

# ***Rab2b* Cas9-CKO Strategy**

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# Project Overview

**Project Name**

***Rab2b***

**Project type**

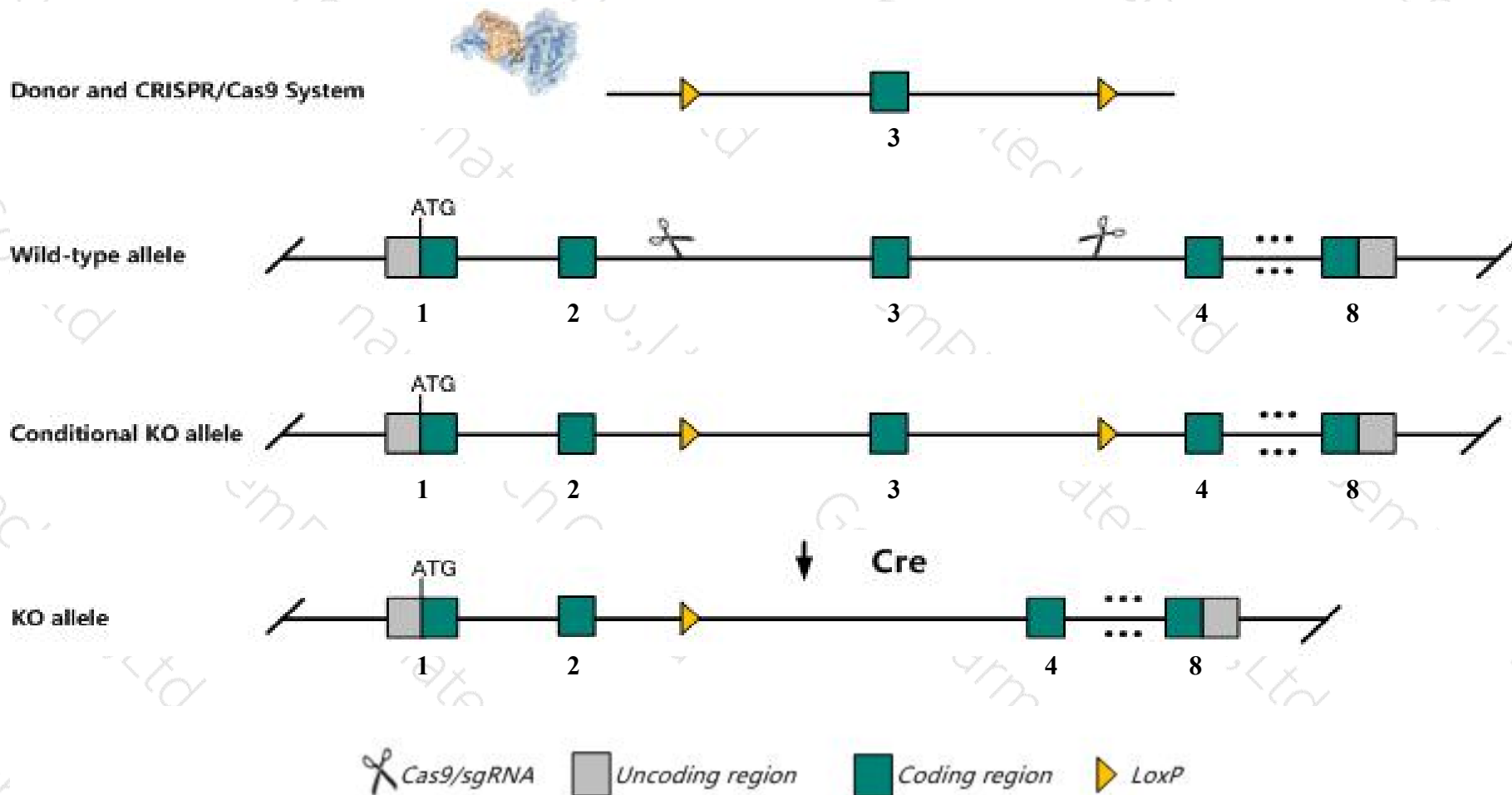
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rab2b* gene. The schematic diagram is as follows:



# Technical routes

- The *Rab2b* gene has 8 transcripts. According to the structure of *Rab2b* gene, exon3 of *Rab2b-201*(ENSMUST00000022765.13) transcript is recommended as the knockout region. The region contains 68bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rab2b* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor 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.
- The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- The *Rab2b* gene is located on the Chr14. 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.
- Transcript *Rab2b*-208 may not be affected.
- The floxed region is near to the N-terminal of *Tox4* gene and *Gm23758* gene, this strategy may influence the regulatory function of the N-terminal of these genes.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.



# Gene information (NCBI)

## Rab2b RAB2B, member RAS oncogene family [Mus musculus (house mouse)]

Gene ID: 76338, updated on 13-Mar-2020

### Summary



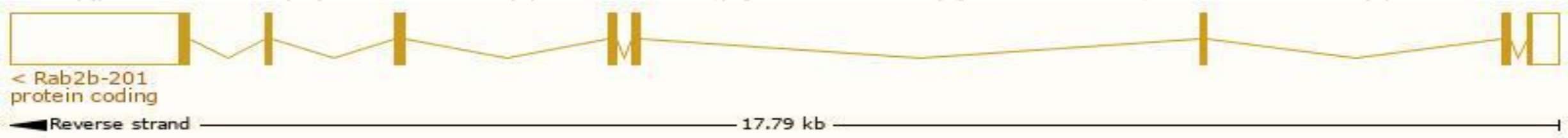
<b>Official Symbol</b>	Rab2b provided by <a href="#">MGI</a>
<b>Official Full Name</b>	RAB2B, member RAS oncogene family provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1923588</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000022159</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	1500012D09Rik, 4930528G15Rik, A230002G14, D530043M21Rik
<b>Expression</b>	Ubiquitous expression in whole brain E14.5 (RPKM 15.1), CNS E18 (RPKM 14.2) and 24 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

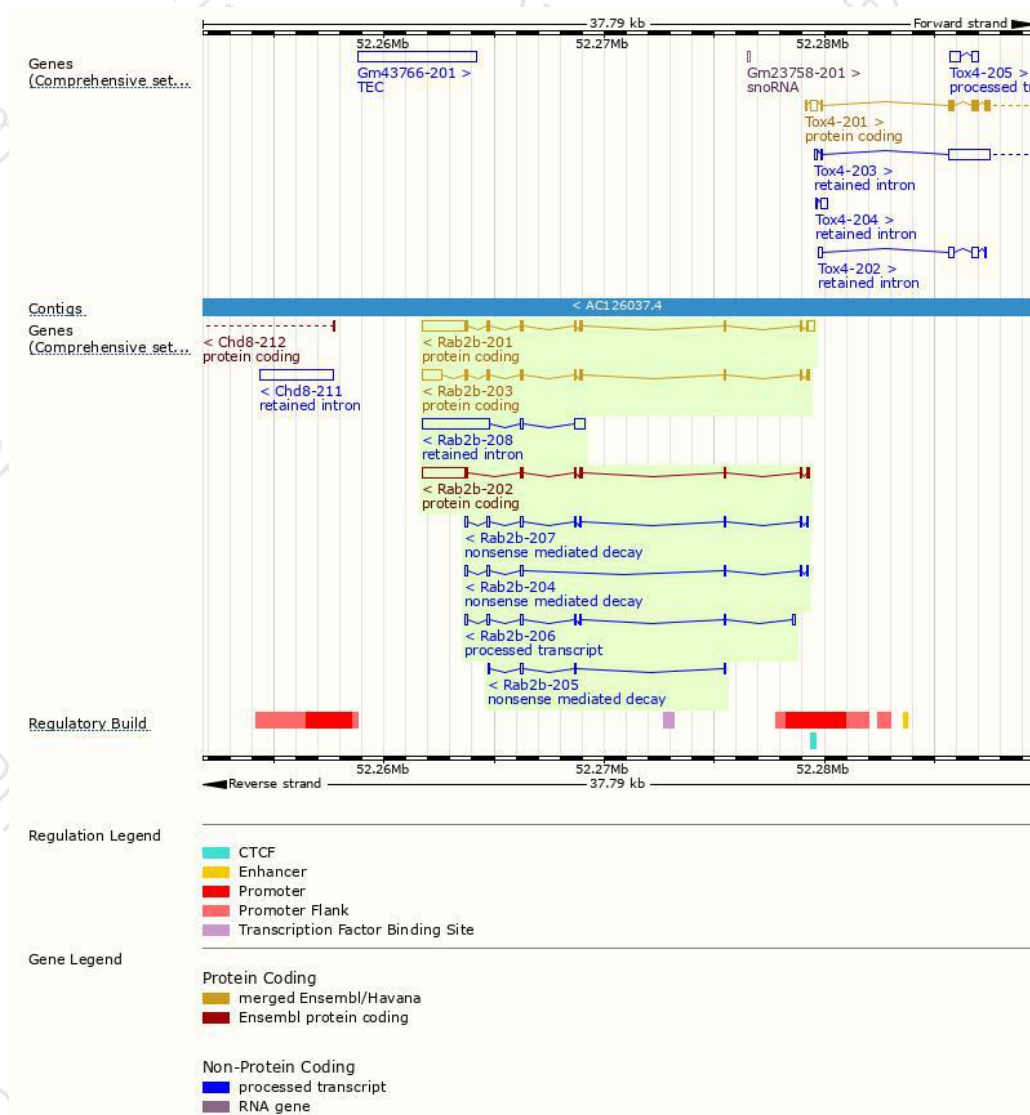
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rab2b-201	<a href="#">ENSMUST00000022765.13</a>	2906	<a href="#">216aa</a>	Protein coding	<a href="#">CCDS27052</a>	<a href="#">P59279 Q0PD64</a>	TSL:1 GENCODE basic APPRIS P1
Rab2b-203	<a href="#">ENSMUST00000167116.7</a>	1573	<a href="#">216aa</a>	Protein coding	<a href="#">CCDS27052</a>	<a href="#">P59279 Q0PD64</a>	TSL:1 GENCODE basic APPRIS P1
Rab2b-202	<a href="#">ENSMUST00000100631.10</a>	2619	<a href="#">193aa</a>	Protein coding	-	<a href="#">Q3TEG7</a>	TSL:1 GENCODE basic
Rab2b-207	<a href="#">ENSMUST00000174020.7</a>	607	<a href="#">71aa</a>	Nonsense mediated decay	-	<a href="#">G3V022</a>	TSL:5
Rab2b-204	<a href="#">ENSMUST00000172488.7</a>	475	<a href="#">62aa</a>	Nonsense mediated decay	-	<a href="#">G3UXQ7</a>	TSL:5
Rab2b-205	<a href="#">ENSMUST00000172634.1</a>	270	<a href="#">45aa</a>	Nonsense mediated decay	-	<a href="#">G3UZ24</a>	CDS 5' incomplete TSL:5
Rab2b-206	<a href="#">ENSMUST00000173046.7</a>	576	No protein	Processed transcript	-	-	TSL:5
Rab2b-208	<a href="#">ENSMUST00000174585.7</a>	3576	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Rab2b-201* transcript,the transcription is shown below:

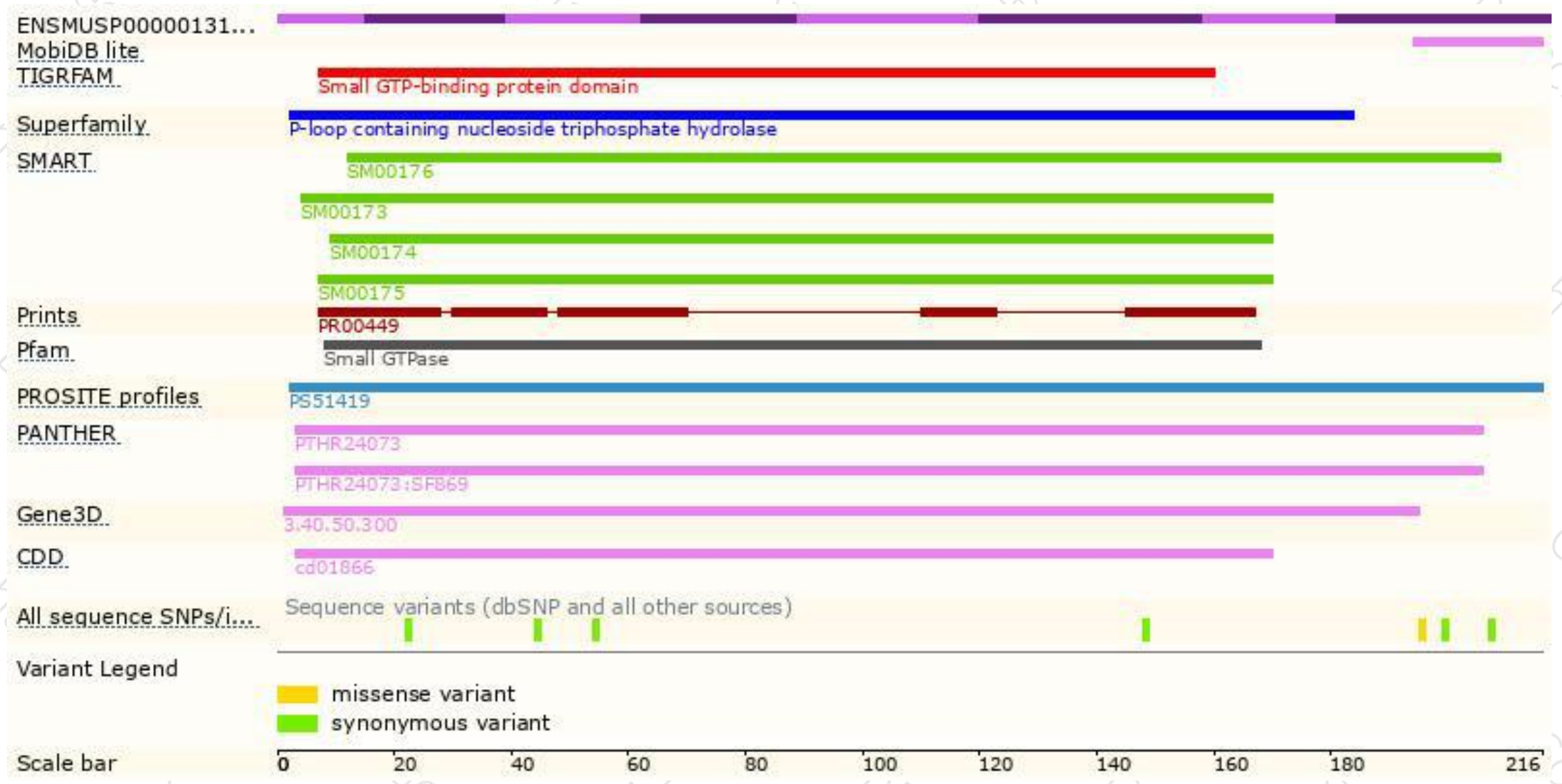


# Genomic location distribution





# Protein domain



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

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