

Rpa2 Cas9-CKO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2019-11-22

Project Overview

Project Name

Rpa2

Project type

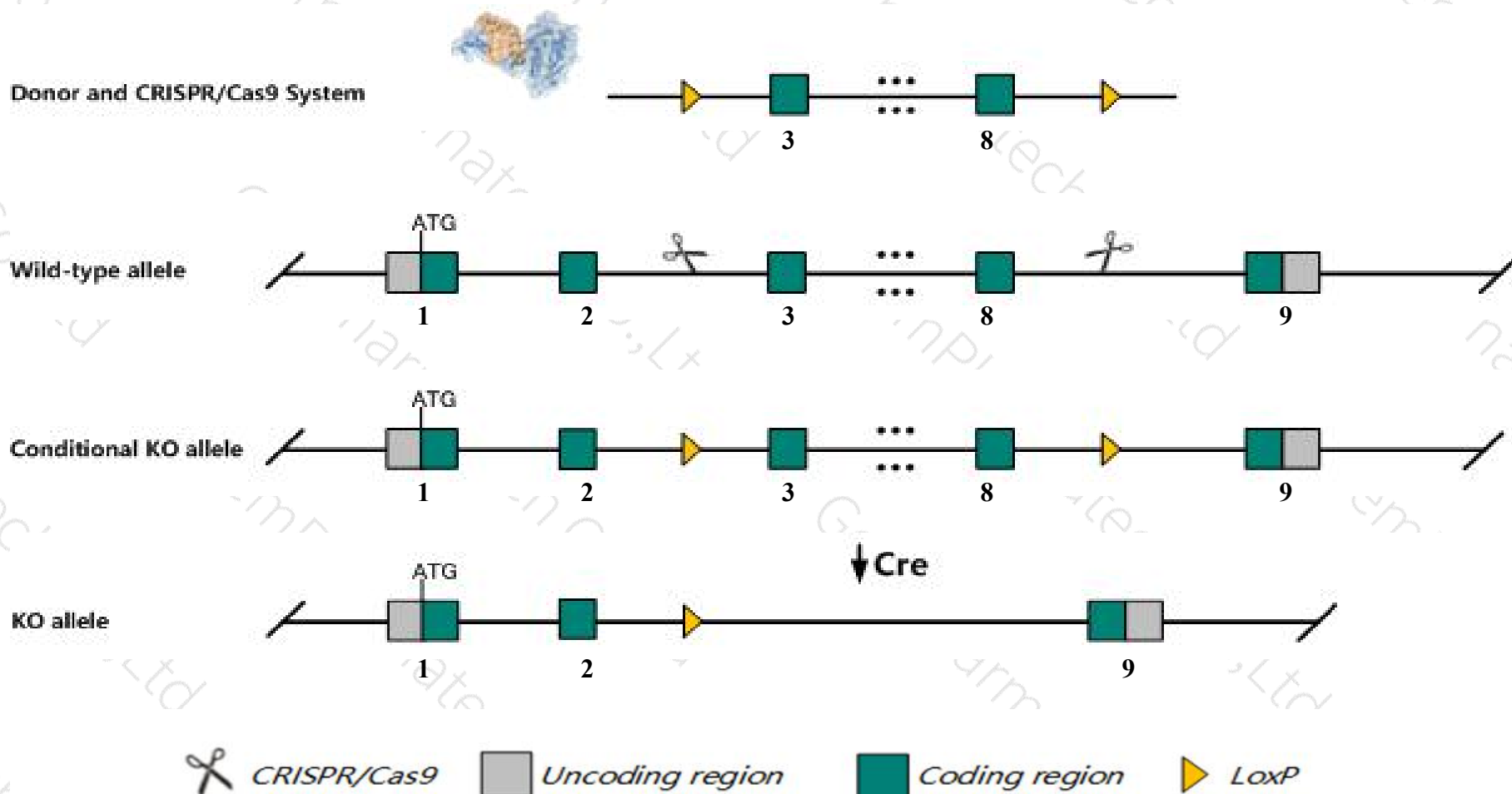
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rpa2* gene. The schematic diagram is as follows:



- The *Rpa2* gene has 6 transcripts. According to the structure of *Rpa2* gene, exon3-exon8 of *Rpa2-201* (ENSMUST00000102561.10) transcript is recommended as the knockout region. The region contains 611bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rpa2* 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

- The *Rpa2* gene is located on the Chr4. 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)

Rpa2 replication protein A2 [Mus musculus (house mouse)]

Gene ID: 19891, updated on 5-Feb-2019

Summary



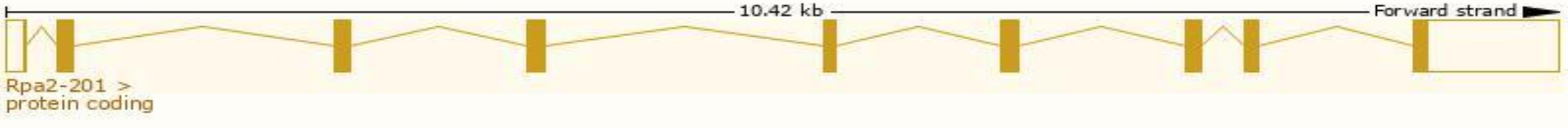
Official Symbol	Rpa2 provided by MGI
Official Full Name	replication protein A2 provided by MGI
Primary source	MGI:MGI:1339939
See related	Ensembl:ENSMUSG00000028884
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA409079, AI325195, AU020965, RPA34, Rf-A2
Expression	Broad expression in liver E14 (RPKM 35.0), liver E14.5 (RPKM 32.2) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

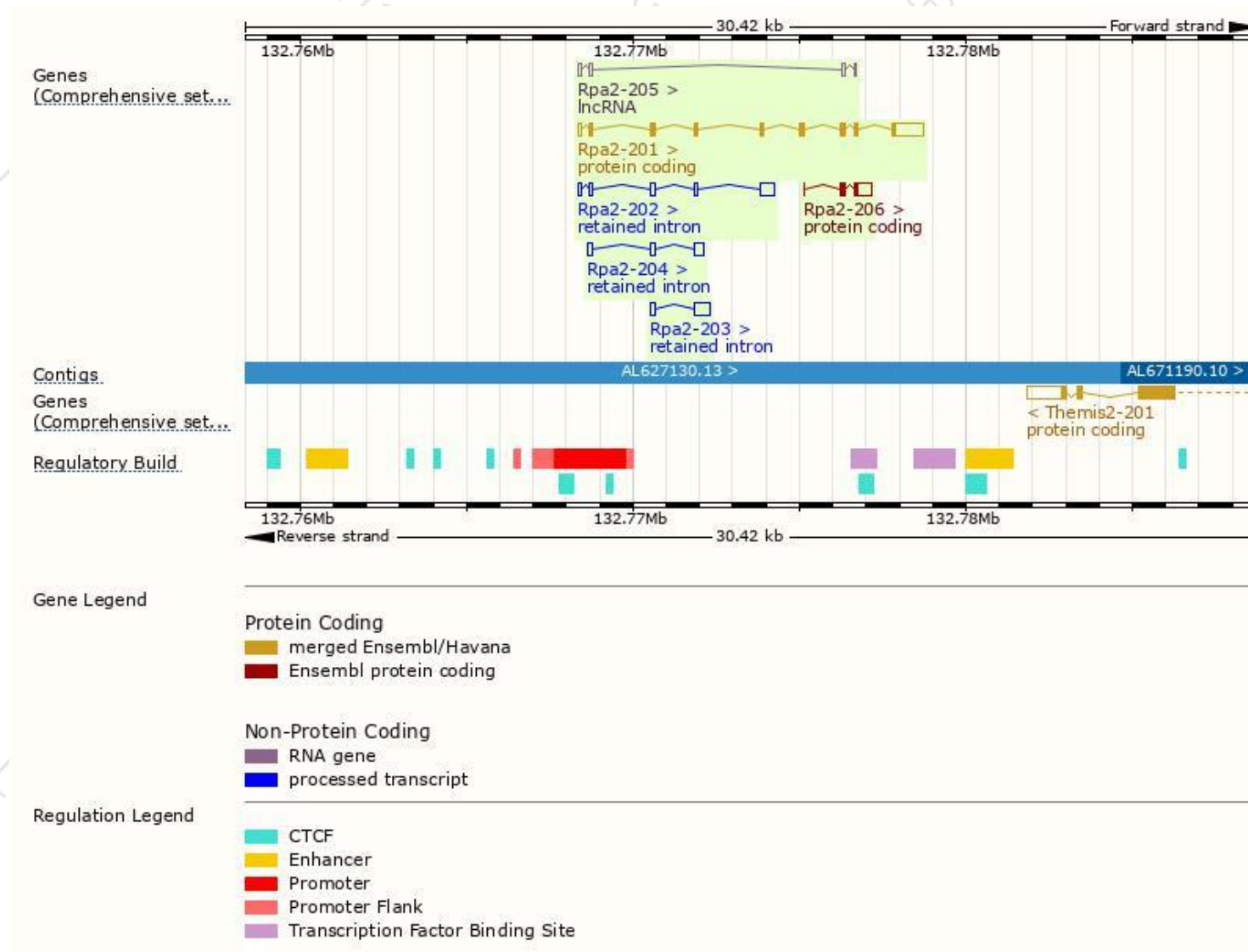
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rpa2-201	ENSMUST00000102561.10	1813	270aa	Protein coding	CCDS18734	Q3TE40	TSL:1 GENCODE basic APPRIS P1
Rpa2-206	ENSMUST00000156968.1	624	70aa	Protein coding	-	F6V8R7	CDS 5' incomplete TSL:5
Rpa2-202	ENSMUST00000130090.7	823	No protein	Retained intron	-	-	TSL:1
Rpa2-203	ENSMUST00000130444.1	599	No protein	Retained intron	-	-	TSL:3
Rpa2-204	ENSMUST00000133415.1	533	No protein	Retained intron	-	-	TSL:3
Rpa2-205	ENSMUST00000153046.7	367	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Rpa2-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain

ENSMUSP00000099...

Low complexity (Seq)

Superfamily

Nucleic acid-binding, OB-fold

Winged helix DNA-binding domain

Pfam

Replication protein A, C-terminal

PIRSF

Replication factor A protein 2

PANTHER

Replication factor A protein-like

PTHR13989:SF10

Gene3D

2.40.50.140

Winged helix-like DNA-binding dom

CDD

cd04478

All sequence SNPs/i...

Sequence variants (dbSNP and all other sources)

Variant Legend

 missense variant
 synonymous variant

Scale bar

0 40 80 120 160 200 240 280

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

Tel: 400-9660890

