Rab31 Cas9-CKO Strategy

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Project Overview

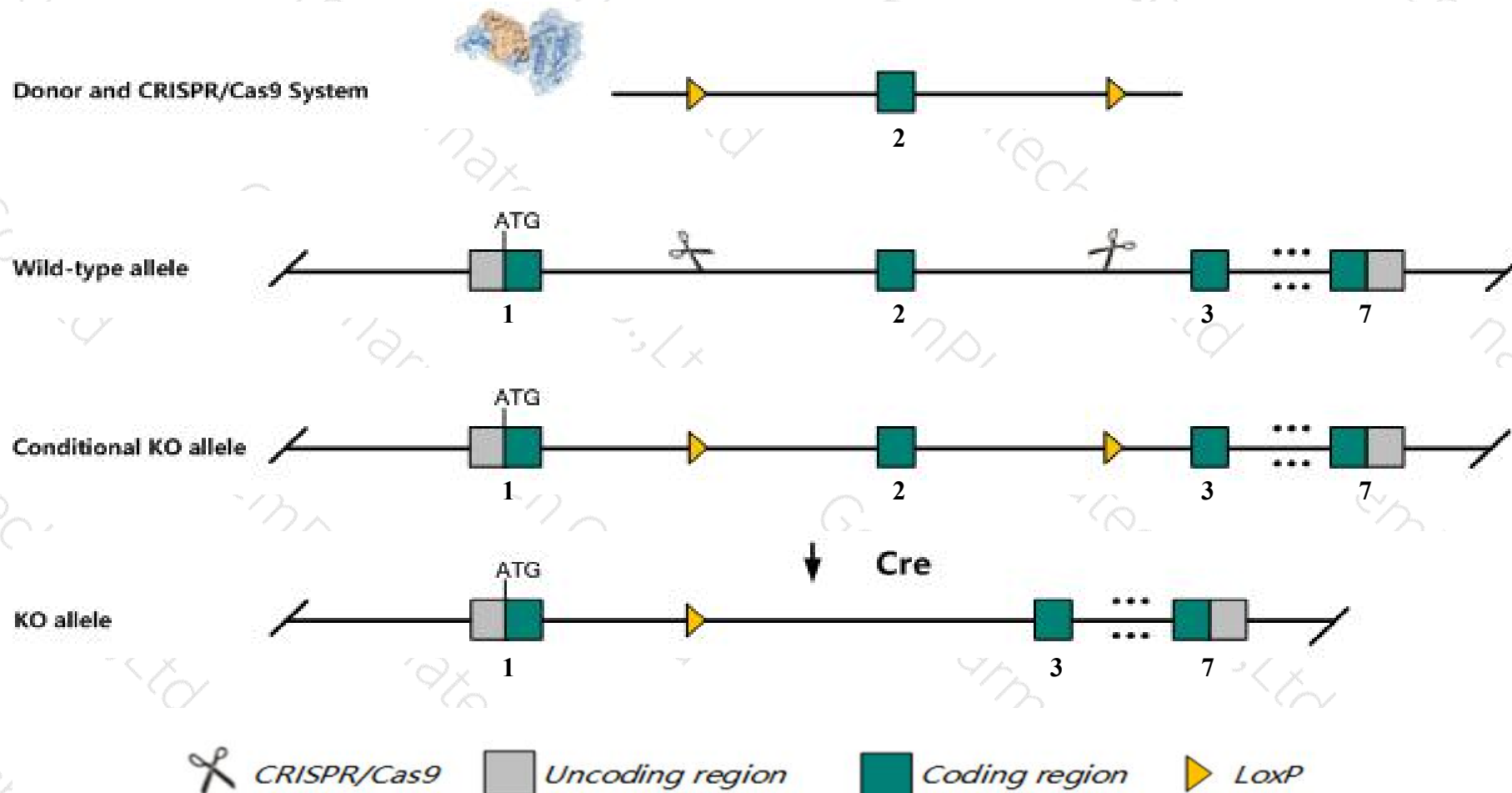|	
Project Name	*Rab31*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rab31* gene. The schematic diagram is as follows:

Technical routes

➤ The *Rab31* gene has 2 transcripts. According to the structure of *Rab31* gene, exon2 of *Rab31-201* (ENSMUST00000070673.8) transcript is recommended as the knockout region. The region contains Ens 80bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Rab31* 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 *Rab31* 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）

Rab31 RAB31, member RAS oncogene family [*Mus musculus* (house mouse)]

Gene ID: 106572, updated on 12-Aug-2019

▲ Summary

Official Symbol	Rab31 provided by MGI
Official Full Name	RAB31, member RAS oncogene family provided by MGI
Primary source	MGI:MGI:1914603
See related	Ensembl:ENSMUSG00000056515
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	Rab22B; AI415285; 1700093E07Rik
Expression	Ubiquitous expression in ovary adult (RPKM 24.0), cortex adult (RPKM 19.7) and 27 other tissues See more
Orthologs	human all

▲ Genomic context

Location: 17; 17 E1.1

See Rab31 in Genome Data Viewer

Exon count: 7

| Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	17	NC_000083.6 (65651726..65772752, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	17	NC_000083.5 (66001066..66122092, complement)

Transcript information（Ensembl）

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

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rab31-201	ENSMUST00000070673.8	3473	195aa	Protein coding	CCDS50166	Q3TXV4	TSL:1 GENCODE basic APPRIS P1
Rab31-202	ENSMUST00000233258.1	555	44aa	Protein coding	-	Q3TM43	GENCODE basic

The strategy is based on the design of *Rab31-201* transcript,The transcription is shown below

< Rab31-201
protein coding

Reverse strand

121.02 kb
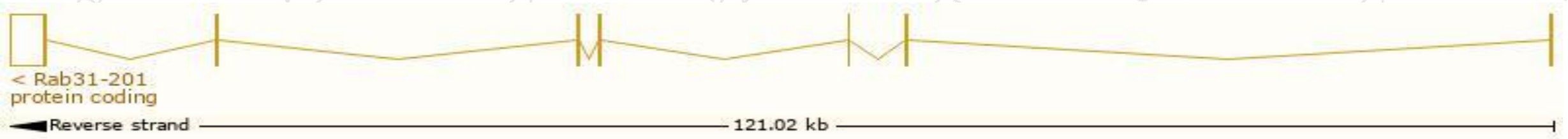
Genomic location distribution
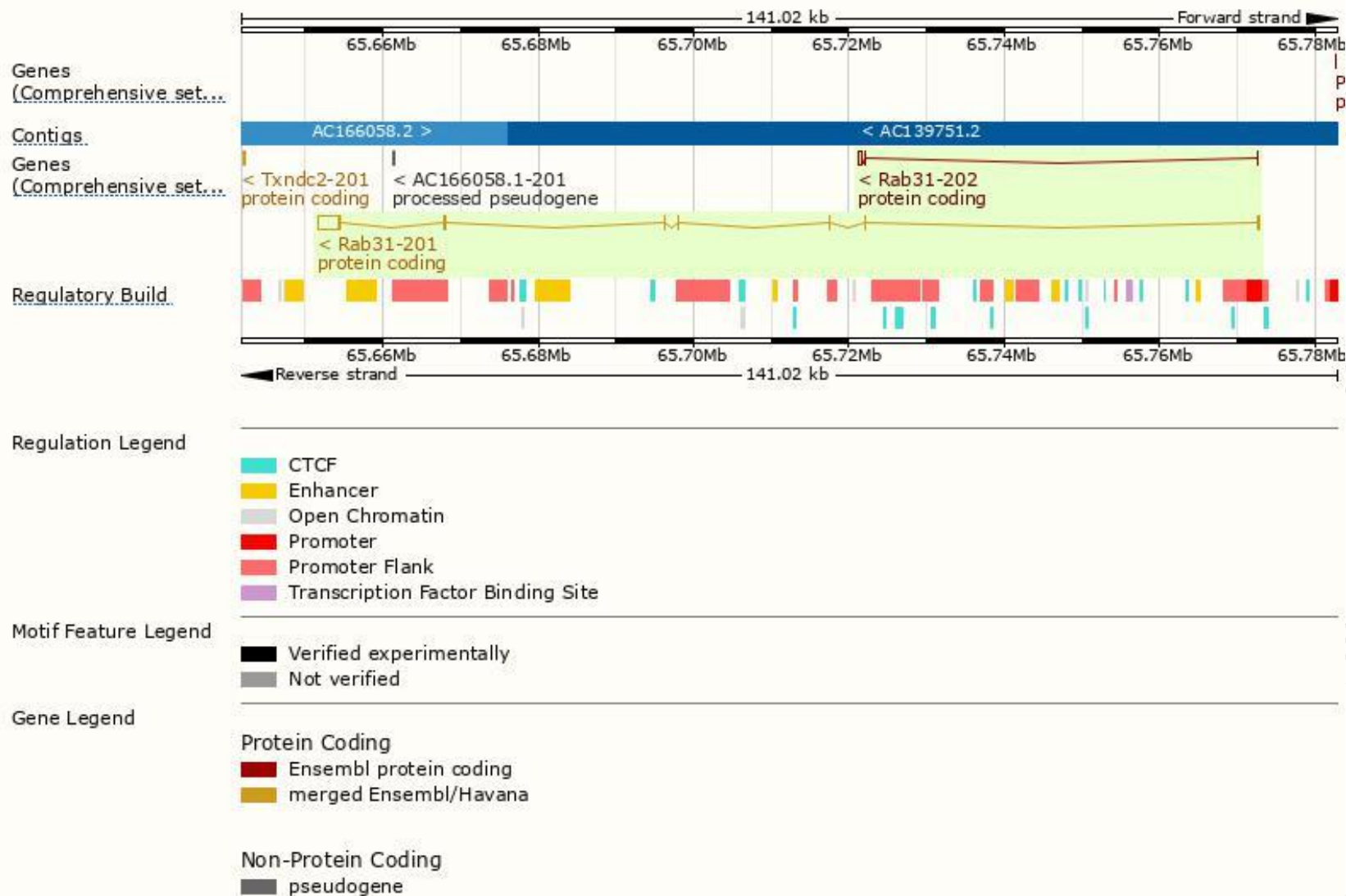
Protein domain

|	
ENSMUSP00000068...	
Conserved Domains	
hmmpanther	PTHR24073
	PTHR24073:SF588
TIGRFAM domain	Small GTP-binding protein domain
Superfamily domains	P-loop containing nucleoside triphosphate hydrolase
SMART domains	SM00173
	SM00175
	SM00176
	SM00174
Prints domain	PR00449
Pfam domain	Small GTPase superfamily
PROSITE profiles	PS51419
Gene3D	3.40.50.300
All sequence SNPs/i...	Sequence variants (dbSNP and all other sources)
Variant Legend	▮ missense variant ▮ synonymous variant
Scale bar	0 20 40 60 80 100 120 140 160 195

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