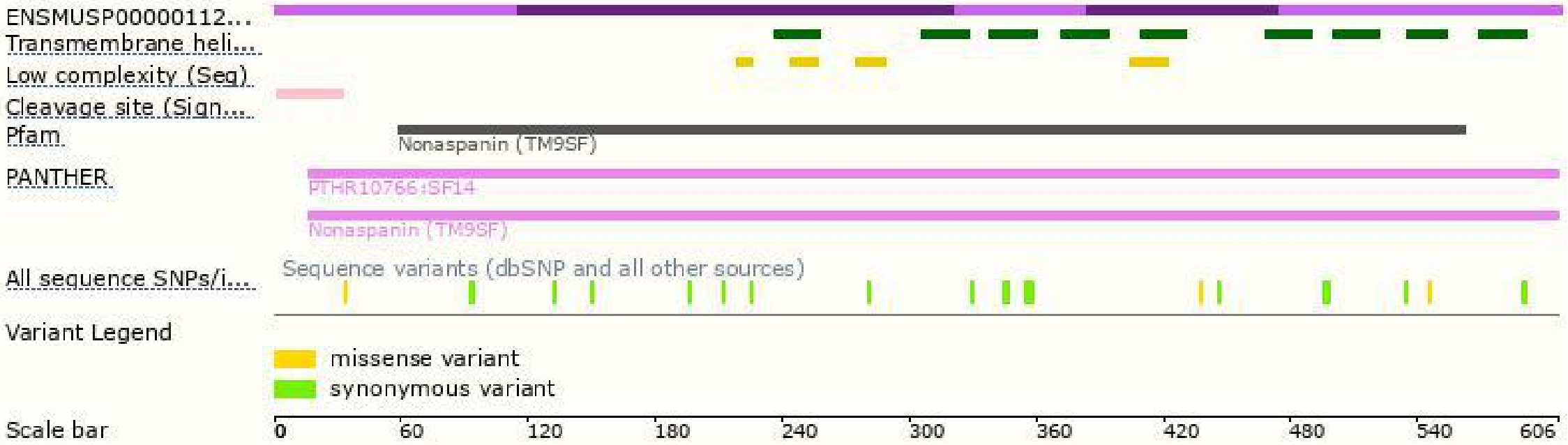
The strategy is based on the design of *Tm9sf1-205* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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