

Rxrb Cas9-KO Strategy

Designer: Yun Li

Reviewer: Shuang Zhang

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Project Overview

Project Name

Rxrb

Project type

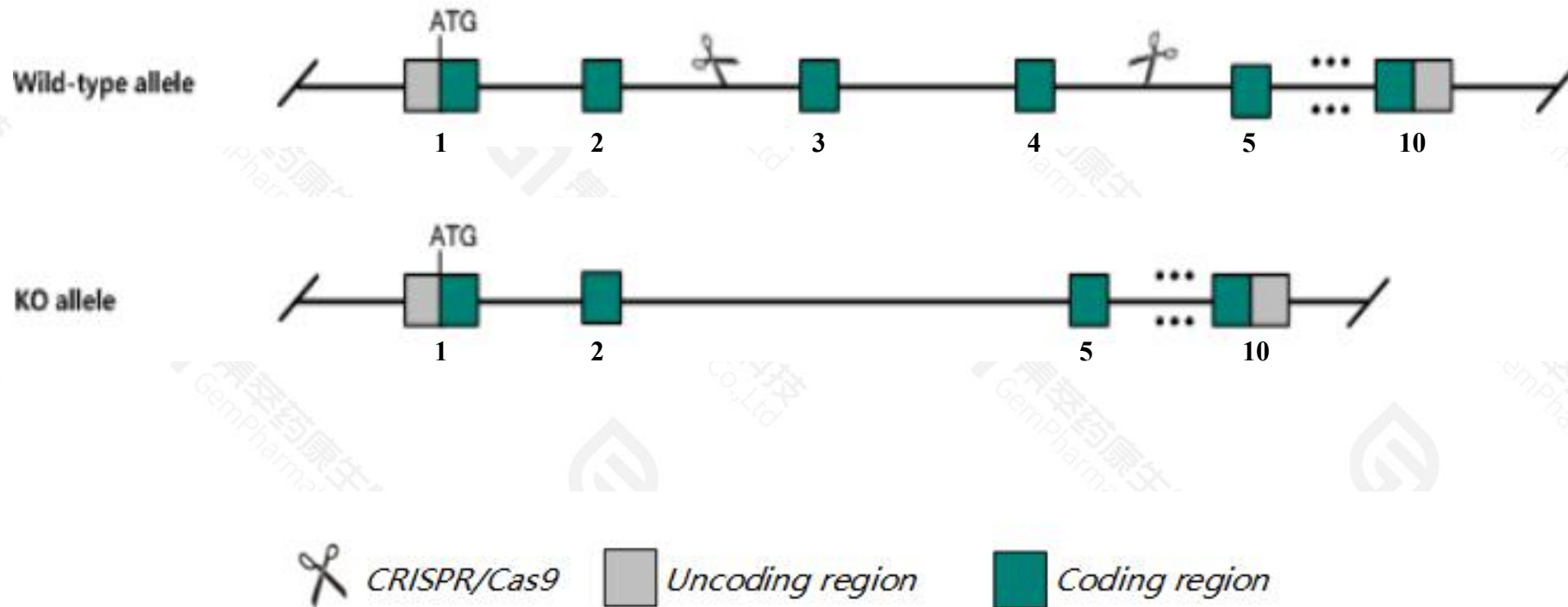
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Rxrb* gene has 10 transcripts. According to the structure of *Rxrb* gene, exon3-exon4 of *Rxrb*-201(ENSMUST00000044858.16) transcript is recommended as the knockout region. The region contains 337bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rxrb* 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.

- According to the existing MGI data, mutant mice homozygous for a null mutation exhibit partial embryonic and perinatal lethality, and surviving adult males are sterile due to defects in spermatogenesis.
- The KO region contains functional region of the *Rxrb* gene. Knockout the region may affect the function of *Slc39a7* gene.
- The Intron2 and Intron4 are only 510bp and 1452bp, loxp insertion may affect mRNA splicing.
- The *Rxrb* gene is located on the Chr17. 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)

Rxrb retinoid X receptor beta [Mus musculus (house mouse)]

Gene ID: 20182, updated on 14-Jan-2021

Summary



Official Symbol Rxrb provided by [MGI](#)

Official Full Name retinoid X receptor beta provided by [MGI](#)

Primary source [MGI:MGI:98215](#)

See related [Ensembl:ENSMUSG00000039656](#)

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 AL023085, H-2R, H-2RIIBP, Nr2, Nr2b2, RCo, RCoR-1, Ru, Rub

Expression Ubiquitous expression in adrenal adult (RPKM 47.1), thymus adult (RPKM 33.9) and 28 other tissues [See more](#)

Orthologs [human](#) [all](#)

Transcript information (Ensembl)

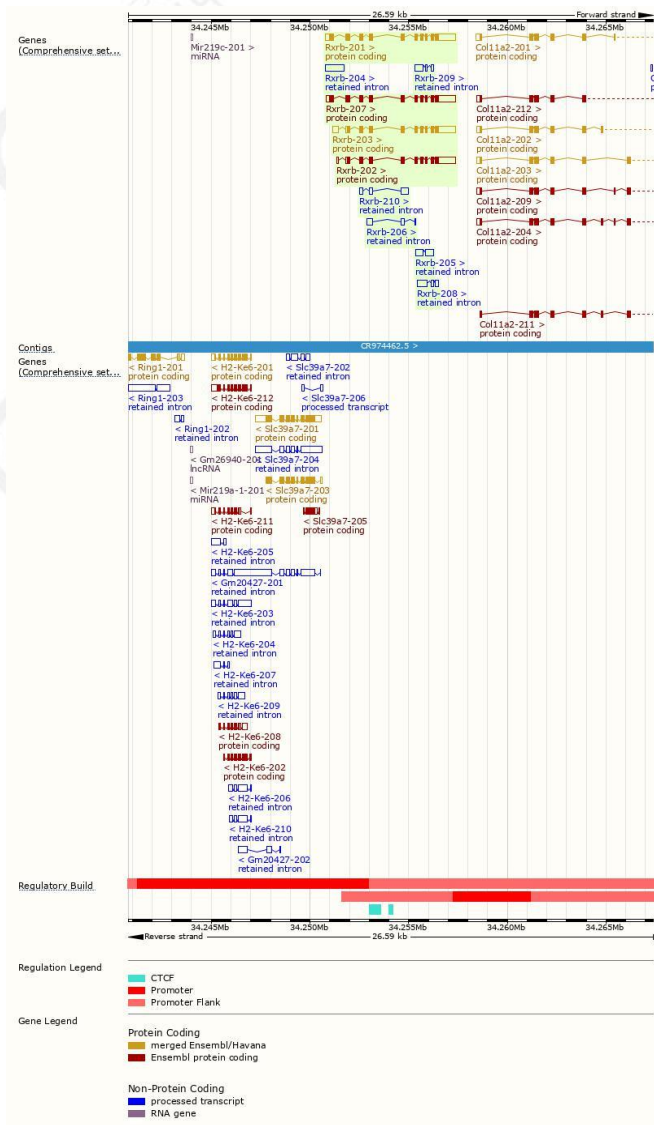
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rxrb-201	ENSMUST00000044858.16	2627	524aa	Protein coding	CCDS57066		TSL:1 , GENCODE basic ,
Rxrb-203	ENSMUST00000173354.9	2502	414aa	Protein coding	CCDS57067		TSL:1 , GENCODE basic ,
Rxrb-202	ENSMUST00000116612.3	2283	410aa	Protein coding	CCDS57068		TSL:1 , GENCODE basic , APPRIS P2 ,
Rxrb-207	ENSMUST00000174299.9	2577	520aa	Protein coding	-		TSL:1 , GENCODE basic , APPRIS ALT2 ,
Rxrb-204	ENSMUST00000173554.9	939	No protein	Retained intron	-		TSL:2 ,
Rxrb-205	ENSMUST00000174033.2	826	No protein	Retained intron	-		TSL:3 ,
Rxrb-208	ENSMUST00000174578.2	759	No protein	Retained intron	-		TSL:3 ,
Rxrb-210	ENSMUST00000174740.2	697	No protein	Retained intron	-		TSL:2 ,
Rxrb-209	ENSMUST00000174645.2	635	No protein	Retained intron	-		TSL:3 ,
Rxrb-206	ENSMUST00000174130.2	516	No protein	Retained intron	-		TSL:2 ,

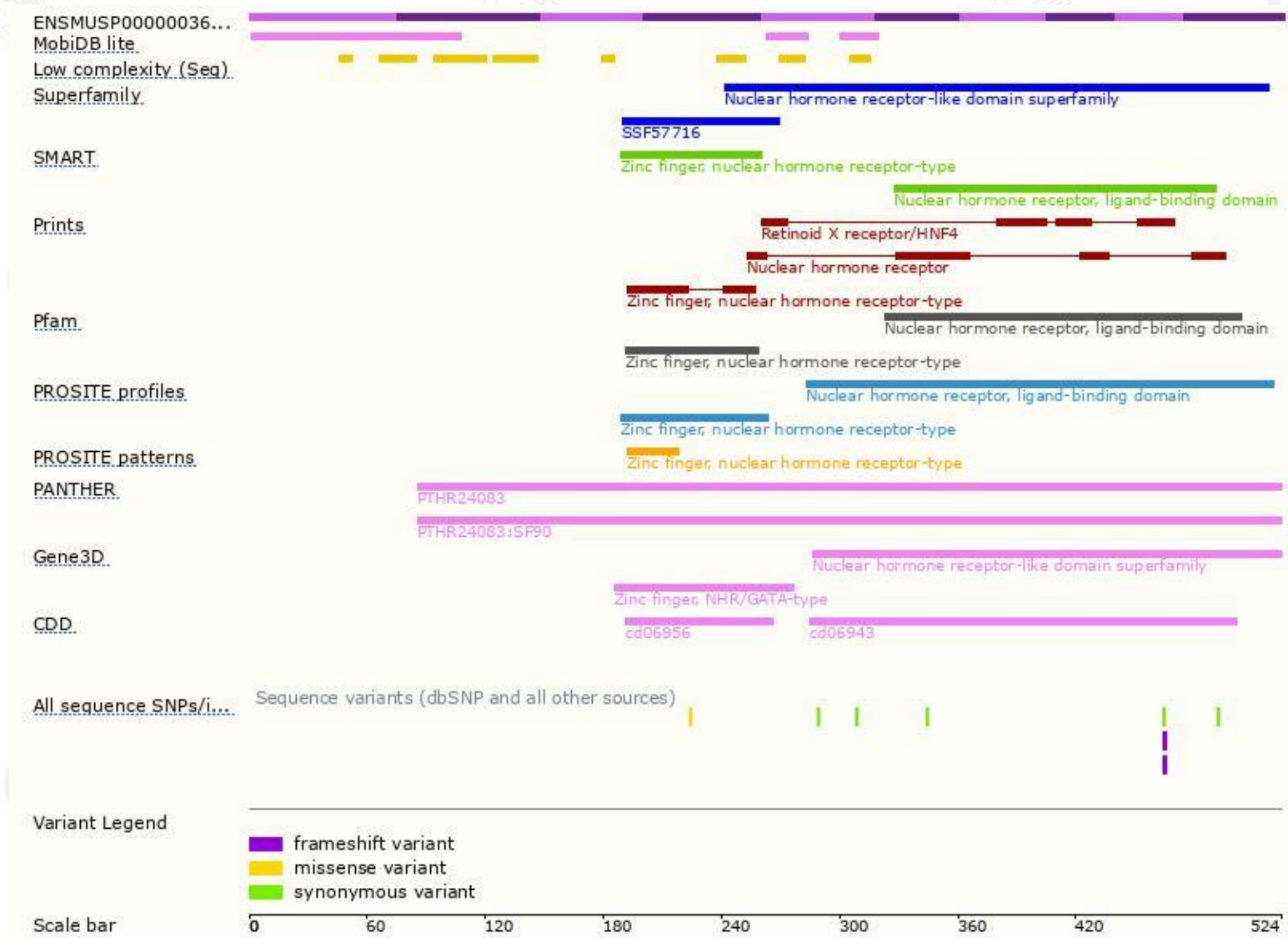
The strategy is based on the design of *Rxrb-201* transcript,the transcription is shown below:



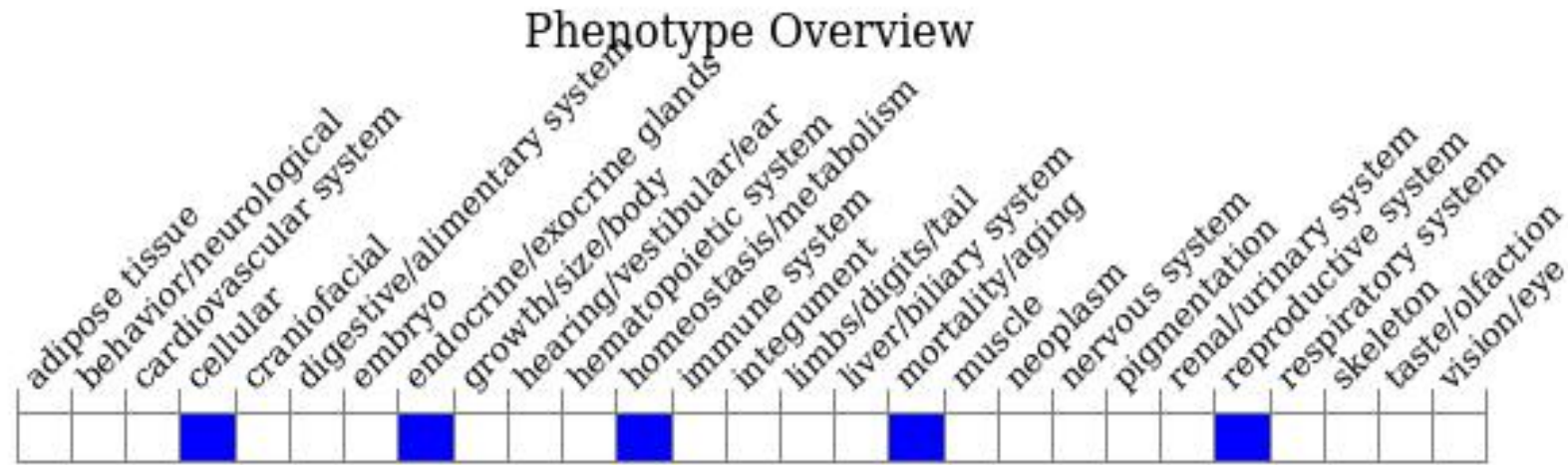
Genomic location distribution



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, mutant mice homozygous for a null mutation exhibit partial embryonic and perinatal lethality, and surviving adult males are sterile due to defects in spermatogenesis.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

