

Rbpj Cas9-KO Strategy

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Project Overview

Project Name

Rbpj

Project type

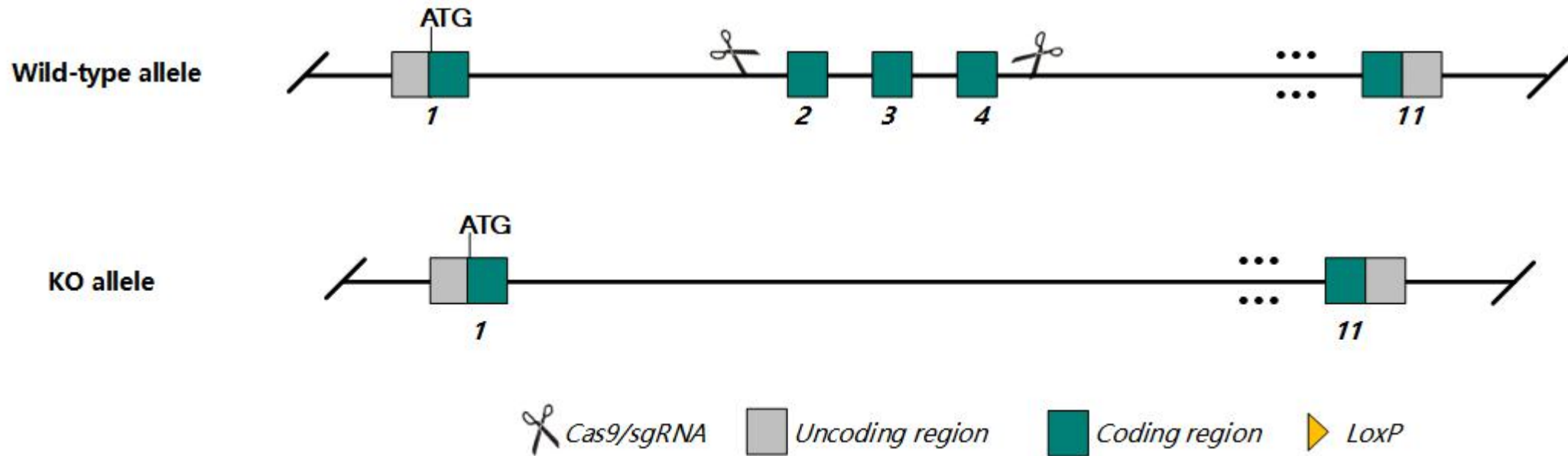
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



The *Rbpj* gene has 12 transcripts. According to the structure of *Rbpj* gene, exon2-exon4 of *Rbpj-201* ENSMUST00000037618.12) transcript is recommended as the knockout region. The region contains 80bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Rbpj* 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, Mice homozygous for a null allele exhibit complete prenatal lethality.

The *Rbpj* gene is located on the Chr5. 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.

Rbpj recombination signal binding protein for immunoglobulin kappa J region [Mus musculus (house mouse)]

Gene ID: 19664, updated on 12-Mar-2019

Summary



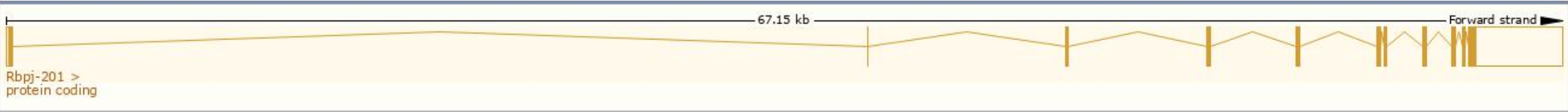
| | |
|---------------------------|---|
| Official Symbol | Rbpj provided by MGI |
| Official Full Name | recombination signal binding protein for immunoglobulin kappa J region provided by MGI |
| Primary source | MGI:MGI:96522 |
| See related | Ensembl:ENSMUSG00000039191 |
| Gene type | protein coding |
| 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 | AI843960, CBF1, Igkjrb, Igkrsbp, RBP-J, RBP-J kappa, RBP-Jkappa, RBPjk, Rbpsuh |
| Expression | Ubiquitous expression in limb E14.5 (RPKM 12.9), CNS E11.5 (RPKM 12.5) and 28 other tissues See more |
| Orthologs | human all |

Transcript information Ensembl

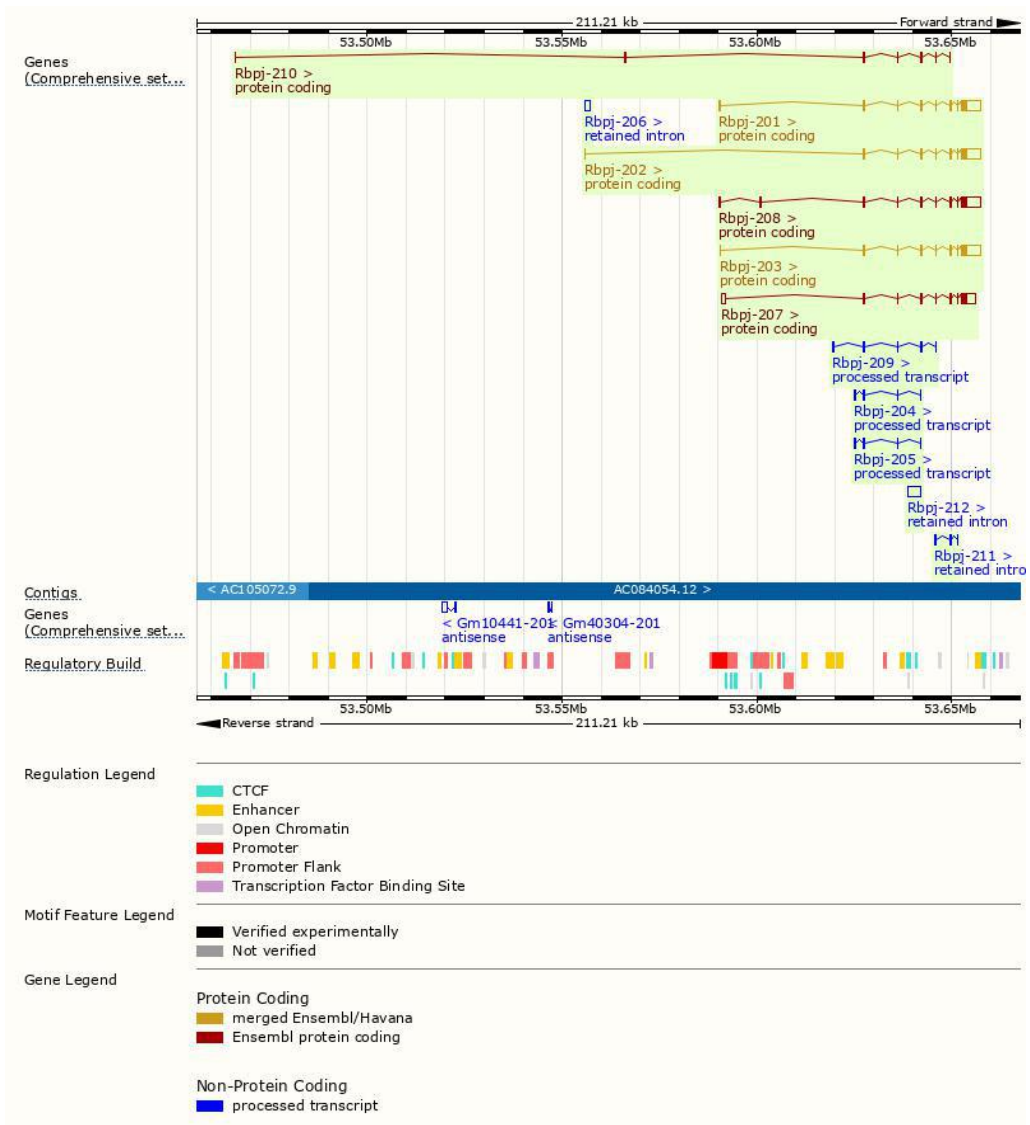
The gene has 12 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | RefSeq | Flags |
|----------|---------------------------------------|------|-----------------------|----------------------|---------------------------|---|--|-------------------------------|
| Rbpj-201 | ENSMUST00000037618.12 | 5459 | 526aa | Protein coding | CCDS19292 | P31266 | NM_009035 NP_033061 | TSL:1 Gencode basic |
| Rbpj-202 | ENSMUST00000087360.8 | 5252 | 485aa | Protein coding | CCDS51503 | E9Q7W0 | NM_001080928 NP_001074397 | TSL:5 Gencode basic |
| Rbpj-203 | ENSMUST00000113865.4 | 5440 | 487aa | Protein coding | CCDS51504 | P31266 Q3UM17 | NM_001080927 NP_001074396 | TSL:1 Gencode basic APPRIS P1 |
| Rbpj-204 | ENSMUST00000200856.3 | 499 | No protein | Processed transcript | - | - | - | TSL:3 |
| Rbpj-205 | ENSMUST00000201701.1 | 516 | No protein | Processed transcript | - | - | - | TSL:2 |
| Rbpj-206 | ENSMUST00000201721.1 | 1519 | No protein | Retained intron | - | - | - | TSL:NA |
| Rbpj-207 | ENSMUST00000201883.3 | 4961 | 465aa | Protein coding | - | Q3U6F1 | - | TSL:1 Gencode basic |
| Rbpj-208 | ENSMUST00000201912.3 | 5485 | 507aa | Protein coding | CCDS80283 | A0A0J9YTV5 | NM_001277116 NP_001264045 | TSL:1 Gencode basic |
| Rbpj-209 | ENSMUST00000201928.3 | 548 | No protein | Processed transcript | - | - | - | TSL:3 |
| Rbpj-210 | ENSMUST00000201991.3 | 687 | 180aa | Protein coding | - | A0A0J9YVE0 | - | CDS 3' incomplete TSL:5 |
| Rbpj-211 | ENSMUST00000202092.1 | 678 | No protein | Retained intron | - | - | - | TSL:2 |
| Rbpj-212 | ENSMUST00000202476.1 | 3436 | No protein | Retained intron | - | - | - | TSL:NA |

The strategy is based on the design of *Rbpj-208* transcript,The transcription is shown below



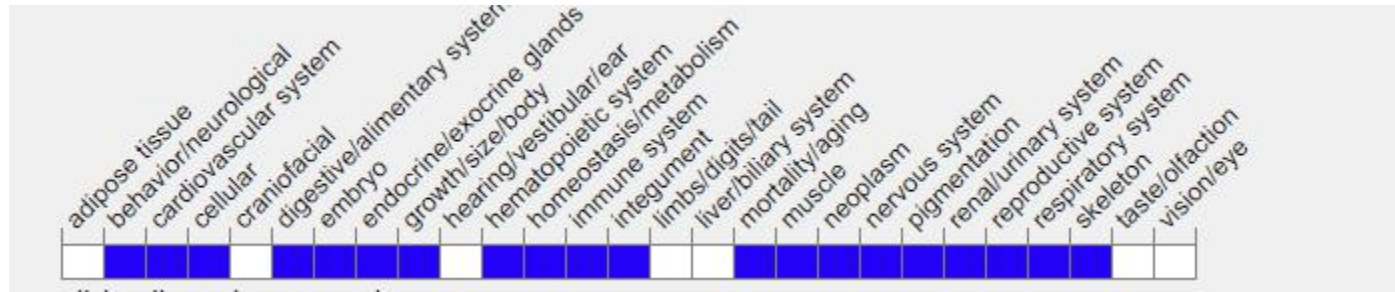
Genomic location distribution



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 null allele exhibit complete prenatal lethality.

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