Rnf219 Cas9-KO Strategy

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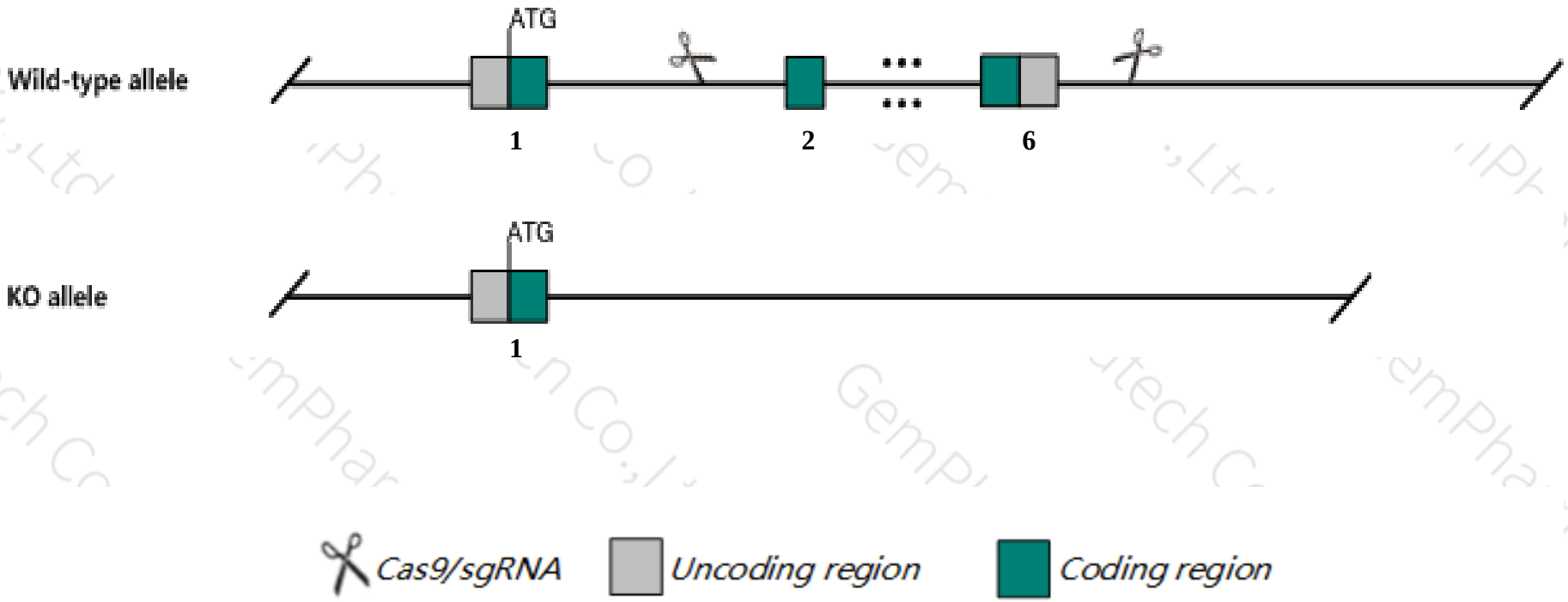
Design Date: 2020-12-17

Project Overview

Project Name	***Rnf219***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnf219* gene. The schematic diagram is as follows:



Technical routes

➢ The *Rnf219* gene has 4 transcripts. According to the structure of *Rnf219* gene, exon2-exon6 of *Rnf219-201*(ENSMUST00000022716.3) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rnf219* 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.

Notice

➢ The *Rnf219* 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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Rnf219 ring finger protein 219 [Mus musculus (house mouse)]

Gene ID: 72486, updated on 31-Jan-2019

Summary

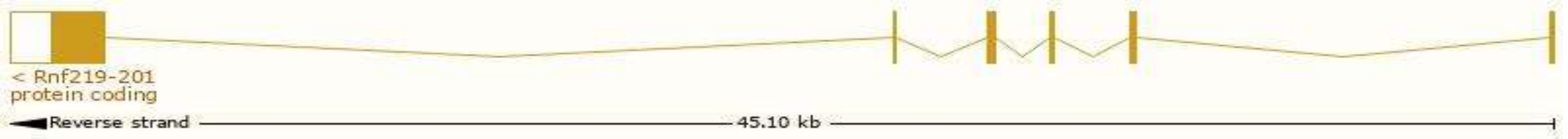
Official Symbol	Rnf219 provided by MGI
Official Full Name	ring finger protein 219 provided by MGI
Primary source	MGI:MGI:1919736
See related	Ensembl:ENSMUSG00000022120
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610206B13Rik, 2810449K13Rik, AI451544
Expression	Broad expression in CNS E11.5 (RPKM 5.7), limb E14.5 (RPKM 3.7) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

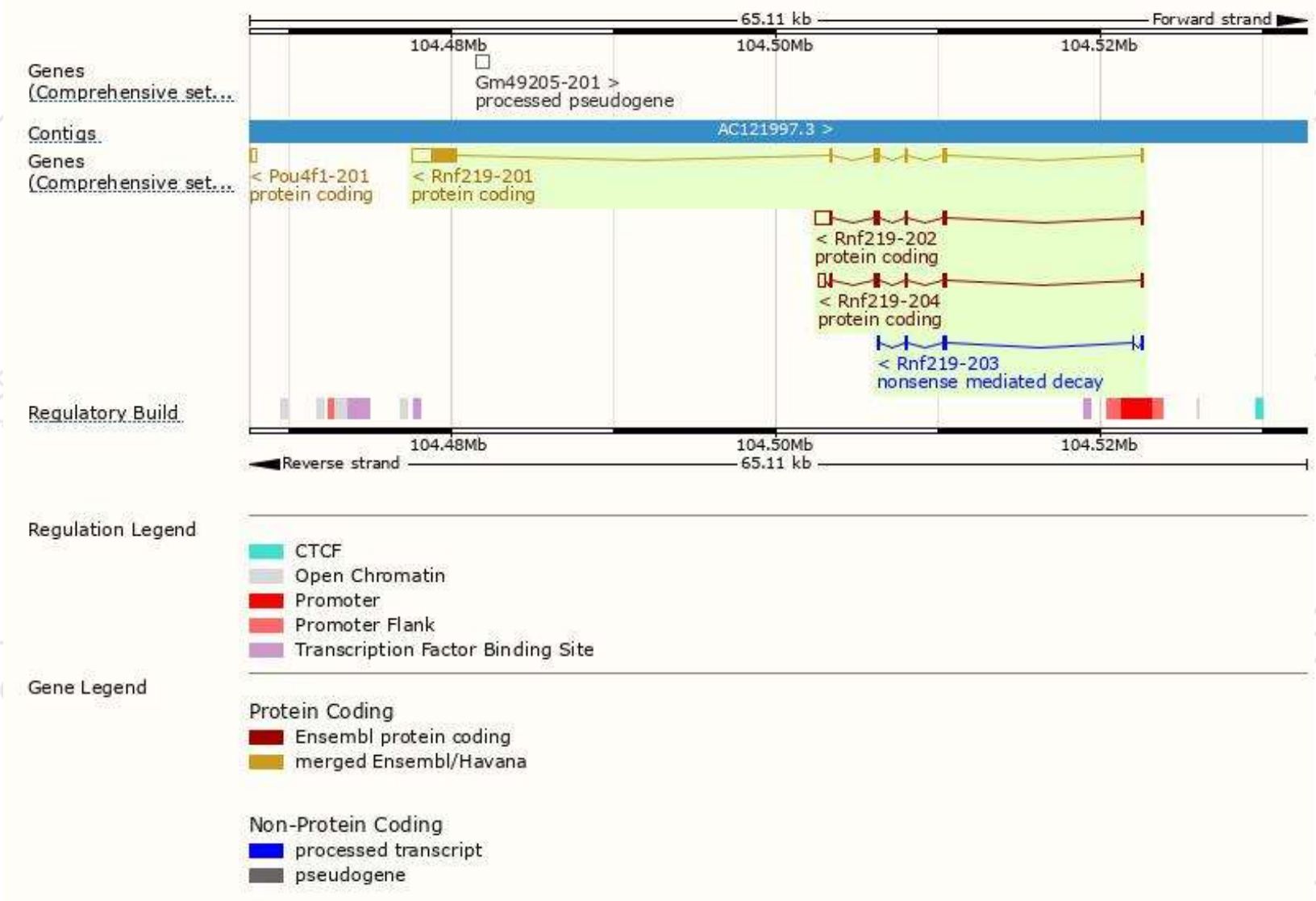
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf219-201	ENSMUST00000022716.3	3420	722aa	Protein coding	CCDS27320	G3X8V5	TSL:3 GENCODE basic APPRIS P2
Rnf219-202	ENSMUST00000227640.1	1632	235aa	Protein coding	-	A0A2I3BRT6	GENCODE basic APPRIS ALT2
Rnf219-204	ENSMUST00000228448.1	1056	214aa	Protein coding	-	Q8K2Y0	GENCODE basic APPRIS ALT2
Rnf219-203	ENSMUST00000228210.1	410	59aa	Nonsense mediated decay	-	A0A2I3BPV5	

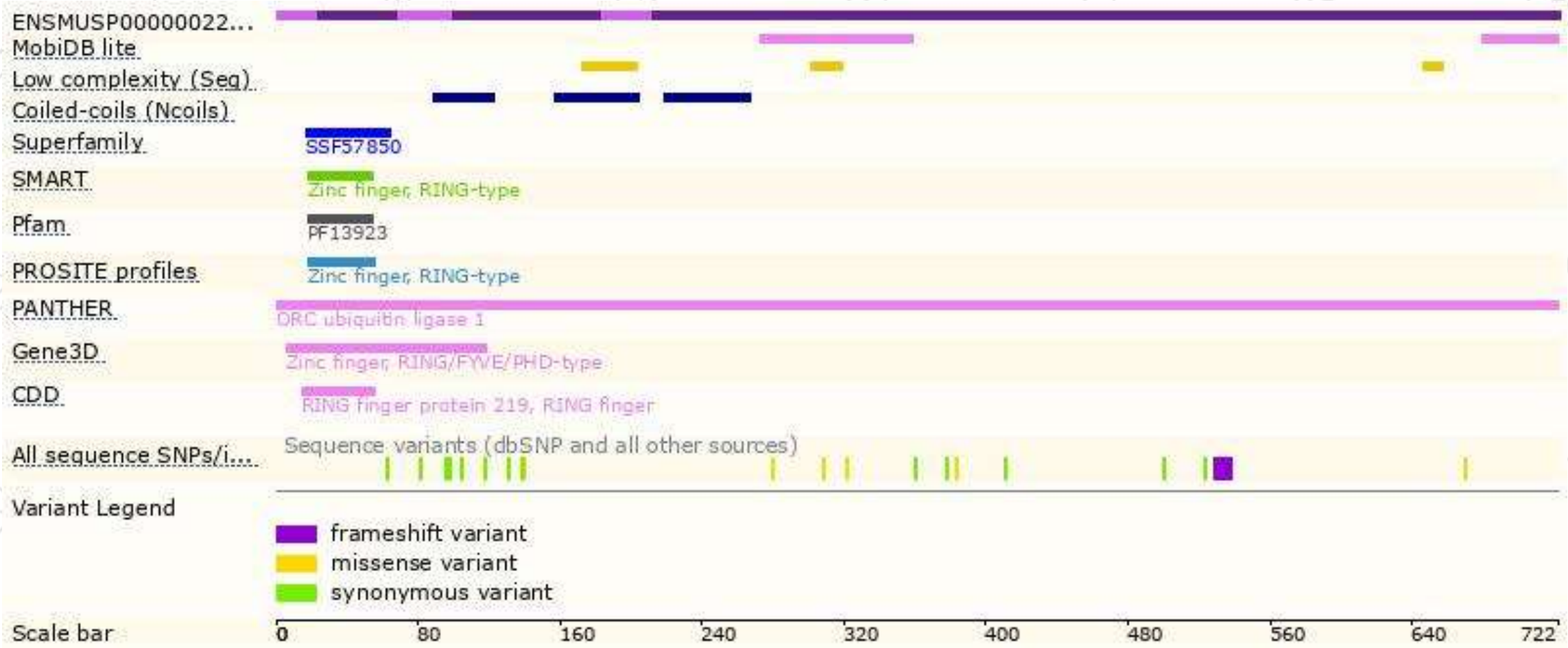
The strategy is based on the design of *Rnf219-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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