

Ramp1 Cas9-CKO Strategy

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Project Overview



Project Name

Ramp1

Project type

Cas9-CKO

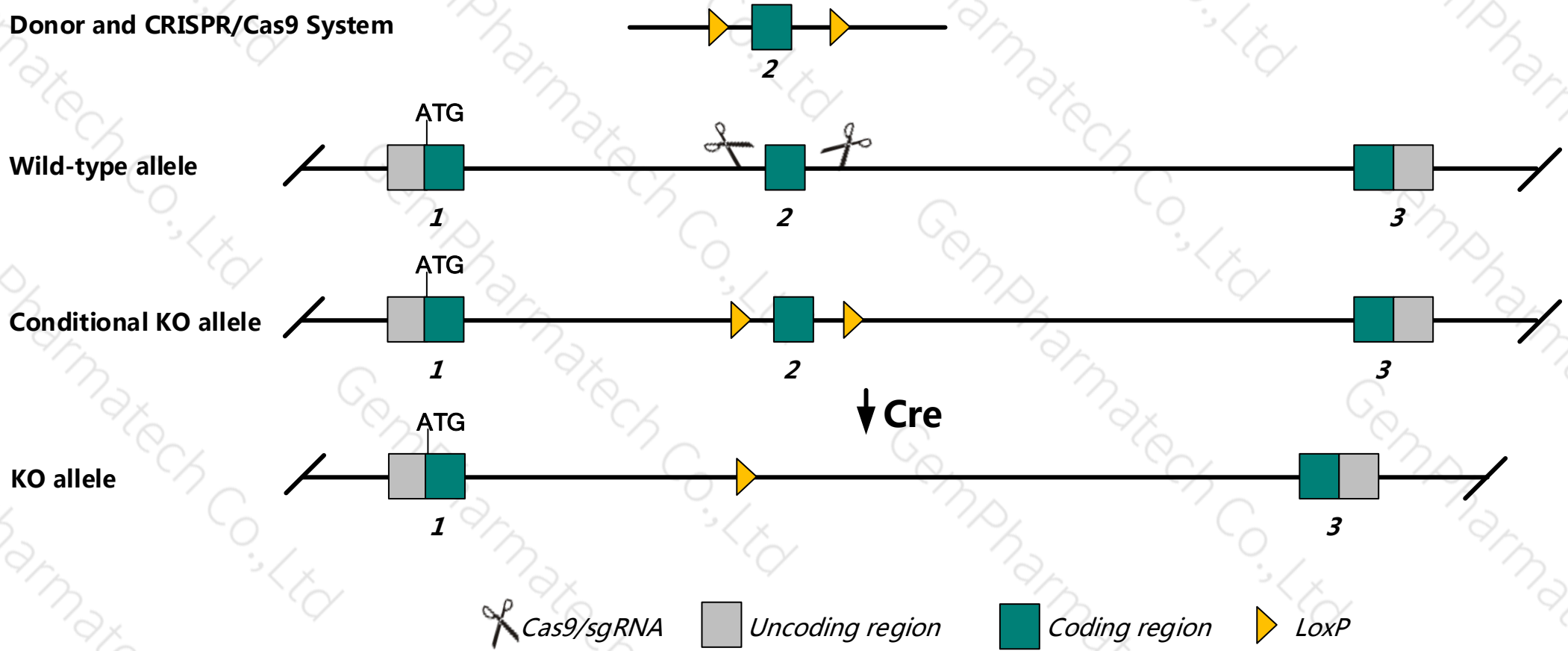
Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ramp1* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System



- The *Ramp1* gene has 3 transcripts. According to the structure of *Ramp1* gene, exon2 of *Ramp1*-201 (ENSMUST00000097648.5) transcript is recommended as the knockout region. The region contains 139bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ramp1* 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 or cell types.

- According to the existing MGI data , Mice homozygous for a knock-out allele exhibit high systolic blood pressure due to a disruption in vasodilatory regulation as well as significantly increased serum levels of proinflammatory cytokines following LPS administration.
- The *Ramp1* gene is located on the Chr1. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ramp1 receptor (calcitonin) activity modifying protein 1 [*Mus musculus* (house mouse)]

Gene ID: 51801, updated on 18-Sep-2018

Summary

Official Symbol	Ramp1 provided by MGI
Official Full Name	receptor (calcitonin) activity modifying protein 1 provided by MGI
Primary source	MGI:MGI:1858418
See related	Ensembl:ENSMUSG000000034353 Vega:OTTMUSG000000048487
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	9130218E19Rik
Expression	Broad expression in thymus adult (RPKM 23.9), colon adult (RPKM 15.0) and 16 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

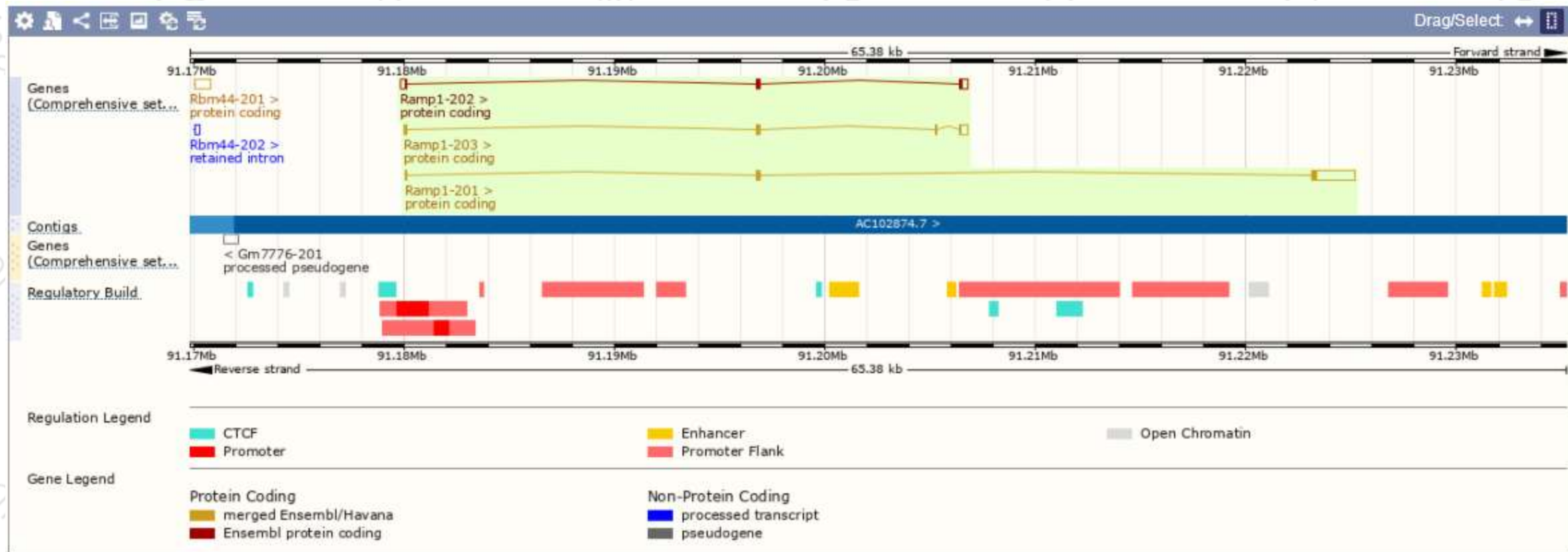
The gene has 3 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)								Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags	
Ramp1-201	ENSMUST00000097648.5	2325	148aa	<div><div></div>Protein coding</div>	CCDS15158	Q3TNJ3 Q9WTJ5	NM_016894 NP_058590	<div>TSL:1</div>	<div>GENCODE basic</div> <div>APPRIS P1</div>
Ramp1-202	ENSMUST00000165855.7	852	103aa	<div><div></div>Protein coding</div>	CCDS78648	E9Q915	NM_178401 NP_848488	<div>TSL:2</div>	<div>GENCODE basic</div>
Ramp1-203	ENSMUST00000188475.6	711	105aa	<div><div></div>Protein coding</div>	CCDS48321	A0A087WPC6	NM_001168392 NP_001161864	<div>TSL:3</div>	<div>GENCODE basic</div>

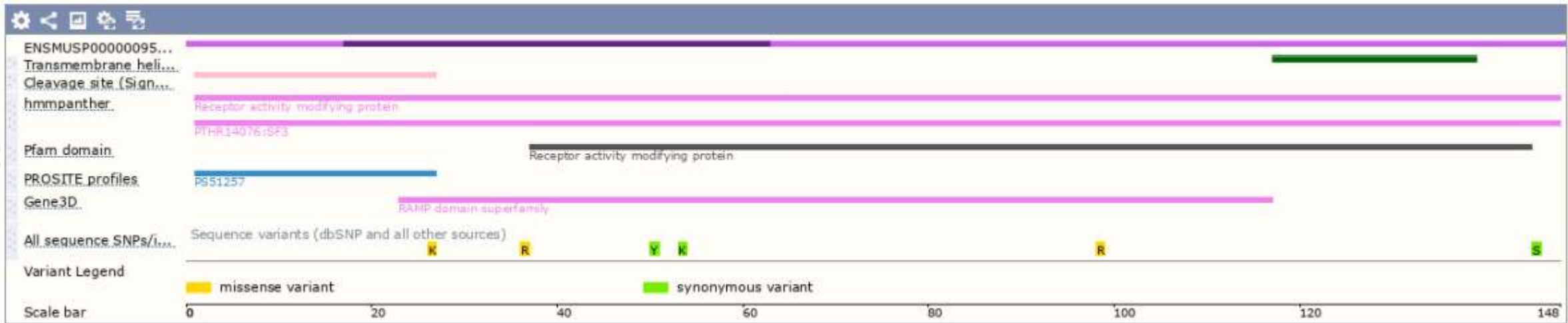
The strategy is based on the design of *Ramp1*-201 transcript,The transcription is shown below



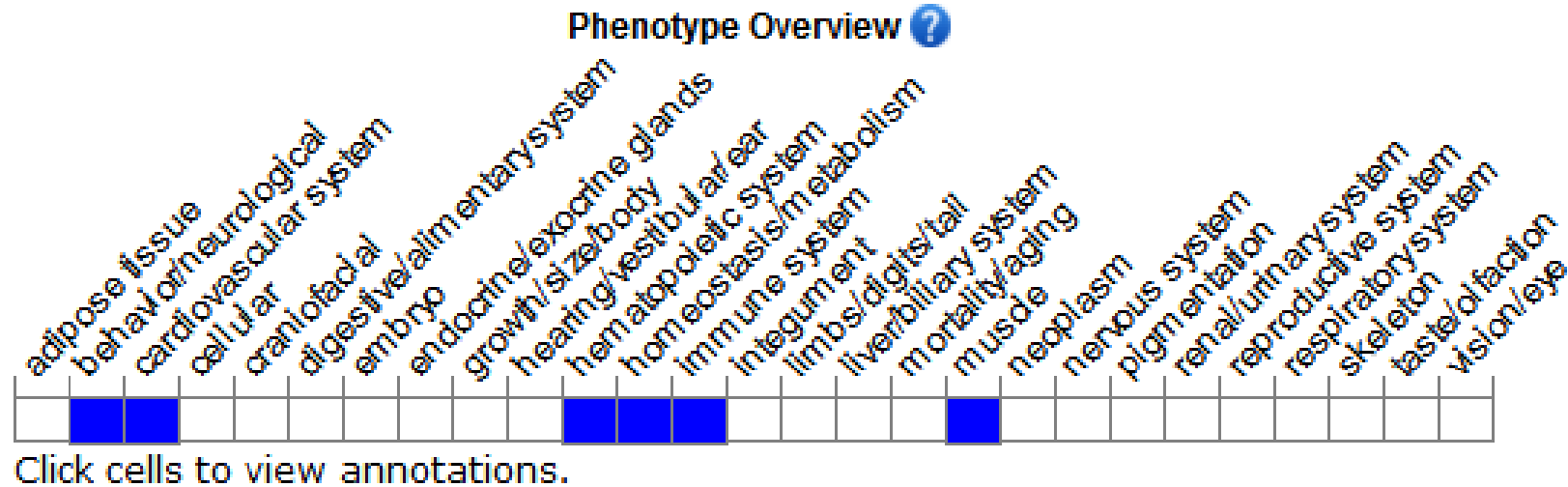
Genomic location distribution



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 high systolic blood pressure due to a disruption in vasodilatory regulation as well as significantly increased serum levels of proinflammatory cytokines following LPS administration.

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