

# ***Rnf141* Cas9-KO Strategy**

Designer: Yanhua Shen  
Reviewer: Xueting Zhang  
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# Project Overview

**Project Name**

***Rnf141***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnf141* gene. The schematic diagram is as follows:



- The *Rnfl141* gene has 12 transcripts. According to the structure of *Rnfl141* gene, exon2-exon6 of *Rnfl141-209* (ENSMUST00000177236.7) transcript is recommended as the knockout region. The region contains all 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 *Rnfl141* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a targeted allele exhibit decreased litter size but normal spermatogenesis and testes weight.
- The knockout region is about 1 kb from the 3' end of the *Ampd3* gene, which may affect the 3-terminal regulation of the gene.
- Transcripts 202, 212 are unaffected.
- The *Rnfl41* 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)

## Rnf141 ring finger protein 141 [ *Mus musculus* (house mouse) ]

Gene ID: 67150, updated on 12-Aug-2019

### Summary

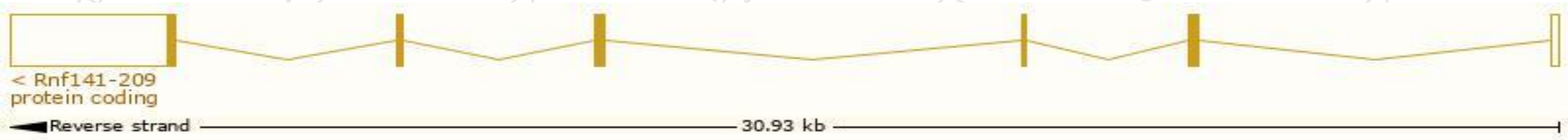
Official Symbol	Rnf141 provided by <a href="#">MGI</a>
Official Full Name	ring finger protein 141 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1914400</a>
See related	<a href="#">Ensembl:ENSMUSG00000030788</a>
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ZFP36; ZNF230; AA792898; AU022812; 2610110L04Rik
Expression	Ubiquitous expression in lung adult (RPKM 5.5), subcutaneous fat pad adult (RPKM 5.1) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

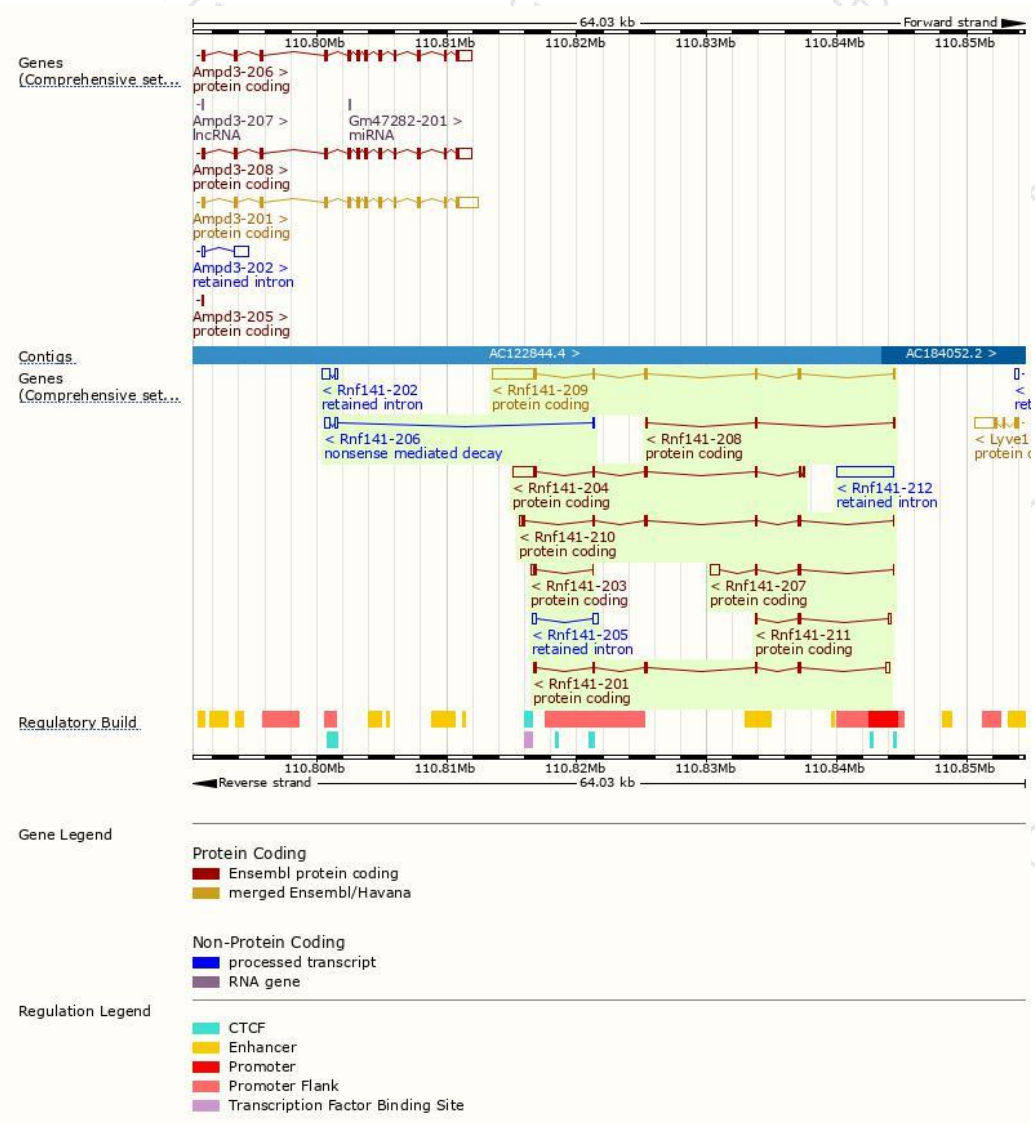
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf141-209	<a href="#">ENSMUST00000177236.7</a>	4032	<a href="#">230aa</a>	Protein coding	<a href="#">CCDS40086</a>	<a href="#">Q99MB7</a>	TSL:1 GENCODE basic APPRIS P1
Rnf141-201	<a href="#">ENSMUST00000106682.9</a>	1101	<a href="#">230aa</a>	Protein coding	<a href="#">CCDS40086</a>	<a href="#">Q99MB7</a>	TSL:3 GENCODE basic APPRIS P1
Rnf141-204	<a href="#">ENSMUST00000175981.7</a>	2333	<a href="#">133aa</a>	Protein coding	-	<a href="#">H3BJU0</a>	TSL:1 GENCODE basic
Rnf141-207	<a href="#">ENSMUST00000176716.2</a>	1080	<a href="#">87aa</a>	Protein coding	-	<a href="#">A0A1B0GT51</a>	TSL:2 GENCODE basic
Rnf141-210	<a href="#">ENSMUST00000177462.7</a>	859	<a href="#">180aa</a>	Protein coding	-	<a href="#">H3BJB4</a>	TSL:5 GENCODE basic
Rnf141-203	<a href="#">ENSMUST00000175648.1</a>	422	<a href="#">59aa</a>	Protein coding	-	<a href="#">H3BJX9</a>	CDS 5' incomplete TSL:3
Rnf141-211	<a href="#">ENSMUST00000177520.1</a>	419	<a href="#">75aa</a>	Protein coding	-	<a href="#">H3BJE9</a>	CDS 3' incomplete TSL:3
Rnf141-208	<a href="#">ENSMUST00000176746.7</a>	317	<a href="#">21aa</a>	Protein coding	-	<a href="#">H3BKH1</a>	CDS 3' incomplete TSL:2
Rnf141-206	<a href="#">ENSMUST00000176210.1</a>	647	<a href="#">28aa</a>	Nonsense mediated decay	-	<a href="#">H3BK28</a>	CDS 5' incomplete TSL:2
Rnf141-212	<a href="#">ENSMUST00000210070.1</a>	4423	No protein	Retained intron	-	-	TSL:NA
Rnf141-202	<a href="#">ENSMUST00000148367.1</a>	793	No protein	Retained intron	-	-	TSL:1
Rnf141-205	<a href="#">ENSMUST00000176048.1</a>	614	No protein	Retained intron	-	-	TSL:2

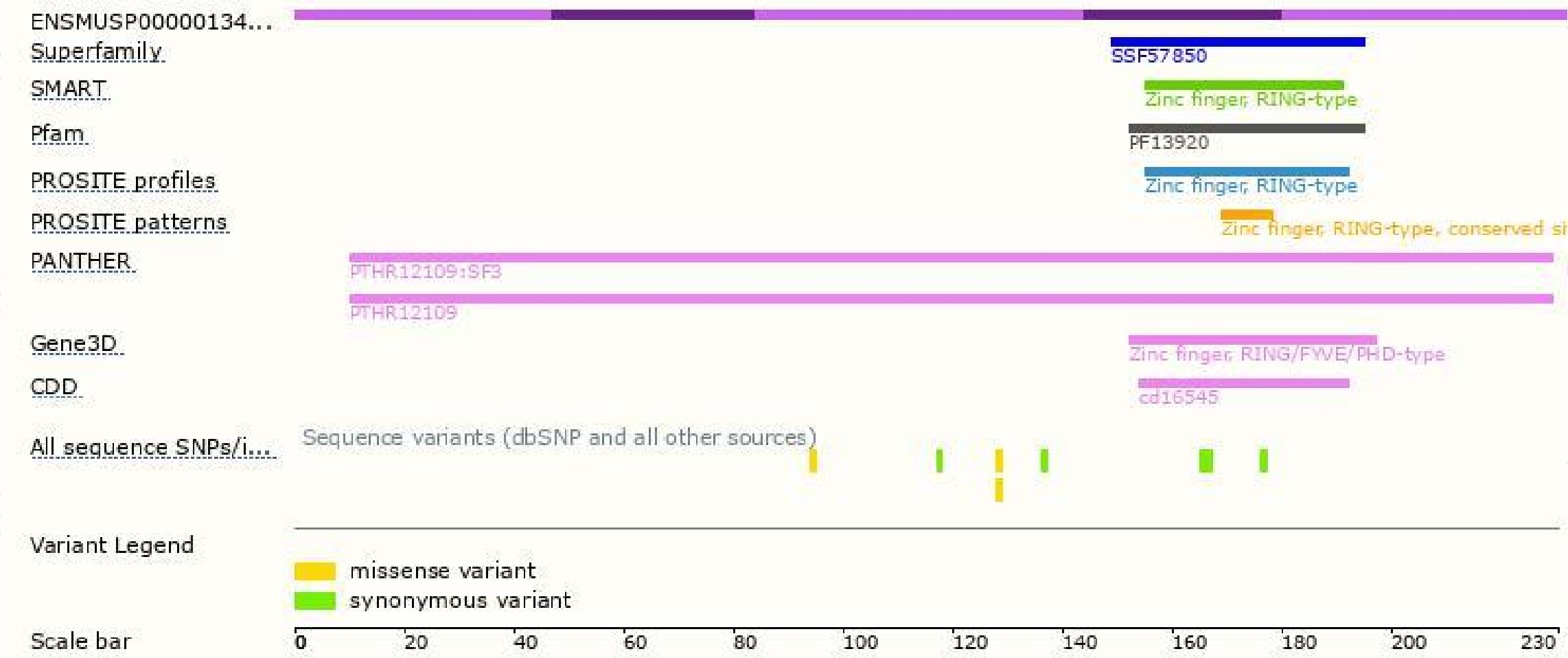
The strategy is based on the design of *Rnf141-209* transcript,The transcription is shown below



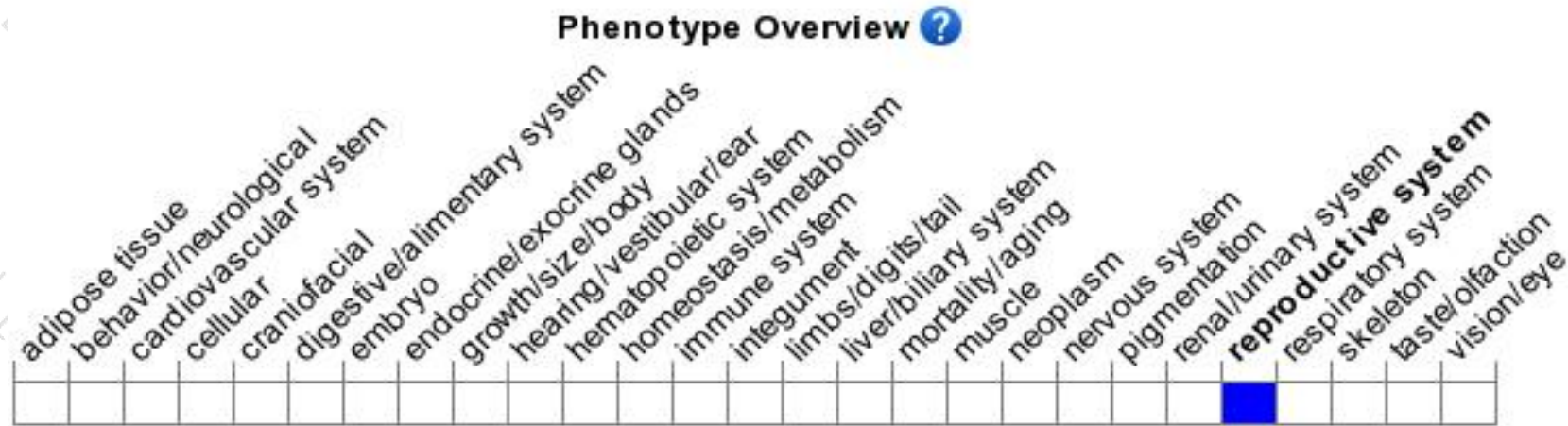
# Genomic location distribution



# 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 targeted allele exhibit decreased litter size but normal spermatogenesis and testes weight.

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

Tel: 400-9660890

