Rbck1 Cas9-CKO *Strategy*

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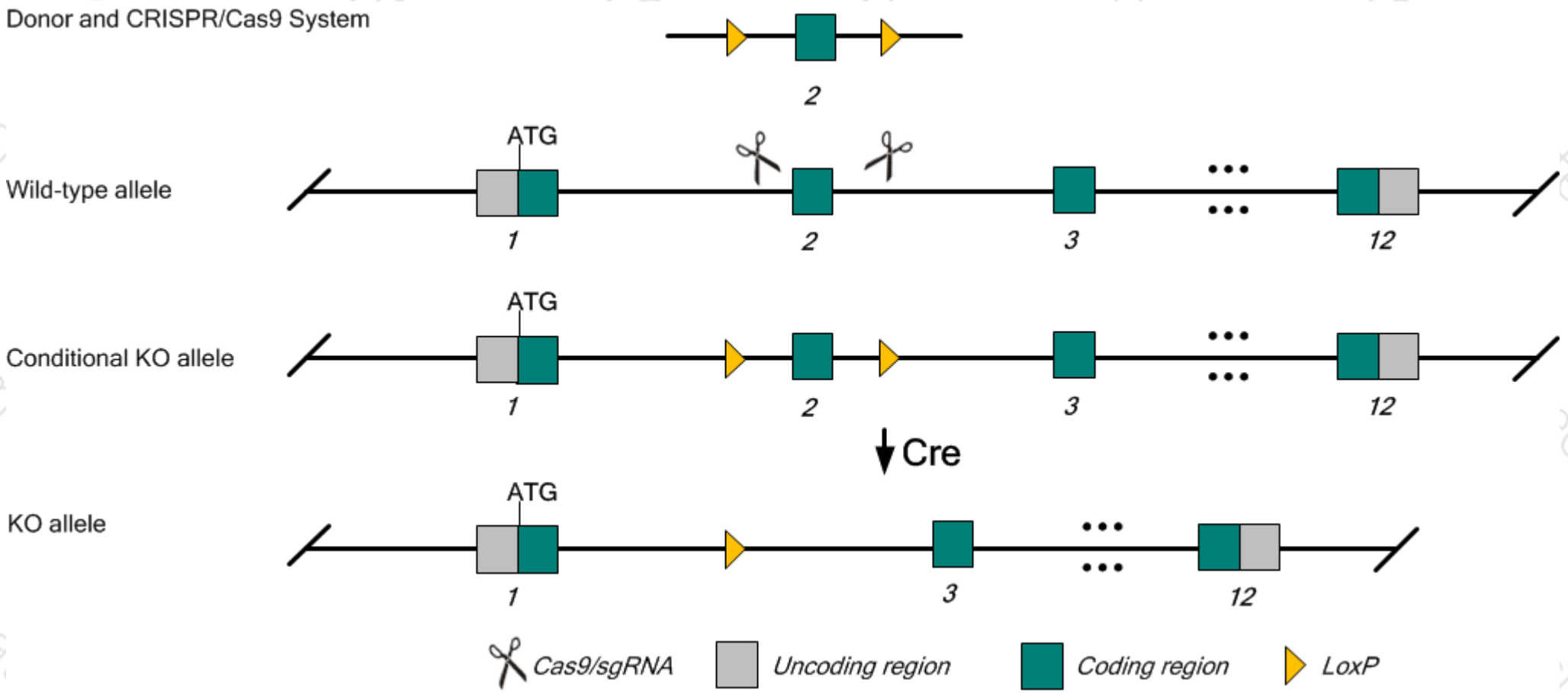
Project Overview

Project Name	***Rbck1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rbck1* gene. The schematic diagram is as follows:



Technical routes

- The *Rbck1* gene has 8 transcripts, According to the structure of *Rbck1* gene, exon2 of Rbck1-*202* transcript is recommended as the knockout region.The region contains the 145bp coding seqence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Rbck1* 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.

Notice

- According to the existing MGI data，Mice homozygous for a knock-out allele exhibit increased TNF-induced hepatocyte apoptosis.
- Transcript *Rbck1-203, Rbck1-205, Rbck1-206, Rbck1-208* may not be affected. The impact on transcript *Rbck1-207* is unknown.
- The *Rbck1* gene is located in the Chr2. 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）

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Rbck1 RanBP-type and C3HC4-type zinc finger containing 1 [*Mus musculus* (house mouse)]

Gene ID: 24105, updated on 31-Jan-2019

Summary

Official Symbol	Rbck1 provided by MGI
Official Full Name	RanBP-type and C3HC4-type zinc finger containing 1 provided by MGI
Primary source	MGI:MGI:1344372
See related	Ensembl:ENSMUSG00000027466
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	UIP28; HOIL-1; HOIL-1L; AL033326; Ubce7ip3
Expression	Ubiquitous expression in adrenal adult (RPKM 103.1), thymus adult (RPKM 93.1) and 28 other tissues See more
Orthologs	human all

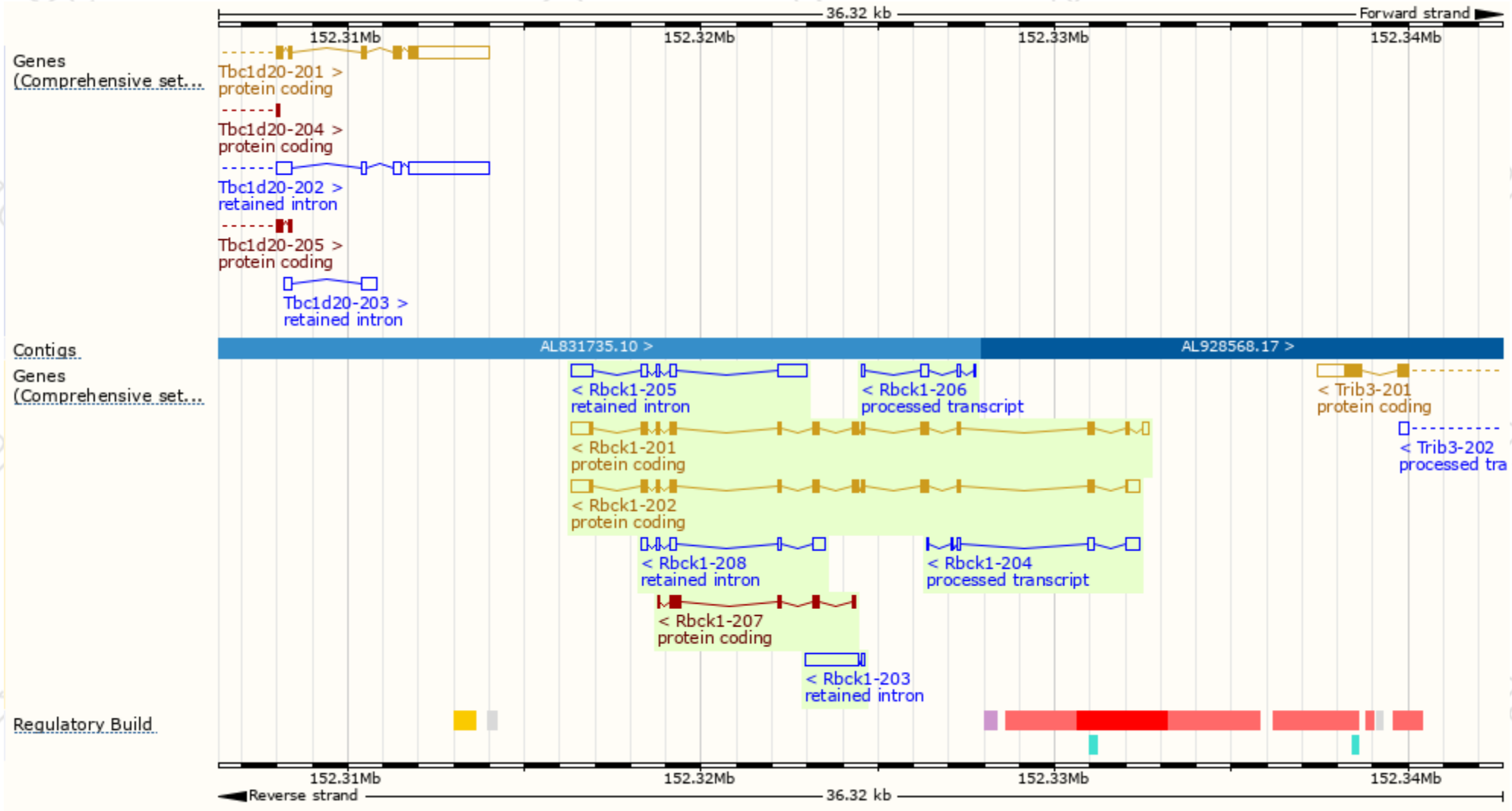
Transcript information （Ensembl）

The gene has 8 transcripts, and all transcripts are shown below ：

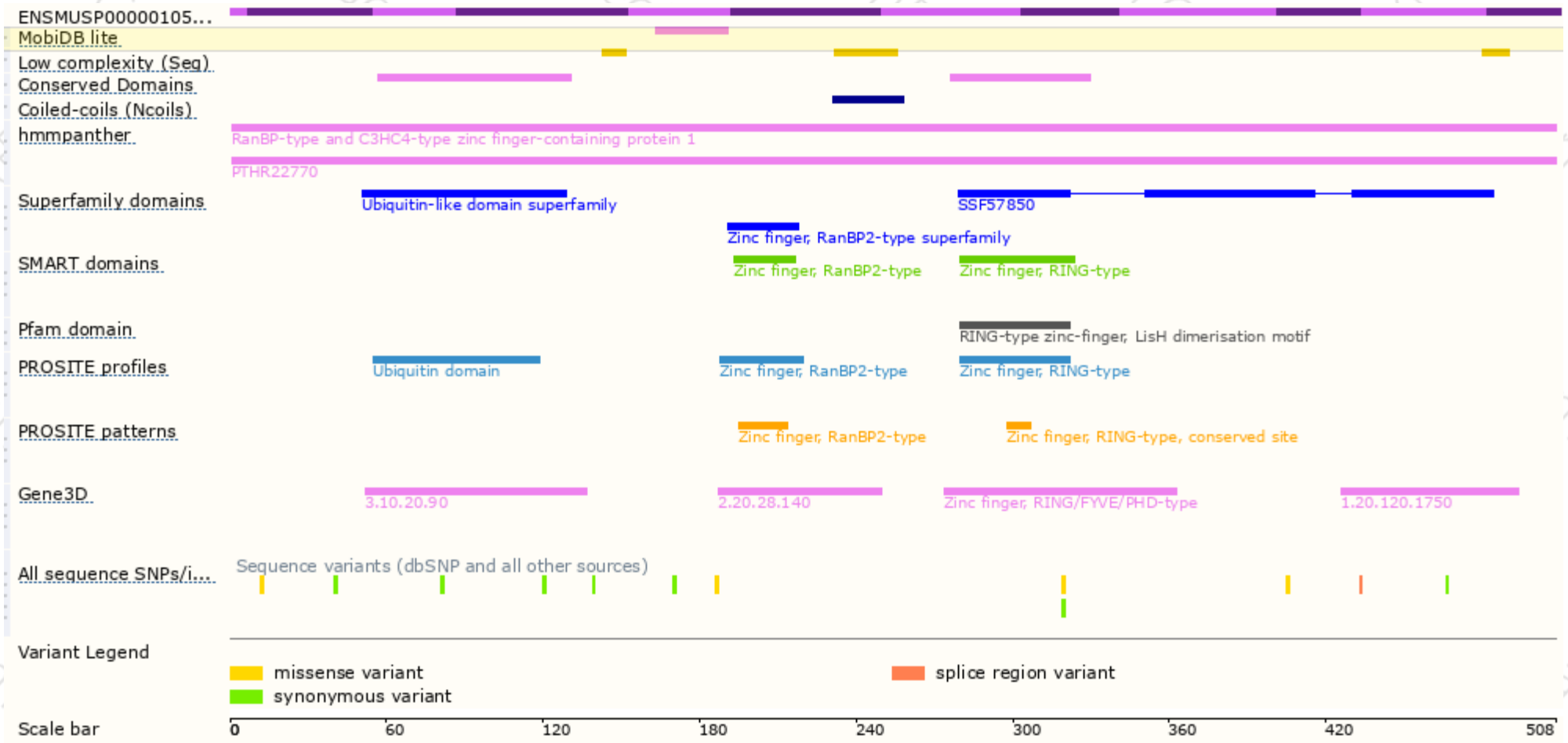
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Rbck1-202	ENSMUST00000109847.8	2384	508aa	Protein coding	CCDS38273	Q9WUB0	NM_001083921 NP_001077390	TSL:1 GENCODE basic APPRIS P1
Rbck1-201	ENSMUST00000028964.13	2252	508aa	Protein coding	CCDS38273	Q9WUB0	NM_019705 NP_062679	TSL:1 GENCODE basic APPRIS P1
Rbck1-207	ENSMUST00000144865.1	700	233aa	Protein coding	-	F6VII1	-	CDS 5' and 3' incomplete TSL:5
Rbck1-204	ENSMUST00000129590.1	657	No protein	Processed transcript	-	-	-	TSL:5
Rbck1-206	ENSMUST00000131889.7	446	No protein	Processed transcript	-	-	-	TSL:2
Rbck1-205	ENSMUST00000130165.7	1842	No protein	Retained intron	-	-	-	TSL:2
Rbck1-203	ENSMUST00000128645.1	1595	No protein	Retained intron	-	-	-	TSL:1
Rbck1-208	ENSMUST00000145889.1	862	No protein	Retained intron	-	-	-	TSL:2

The strategy is based on the design of *Rbck1-202* 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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