Rnf167 Cas9-KO Strategy

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Reviewer: Yanhua Shen

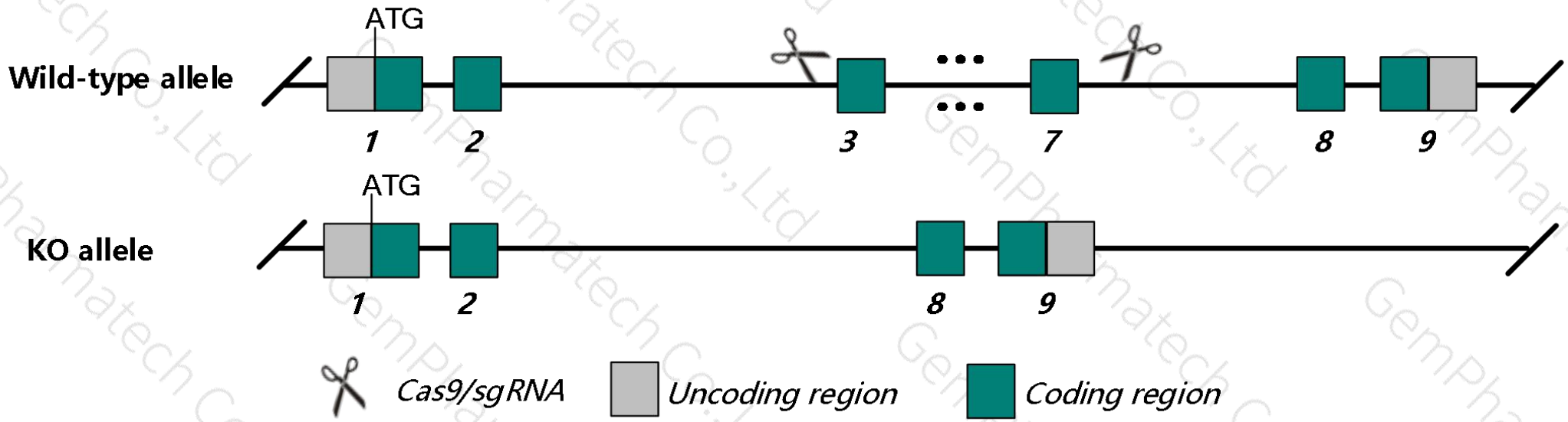
Design Date: 2019-12-30

Project Overview

Project Name	***Rnf167***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnf167* gene. The schematic diagram is as follows:



Technical routes

➢ The *Rnf167* gene has 10 transcripts. According to the structure of *Rnf167* gene, exon3-exon7 of *Rnf167-201* (ENSMUST00000037534.7) transcript is recommended as the knockout region.The region contains 505bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rnf167* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

➢Transcript *Rnf167*-202&204 may not be affected.

➢The knockout region is near to the N-terminal of *Slc25a11* gene and *Eno3* gene and the C-terminal of *Pfn1* gene, this strategy may influence the regulatory function of the N-terminal of *Slc25a11* gene and *Eno3* gene and the C-terminal of *Pfn1* gene.

➢ The *Rnf167* gene is located on the Chr11. 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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Rnf167 ring finger protein 167 [*Mus musculus* (house mouse)]

Gene ID: 70510, updated on 12-Aug-2019

Summary

Official Symbol	Rnf167 provided by MGI
Official Full Name	ring finger protein 167 provided by MGI
Primary source	MGI:MGI:1917760
See related	Ensembl:ENSMUSG00000040746
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	AU019305; AV328608; 0610010G05Rik; 5730408C10Rik
Expression	Ubiquitous expression in thymus adult (RPKM 74.2), spleen adult (RPKM 51.4) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 11; 11 B3

See Rnf167 in Genome Data Viewer

Exon count: 10

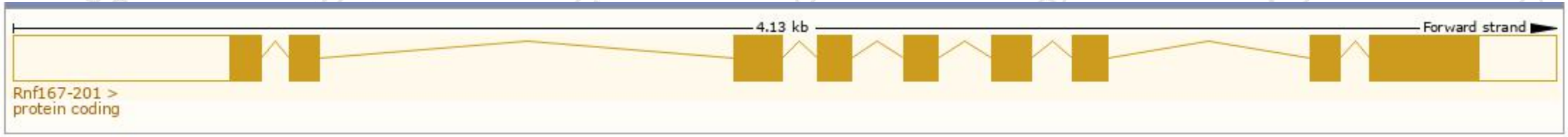
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	11	NC_000077.6 (70647230..70651421)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	11	NC_000077.5 (70461091..70464923)

Transcript information（Ensembl）

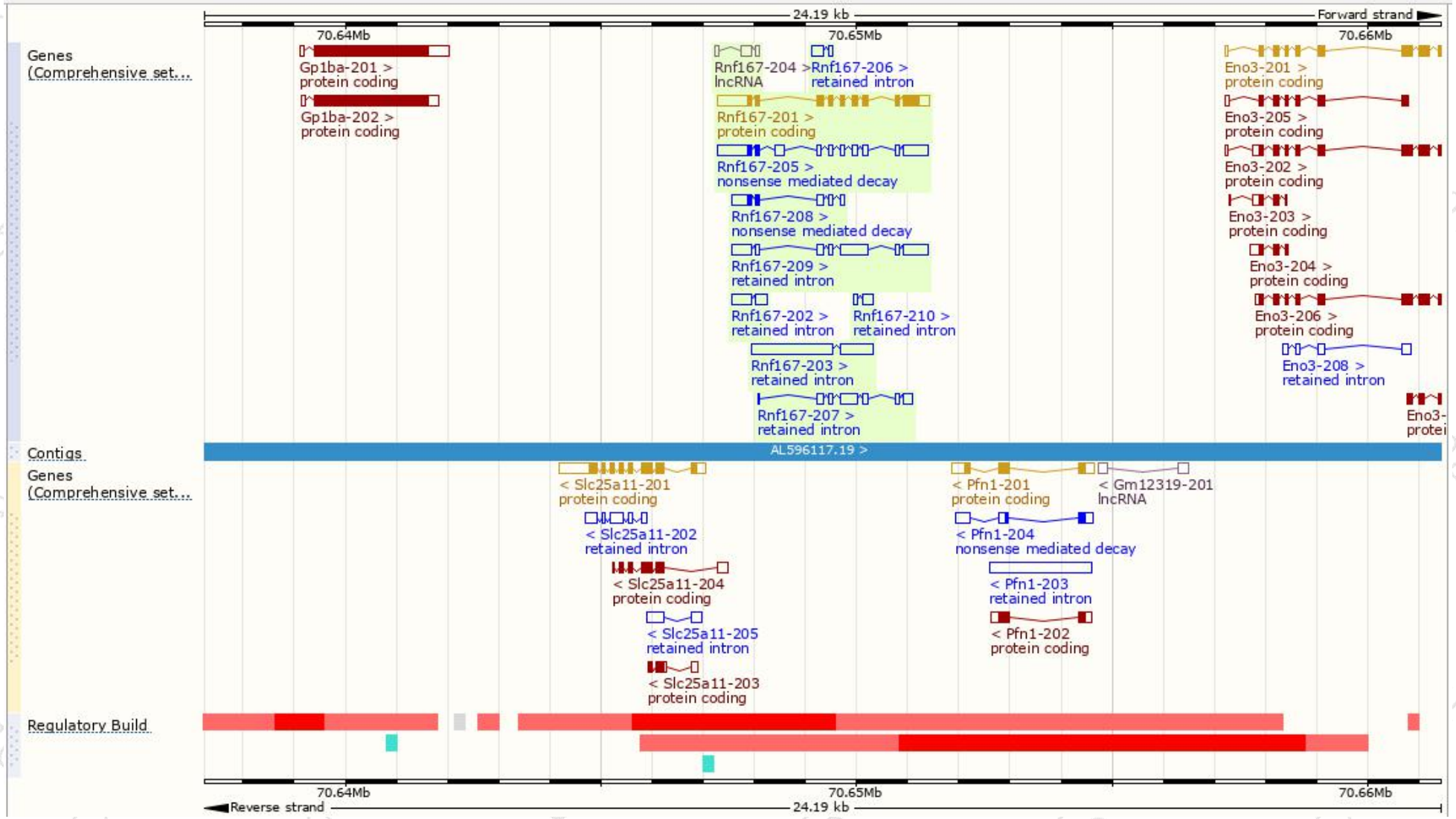
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf167-201	ENSMUST00000037534.7	1833	347aa	Protein coding	CCDS24959	Q91XF4	TSL:1 GENCODE basic APPRIS P1
Rnf167-202	ENSMUST00000131071.1	610	No protein	Retained intron	-	-	TSL:2
Rnf167-203	ENSMUST00000141237.1	2250	No protein	Retained intron	-	-	TSL:1
Rnf167-204	ENSMUST00000141537.1	383	No protein	lncRNA	-	-	TSL:2
Rnf167-205	ENSMUST00000141695.7	1957	56aa	Nonsense mediated decay	-	D6RCH3	TSL:1
Rnf167-206	ENSMUST00000143313.1	313	No protein	Retained intron	-	-	TSL:5
Rnf167-207	ENSMUST00000151034.8	937	No protein	Retained intron	-	-	TSL:3
Rnf167-208	ENSMUST00000152160.7	798	53aa	Nonsense mediated decay	-	D6RH35	TSL:3
Rnf167-209	ENSMUST00000152276.7	1802	No protein	Retained intron	-	-	TSL:1
Rnf167-210	ENSMUST00000152458.1	291	No protein	Retained intron	-	-	TSL:3

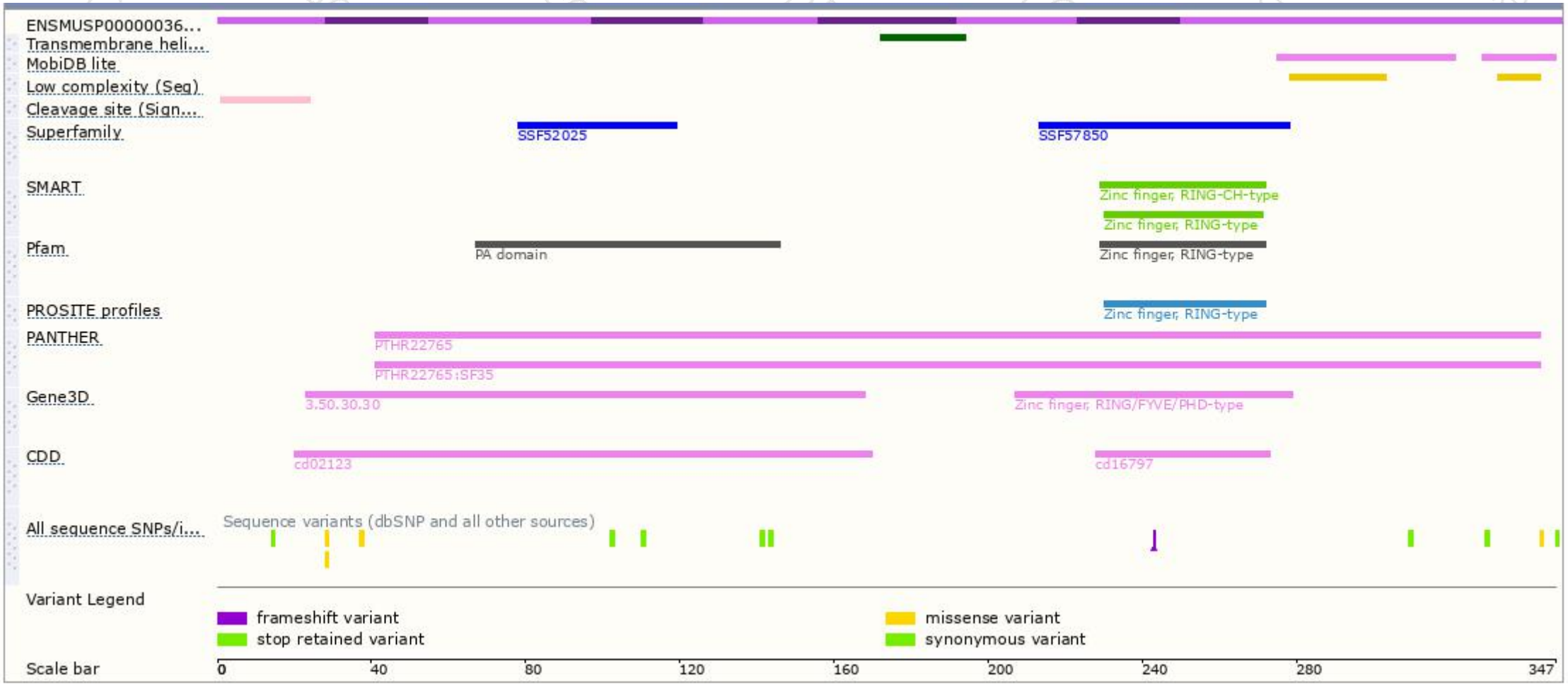
The strategy is based on the design of *Rnf167-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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