Rap1b Cas9-CKO Strategy

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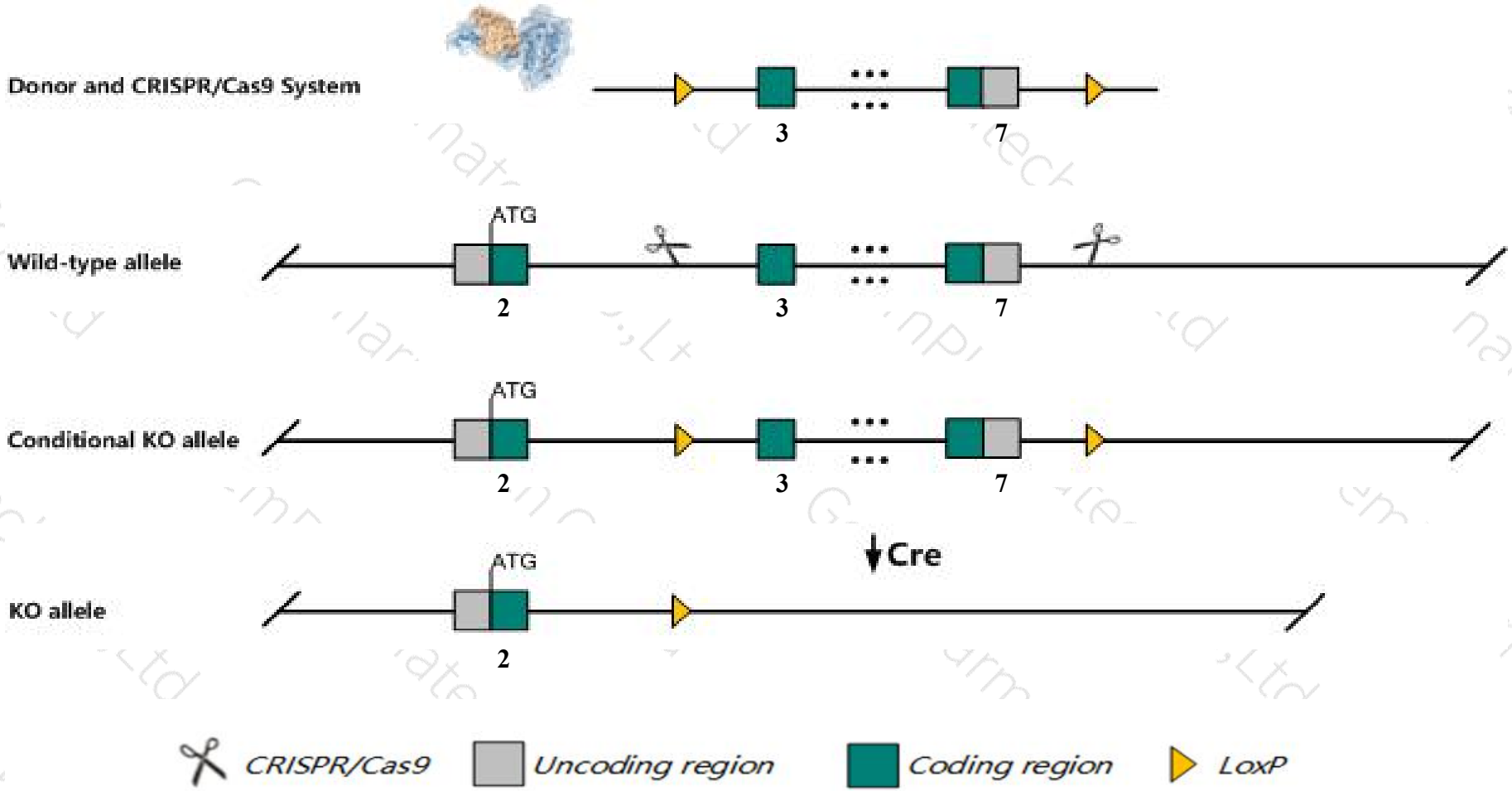
Project Overview

Project Name	***Rap1b***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rap1b* gene. The schematic diagram is as follows:



Technical routes

- The *Rap1b* gene has 2 transcripts. According to the structure of *Rap1b* gene, exon3-exon7 of *Rap1b-201* (ENSMUST00000064667.8) transcript is recommended as the knockout region.The region contains most 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 *Rap1b* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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.

Notice

- According to the existing MGI data,Homozygous null mice display partial embryonic and perinatal lethality, abdominal, cranial, and hepatic bleeding in mice that die in utero, reduced platelet aggregation, and decreased thrombus formation.

- The *Rap1b* gene is located on the Chr10. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Rap1b RAS related protein 1b [*Mus musculus* (house mouse)]

Gene ID: 215449, updated on 21-Dec-2019

Summary

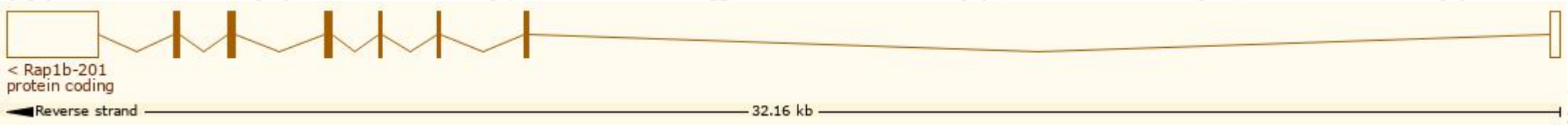
Official Symbol	Rap1b provided by MGI
Official Full Name	RAS related protein 1b provided by MGI
Primary source	MGI:MGI:894315
See related	Ensembl:ENSMUSG00000052681
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2810443E11Rik
Expression	Ubiquitous expression in placenta adult (RPKM 61.6), bladder adult (RPKM 57.0) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

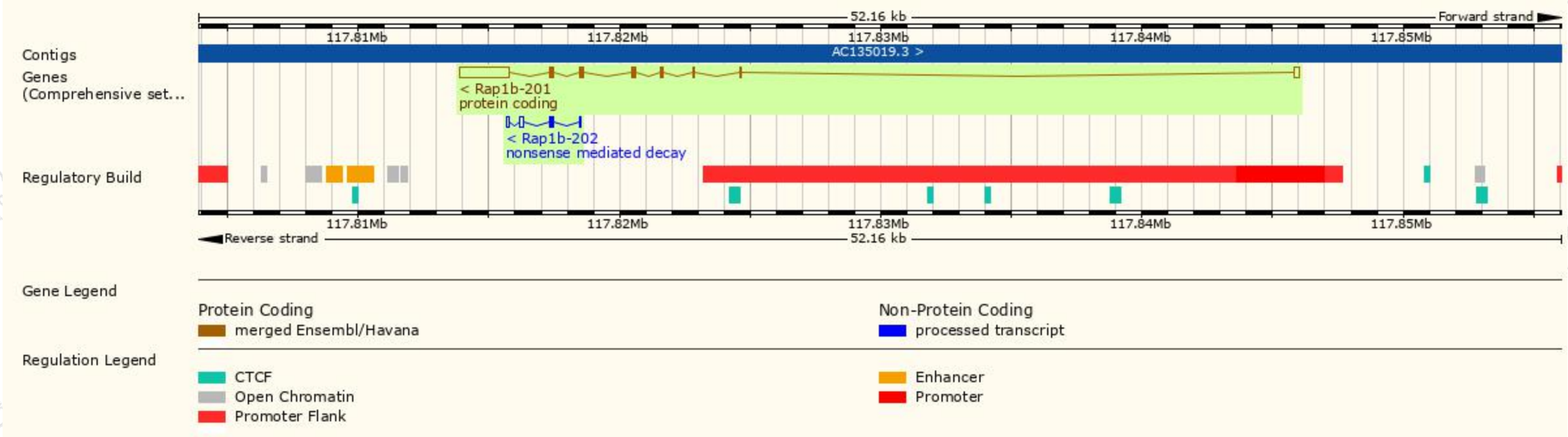
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rap1b-201	ENSMUST00000064667.8	2724	184aa	Protein coding	CCDS24196	Q52L50 Q99JI6	TSL:1 GENCODE basic APPRIS P1
Rap1b-202	ENSMUST00000220214.1	473	53aa	Nonsense mediated decay	-	A0A1W2P777	CDS 5' incomplete TSL:3

The strategy is based on the design of *Rap1b-201* transcript, the transcription is shown below:

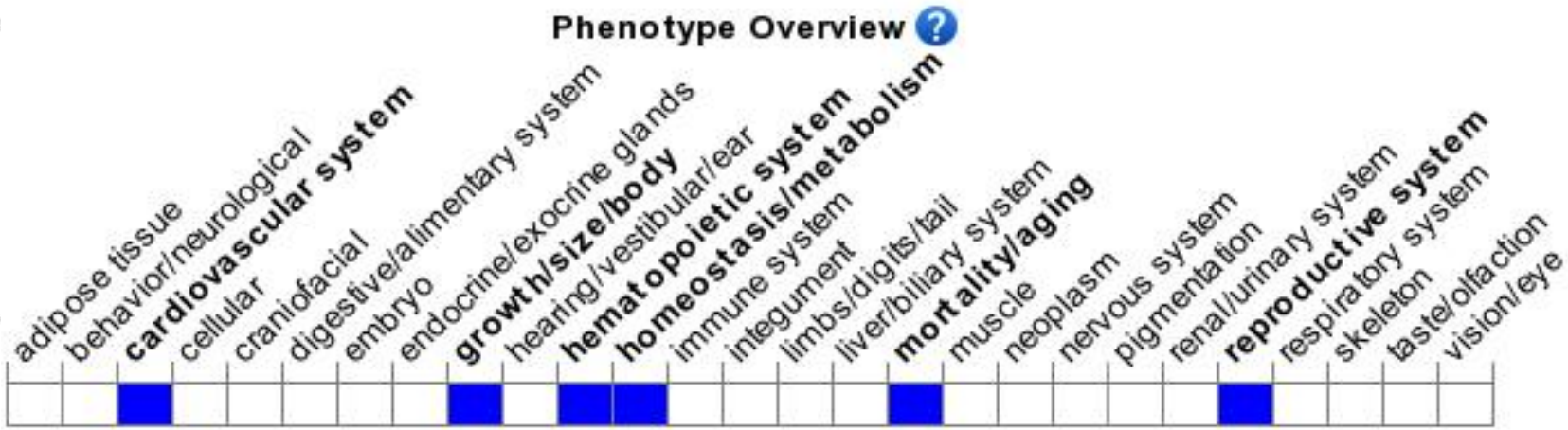


Genomic location distribution



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/).

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

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