

Rhoq Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Rhoq

Project type

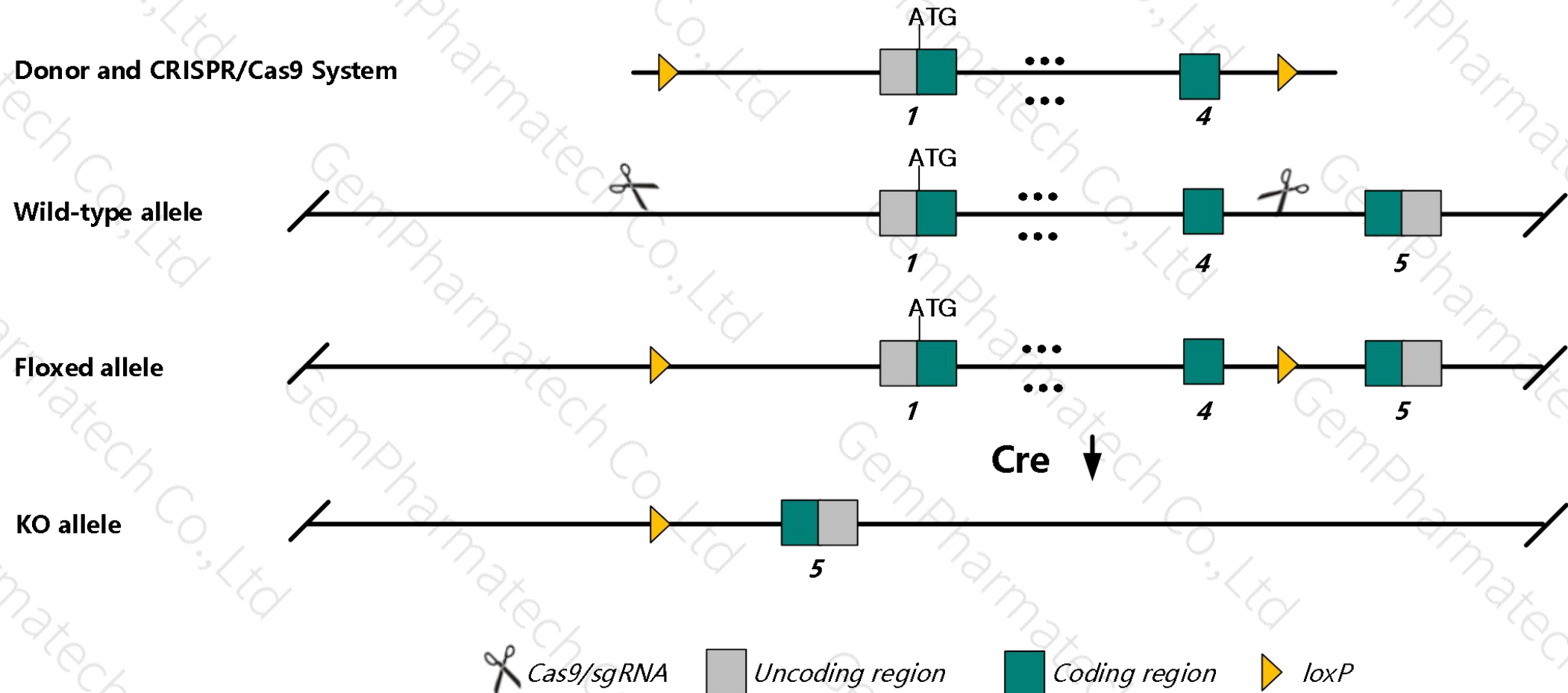
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Rhoq* gene has 3 transcripts. According to the structure of *Rhoq* gene, exon1-exon4 of *Rhoq-201* (ENSMUST00000024956.14) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rhoq* 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.

- The flox region contain the Gm50012 gene, which may delet it after Cre.
- The Rhoq 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Rhoq ras homolog family member Q [*Mus musculus* (house mouse)]

Gene ID: 104215, updated on 13-Mar-2020

Summary

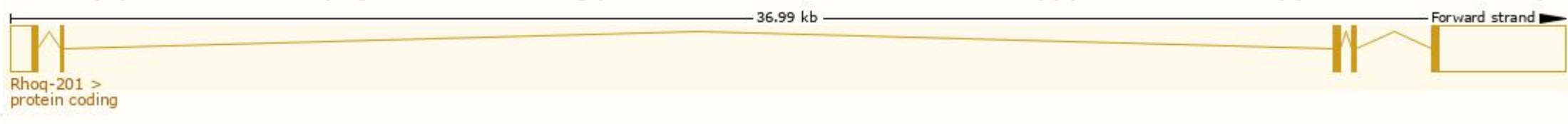
Official Symbol	Rhoq provided by MGI
Official Full Name	ras homolog family member Q provided by MGI
Primary source	MGI:MGI:1931553
See related	Ensembl:ENSMUSG00000024143
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Arhq; Tc10; TC10A
Expression	Ubiquitous expression in subcutaneous fat pad adult (RPKM 5.0), limb E14.5 (RPKM 4.7) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

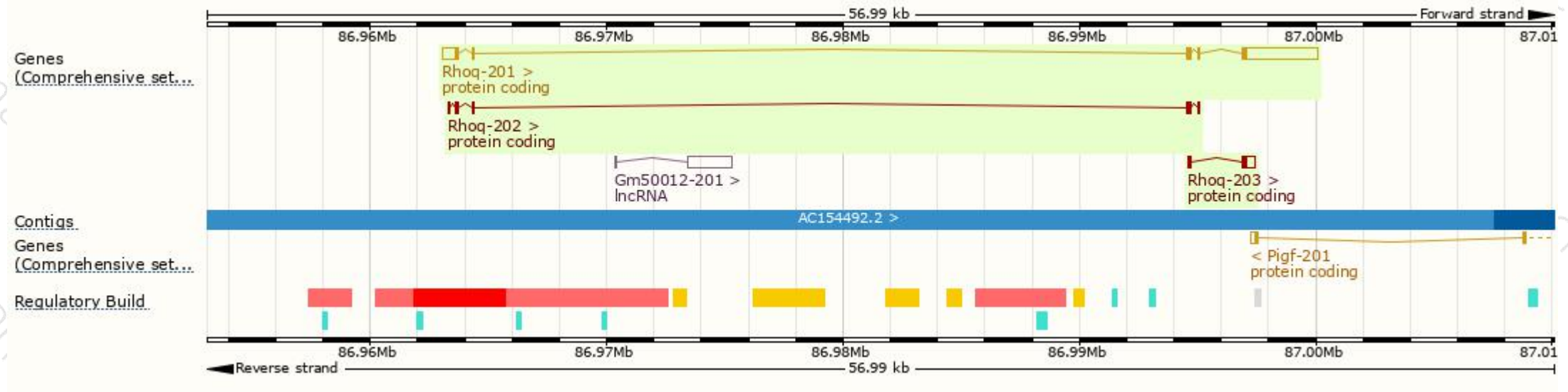
The gene has 3 transcripts, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rhoq-201	ENSMUST00000024956.14	4151	205aa	Protein coding	CCDS29010	Q8R527	TSL:1 GENCODE basic APPRIS P1
Rhoq-203	ENSMUST000000234309.1	653	94aa	Protein coding	-	A0A3Q4EHR0	GENCODE basic
Rhoq-202	ENSMUST000000139344.1	544	153aa	Protein coding	-	D3Z3L1	CDS 3' incomplete TSL:5

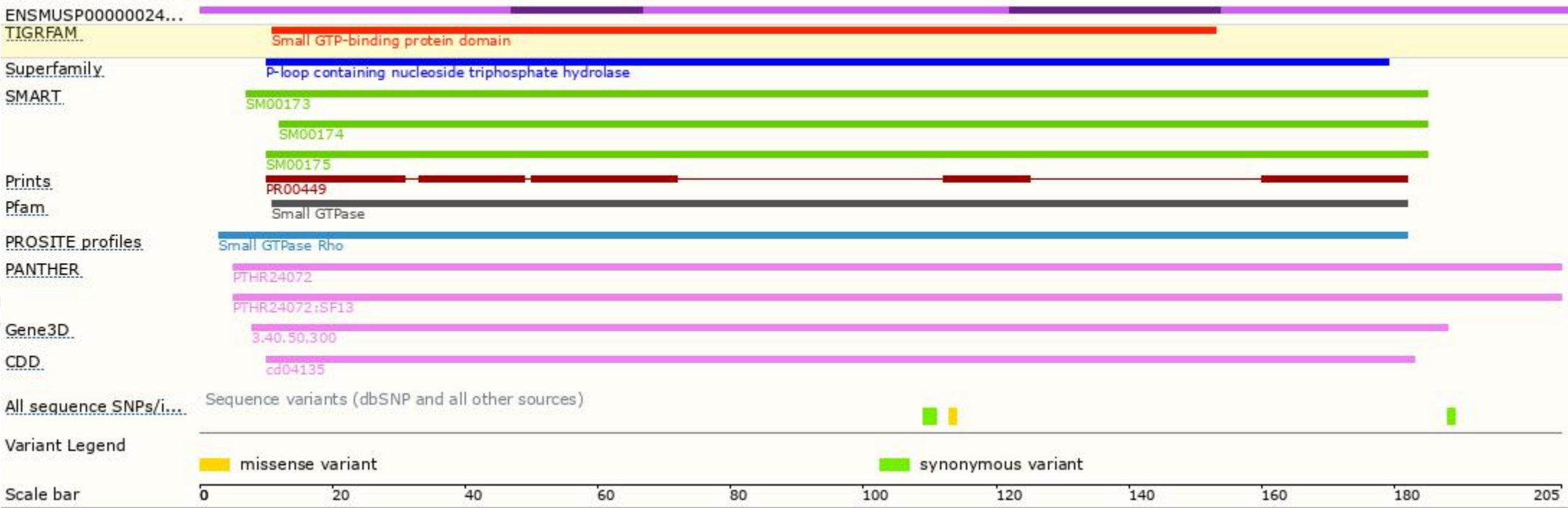
The strategy is based on the design of *Rhoq-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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

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