

***Rgmb* Cas9-KO Strategy**

Designer: Lingyan Wu

Reviewer: Rui Xiong

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Project Overview

Project Name

Rgmb

Project type

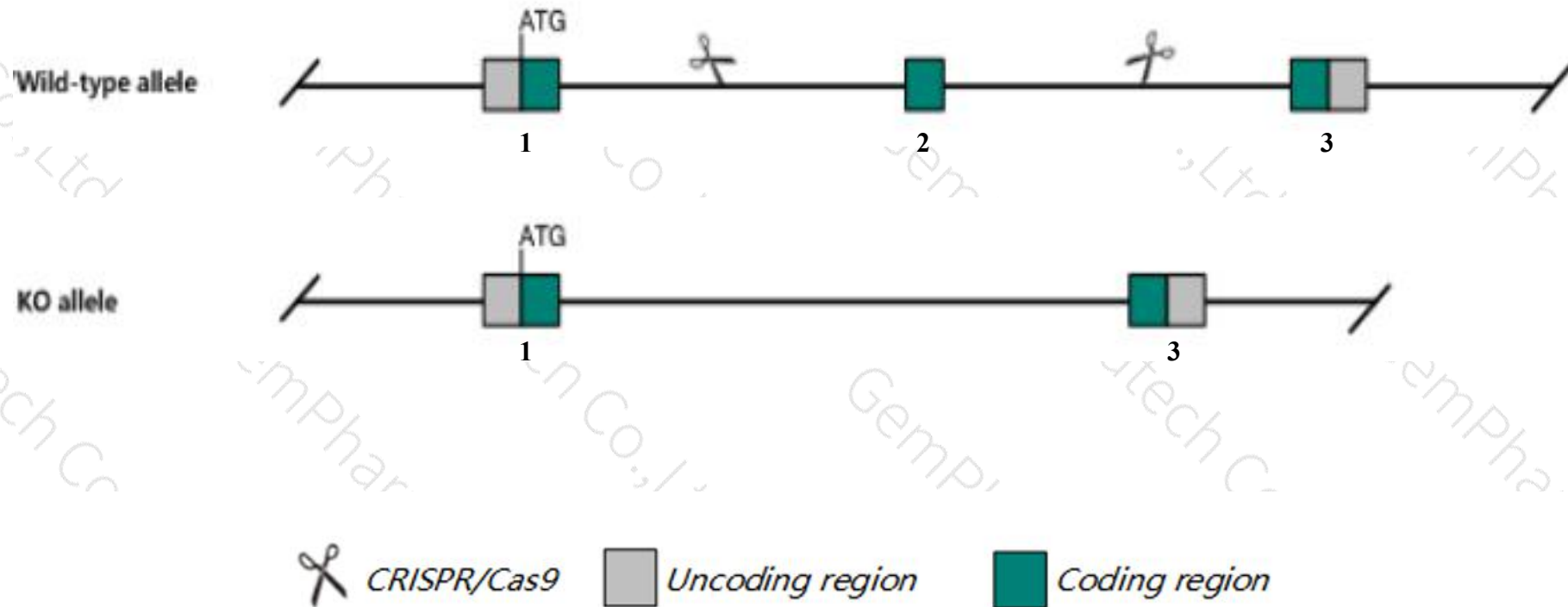
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Rgmb* gene has 7 transcripts. According to the structure of *Rgmb* gene, exon2 of *Rgmb-201* (ENSMUST00000170578.2) transcript is recommended as the knockout region. The region contains 509bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rgmb* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit lethality at 2 to 3 weeks after birth.
- Transcript *Rgmb-204* may not be affected.
- The *Rgmb* 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)

Rgmb repulsive guidance molecule family member B [Mus musculus (house mouse)]

Gene ID: 68799, updated on 13-Mar-2020

Summary



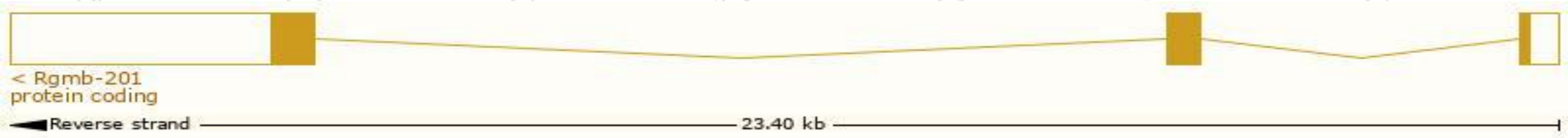
| | |
|---------------------------|---|
| Official Symbol | Rgmb provided by MGI |
| Official Full Name | repulsive guidance molecule family member B provided by MGI |
| Primary source | MGI:MGI:1916049 |
| See related | Ensembl:ENSMUSG00000048027 |
| Gene type | protein coding |
| RefSeq status | VALIDATED |
| Organism | Mus musculus |
| Lineage | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| Also known as | 1110059F19Rik, DRAGON |
| Expression | Ubiquitous expression in whole brain E14.5 (RPKM 29.6), colon adult (RPKM 24.5) and 23 other tissues See more |
| Orthologs | human all |

Transcript information (Ensembl)

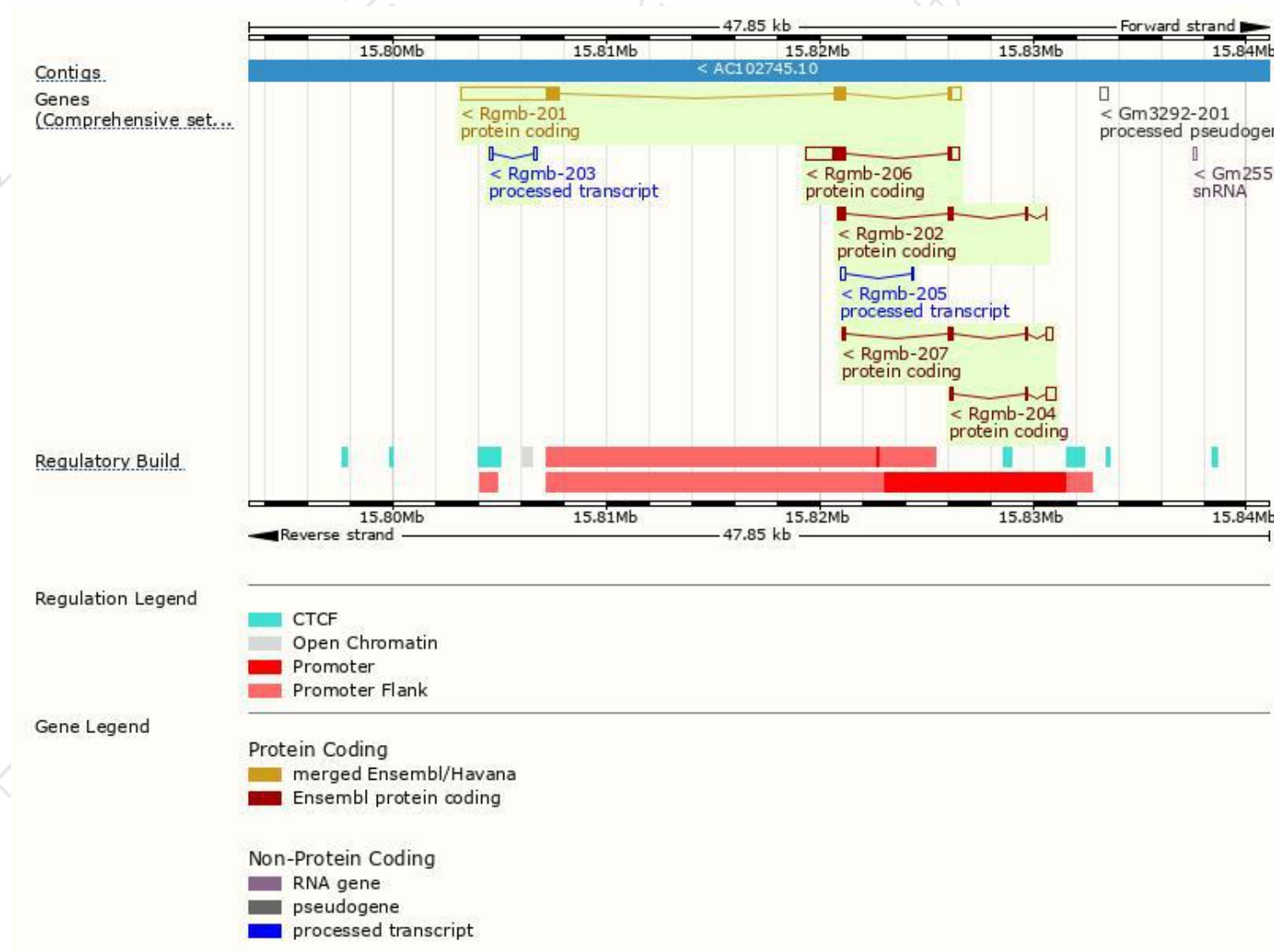
The gene has 7 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|----------|--------------------------------------|------|-----------------------|----------------------|---------------------------|----------------------------|-------------------------------|
| Rgmb-201 | ENSMUST00000170578.2 | 5698 | 436aa | Protein coding | CCDS37455 | Q7TQ33 | TSL:1 GENCODE basic APPRIS P1 |
| Rgmb-206 | ENSMUST00000232638.1 | 2383 | 239aa | Protein coding | - | A0A338P760 | GENCODE basic |
| Rgmb-207 | ENSMUST00000238157.1 | 742 | 135aa | Protein coding | - | A0A494B9Z4 | CDS 3' incomplete |
| Rgmb-204 | ENSMUST00000231985.1 | 717 | 19aa | Protein coding | - | A0A338P6J3 | CDS 3' incomplete |
| Rgmb-202 | ENSMUST00000231281.1 | 701 | 158aa | Protein coding | - | A0A338P6V4 | CDS 3' incomplete |
| Rgmb-205 | ENSMUST00000232592.1 | 301 | No protein | Processed transcript | - | - | |
| Rgmb-203 | ENSMUST00000231906.1 | 290 | No protein | Processed transcript | - | - | |

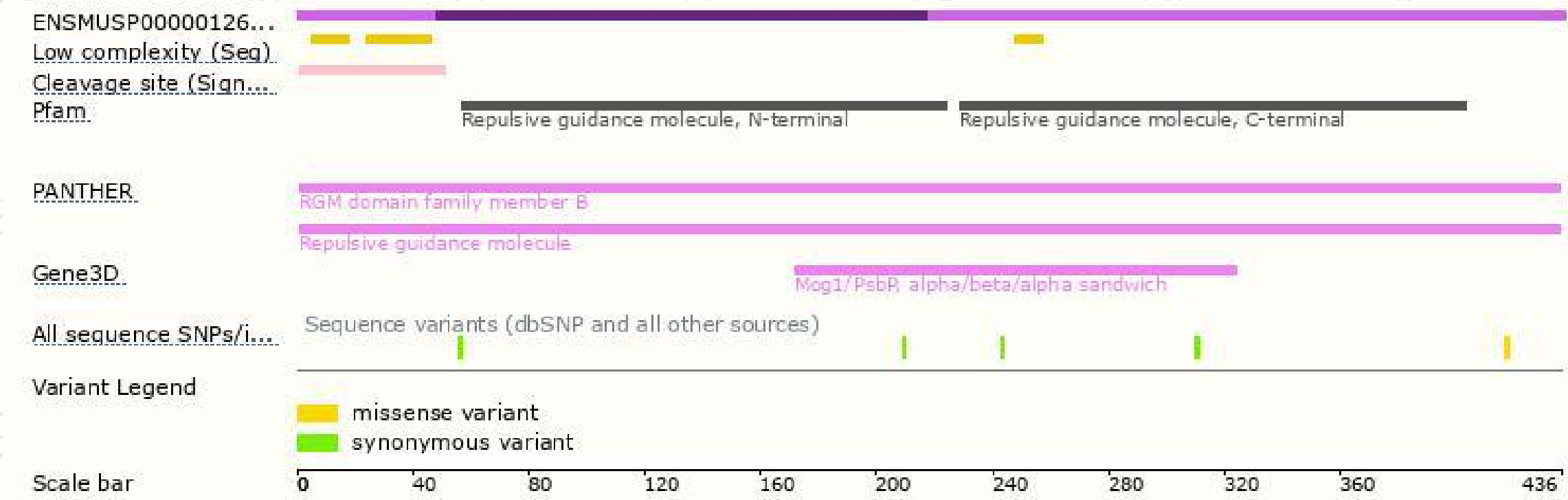
The strategy is based on the design of *Rgmb-201* transcript,the transcription is shown below:



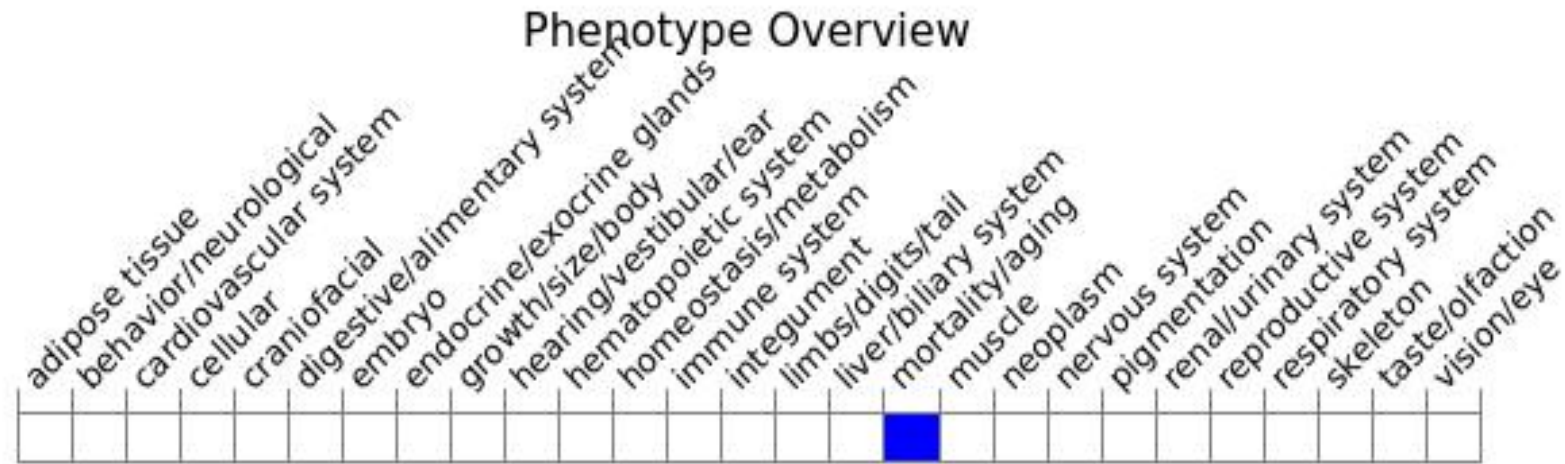
Genomic location distribution



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, mice homozygous for a knock-out allele exhibit lethality at 2 to 3 weeks after birth.

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

Tel: 400-9660890

