Rhpn2 Cas9-CKO Strategy

Designer: Lingyan Wu

Reviewer: Rui Xiong

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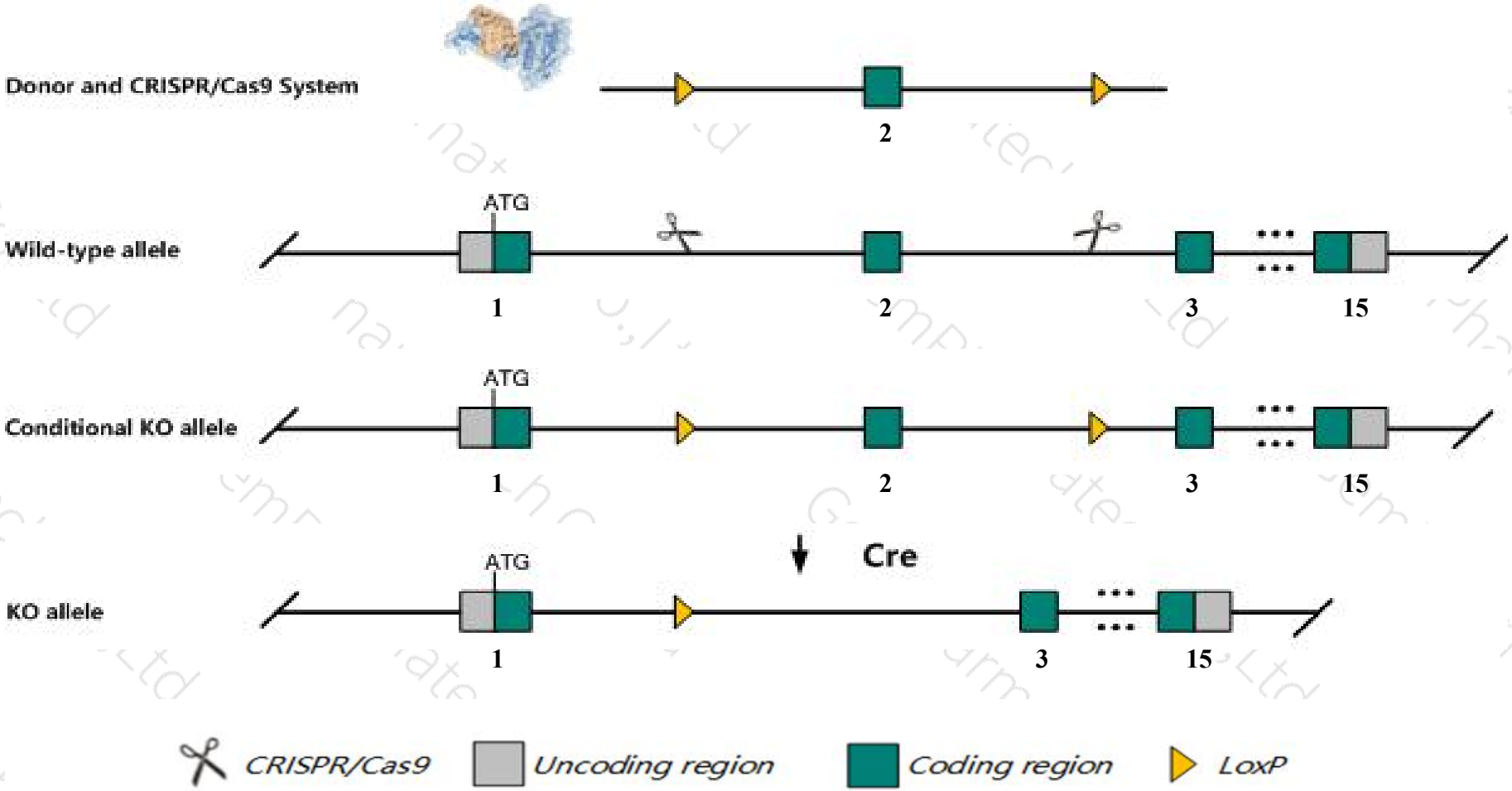
Project Overview

Project Name	***Rhpn2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rhpn2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Rhpn2* gene has 4 transcripts. According to the structure of *Rhpn2* gene, exon2 of *Rhpn2-201*(ENSMUST00000032705.12) transcript is recommended as the knockout region.The region contains 116bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rhpn2* 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 are fertile and have normal body weight and size, normal thyroid morphology and function, and normal brain, lung, ovary, testis, and kidney morphology.

➢ The *Rhpn2* gene is located on the Chr7. 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）

集萃药康 GemPharmatech

Rhpn2 rhophilin, Rho GTPase binding protein 2 [Mus musculus (house mouse)]

Gene ID: 52428, updated on 13-Mar-2020

Summary

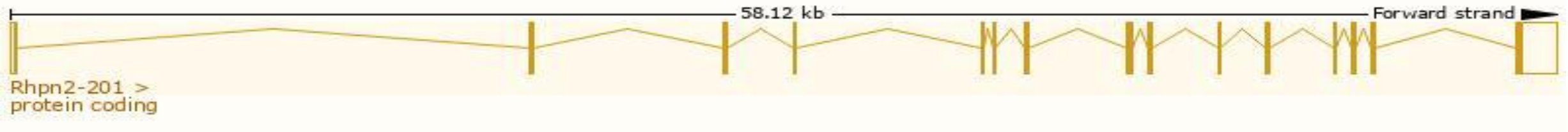
Official Symbol	Rhpn2 provided by MGI
Official Full Name	rhophilin, Rho GTPase binding protein 2 provided by MGI
Primary source	MGI:MGI:1289234
See related	Ensembl:ENSMUSG00000030494
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1300002E07Rik, AA536890, C85860, D7Ertd784e
Expression	Broad expression in colon adult (RPKM 23.4), large intestine adult (RPKM 13.8) and 19 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

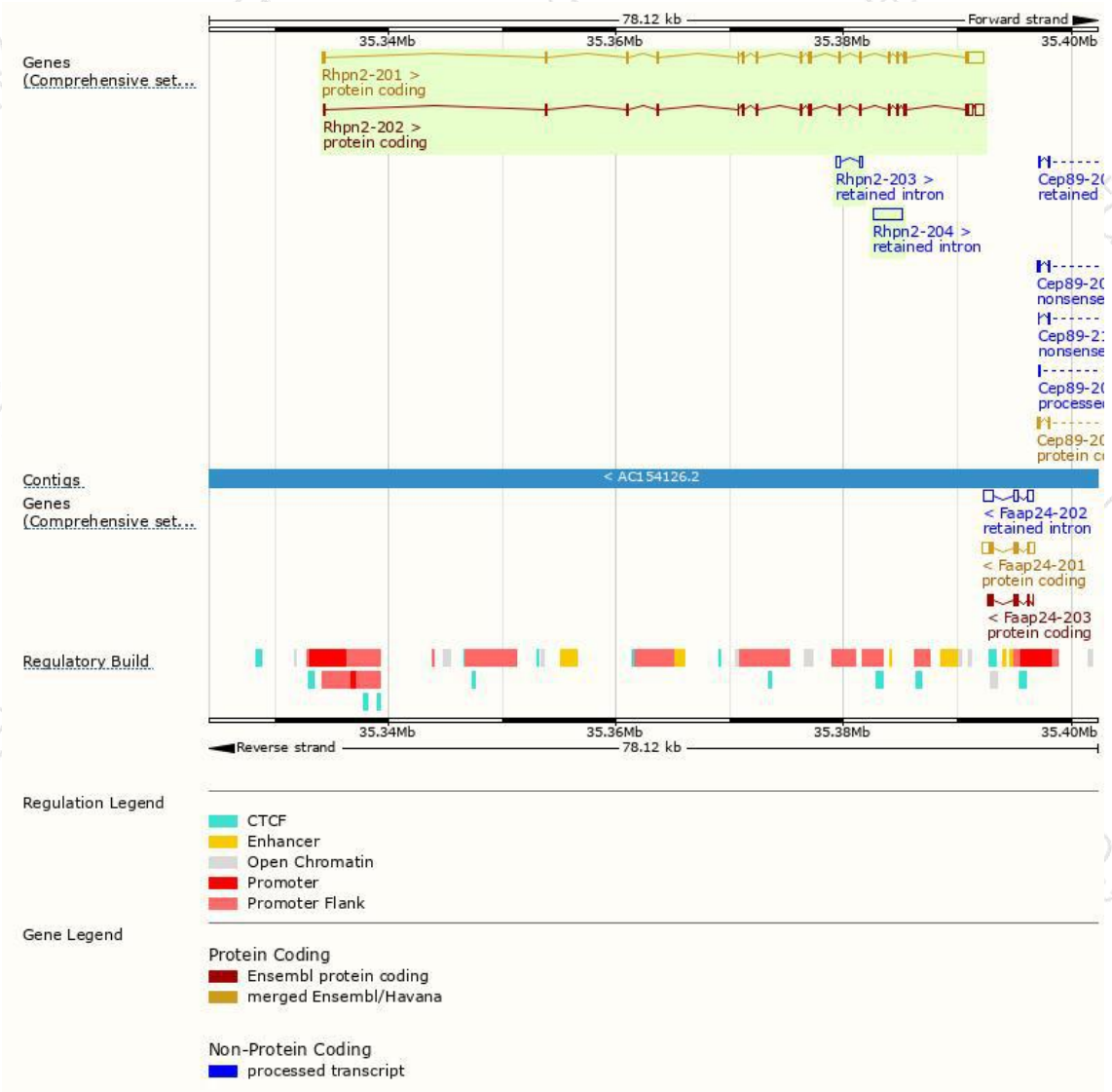
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rhpn2-201	ENSMUST00000032705.12	3508	686aa	Protein coding	CCDS21148	Q8BWR8	TSL:1 GENCODE basic APPRIS P1
Rhpn2-202	ENSMUST00000085556.3	3046	686aa	Protein coding	CCDS21148	Q8BWR8	TSL:1 GENCODE basic APPRIS P1
Rhpn2-204	ENSMUST00000187997.1	2646	No protein	Retained intron	-	-	TSL:NA
Rhpn2-203	ENSMUST00000155140.1	689	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Rhpn2-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd