

***Rnf157* Cas9-KO Strategy**

Designer: Zihe Cui

Reviewer: Xueting Zhang

Design Date: 2020-8-21

Project Overview

Project Name

Rnf157

Project type

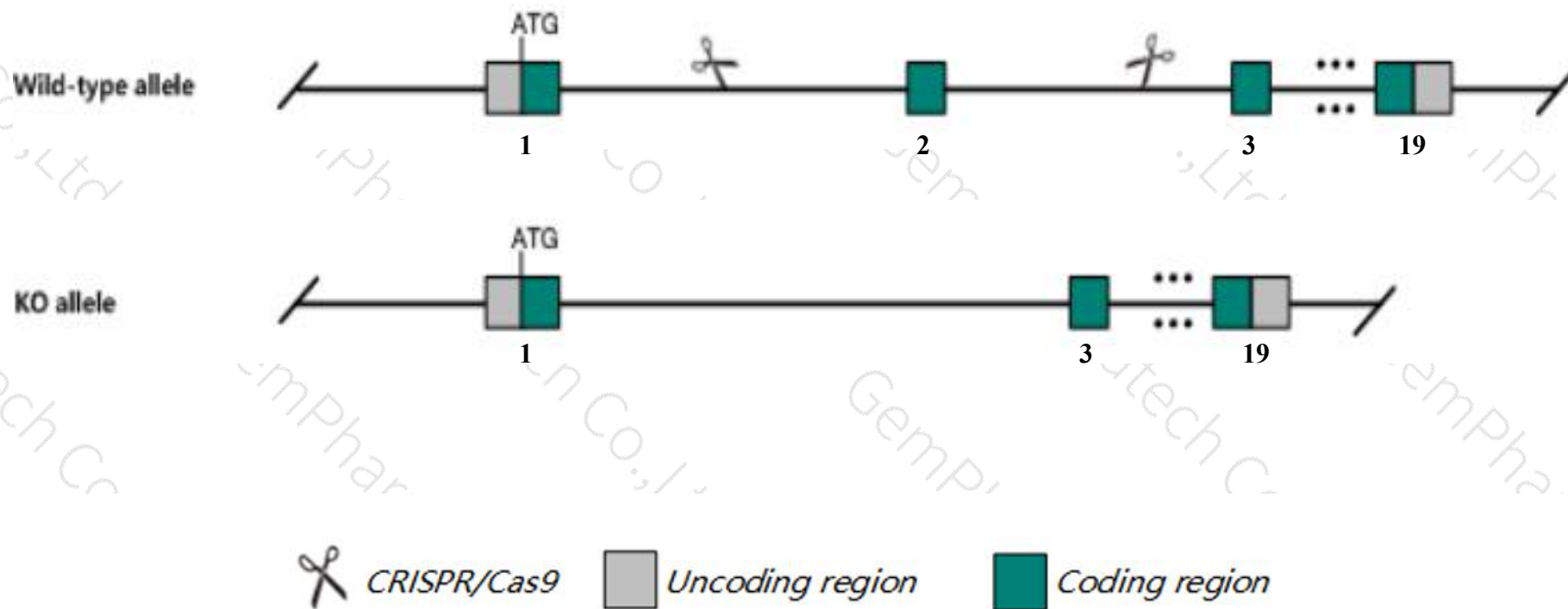
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnf157* gene. The schematic diagram is as follows:



- The *Rnf157* gene has 11 transcripts. According to the structure of *Rnf157* gene, exon2 of *Rnf157-201*(ENSMUST00000100202.9) transcript is recommended as the knockout region. The region contains 119bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rnf157* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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, the gene supports neuronal survival and dendrite growth and maintenance and knockdown with siRNA induces apoptosis in neuronal tissues.
- Transcript *Rnf157*-209, *Rnf157*-211 may not be affected.
- The *Rnf157* 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)

Rnf157 ring finger protein 157 [Mus musculus (house mouse)]

Gene ID: 217340, updated on 13-Mar-2020

Summary



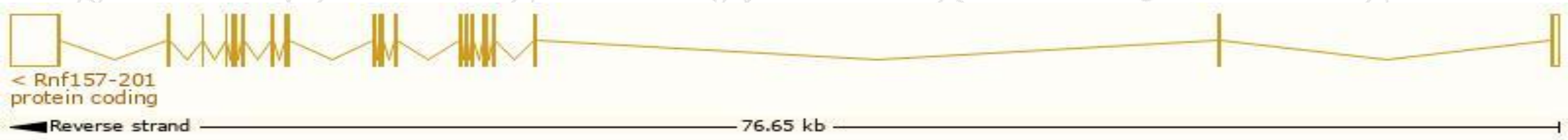
Official Symbol	Rnf157 provided by MGI
Official Full Name	ring finger protein 157 provided by MGI
Primary source	MGI:MGI:2442484
See related	Ensembl:ENSMUSG00000052949
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610036E23Rik, A130073L17Rik, mKIAA1917
Expression	Biased expression in frontal lobe adult (RPKM 39.1), cortex adult (RPKM 38.6) and 14 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

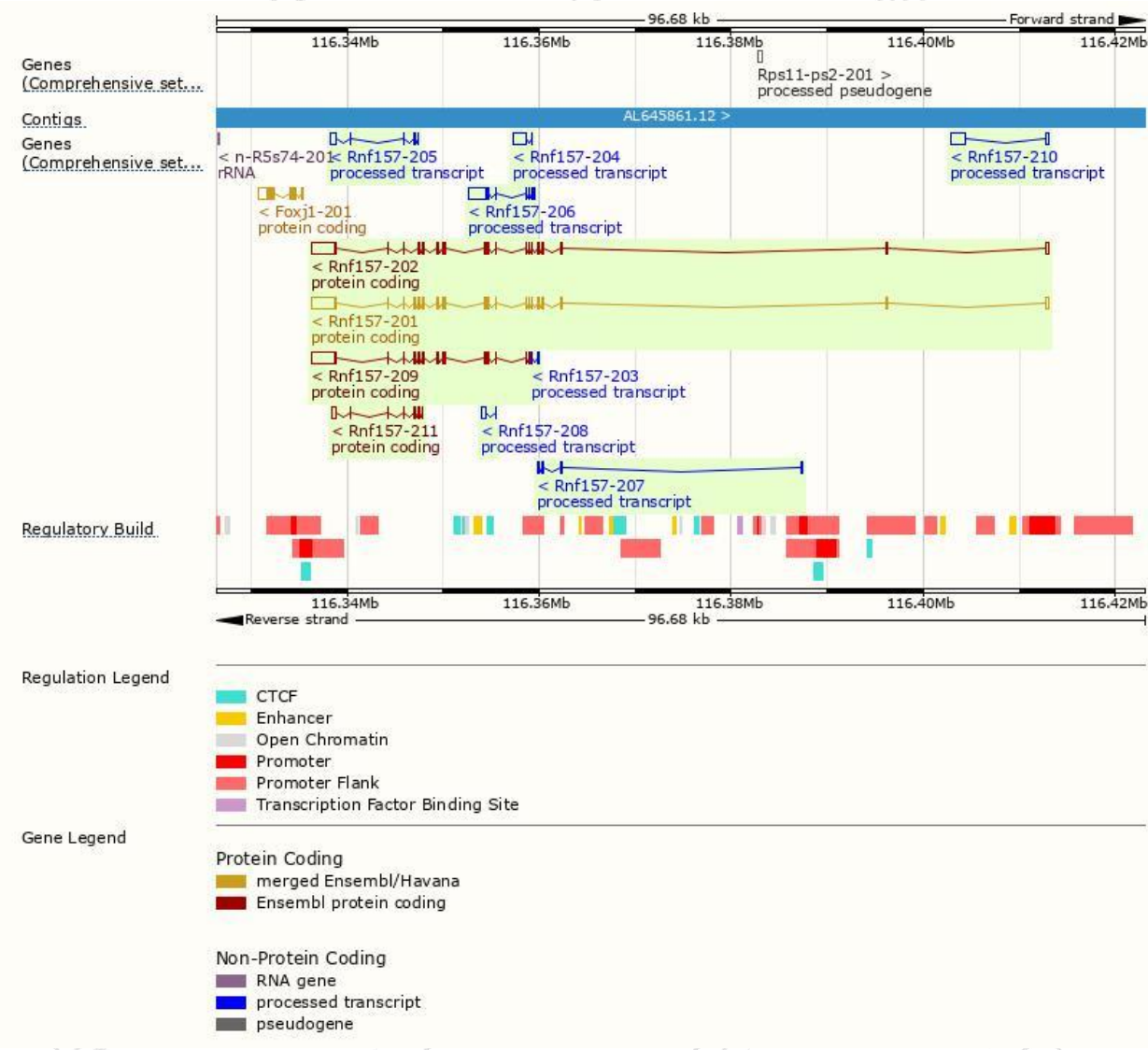
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf157-201	ENSMUST00000100202.9	4619	681aa	Protein coding	CCDS48984	A2AAN9	TSL:1 GENCODE basic APPRIS P2
Rnf157-202	ENSMUST00000106398.8	4553	659aa	Protein coding	-	A2AAP0	TSL:5 GENCODE basic APPRIS ALT2
Rnf157-209	ENSMUST00000149147.7	3873	506aa	Protein coding	-	F7D0T8	CDS 5' incomplete TSL:1
Rnf157-211	ENSMUST00000150775.1	925	166aa	Protein coding	-	F6XBS7	CDS 5' incomplete TSL:3
Rnf157-206	ENSMUST00000141229.1	2265	No protein	Processed transcript	-	-	TSL:1
Rnf157-210	ENSMUST00000149682.1	1891	No protein	Processed transcript	-	-	TSL:1
Rnf157-204	ENSMUST00000137083.1	1414	No protein	Processed transcript	-	-	TSL:3
Rnf157-205	ENSMUST00000137264.1	751	No protein	Processed transcript	-	-	TSL:3
Rnf157-208	ENSMUST00000148763.1	535	No protein	Processed transcript	-	-	TSL:5
Rnf157-207	ENSMUST00000142758.1	326	No protein	Processed transcript	-	-	TSL:3
Rnf157-203	ENSMUST00000129202.1	258	No protein	Processed transcript	-	-	TSL:3

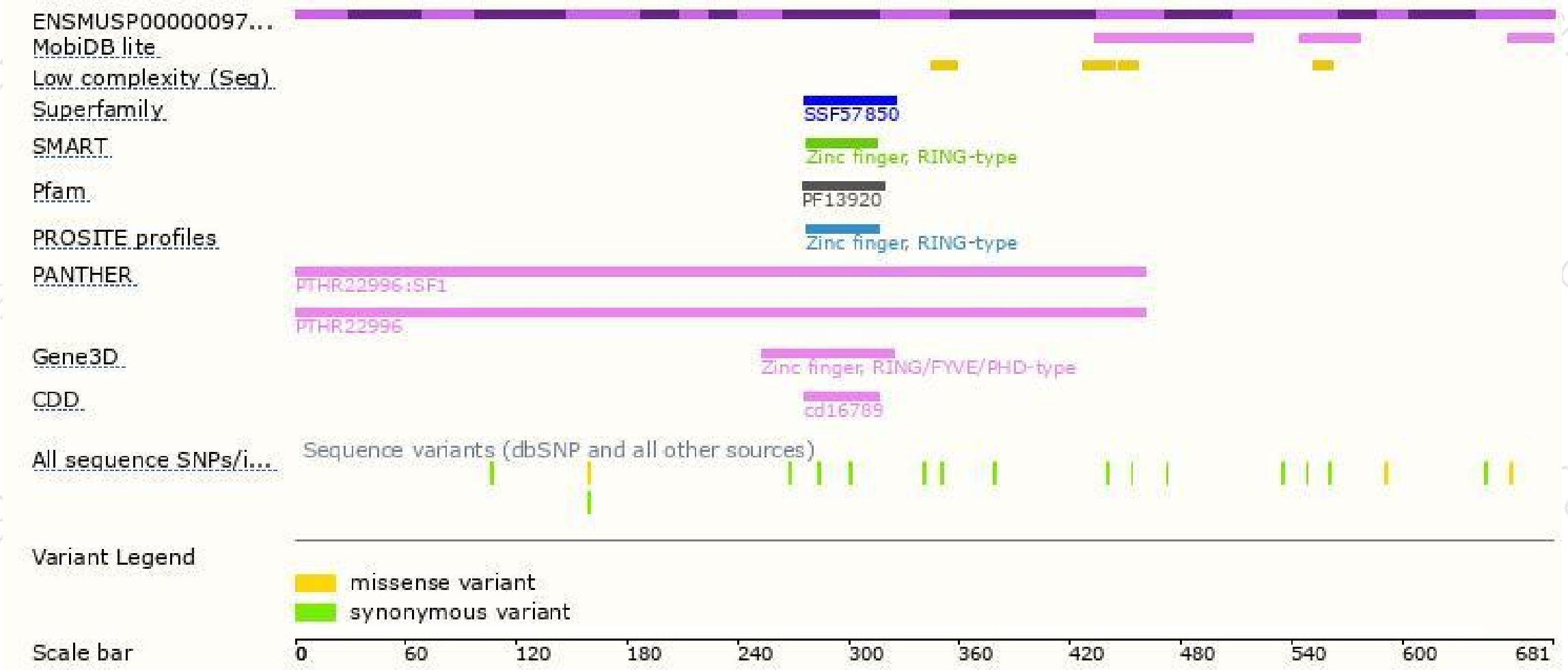
The strategy is based on the design of *Rnf157-201* transcript,the transcription is shown below:



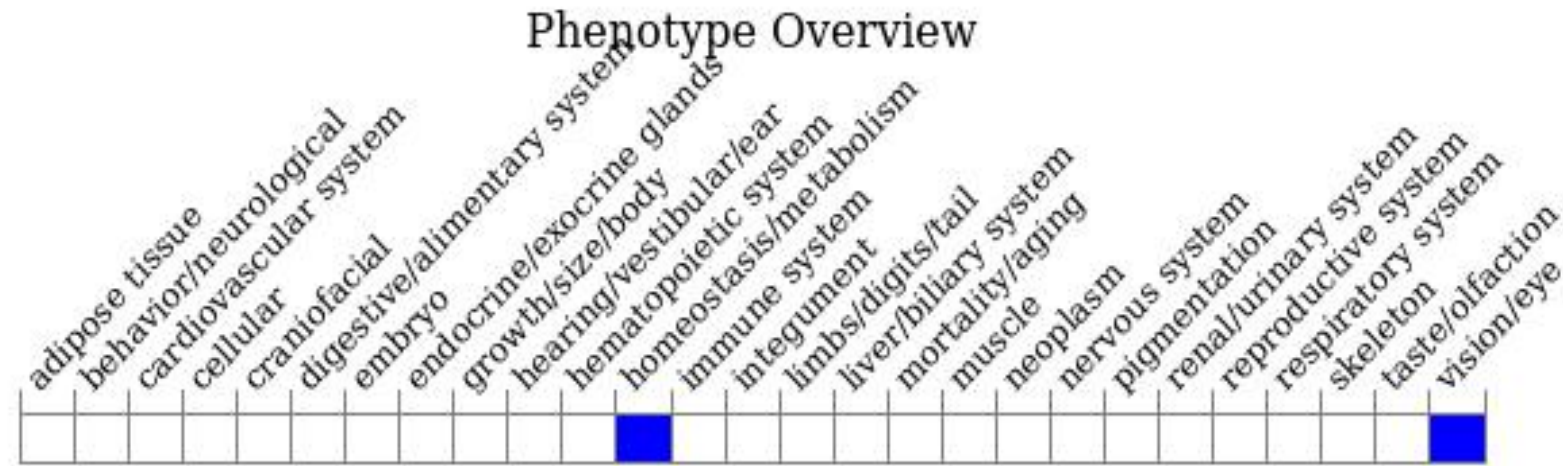
Genomic location distribution



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, the gene supports neuronal survival and dendrite growth and maintenance and knockdown with siRNA induces apoptosis in neuronal tissues.

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

Tel: 400-9660890

