

Kptn Cas9-CKO Strategy

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Project Overview

Project Name

Kptn

Project type

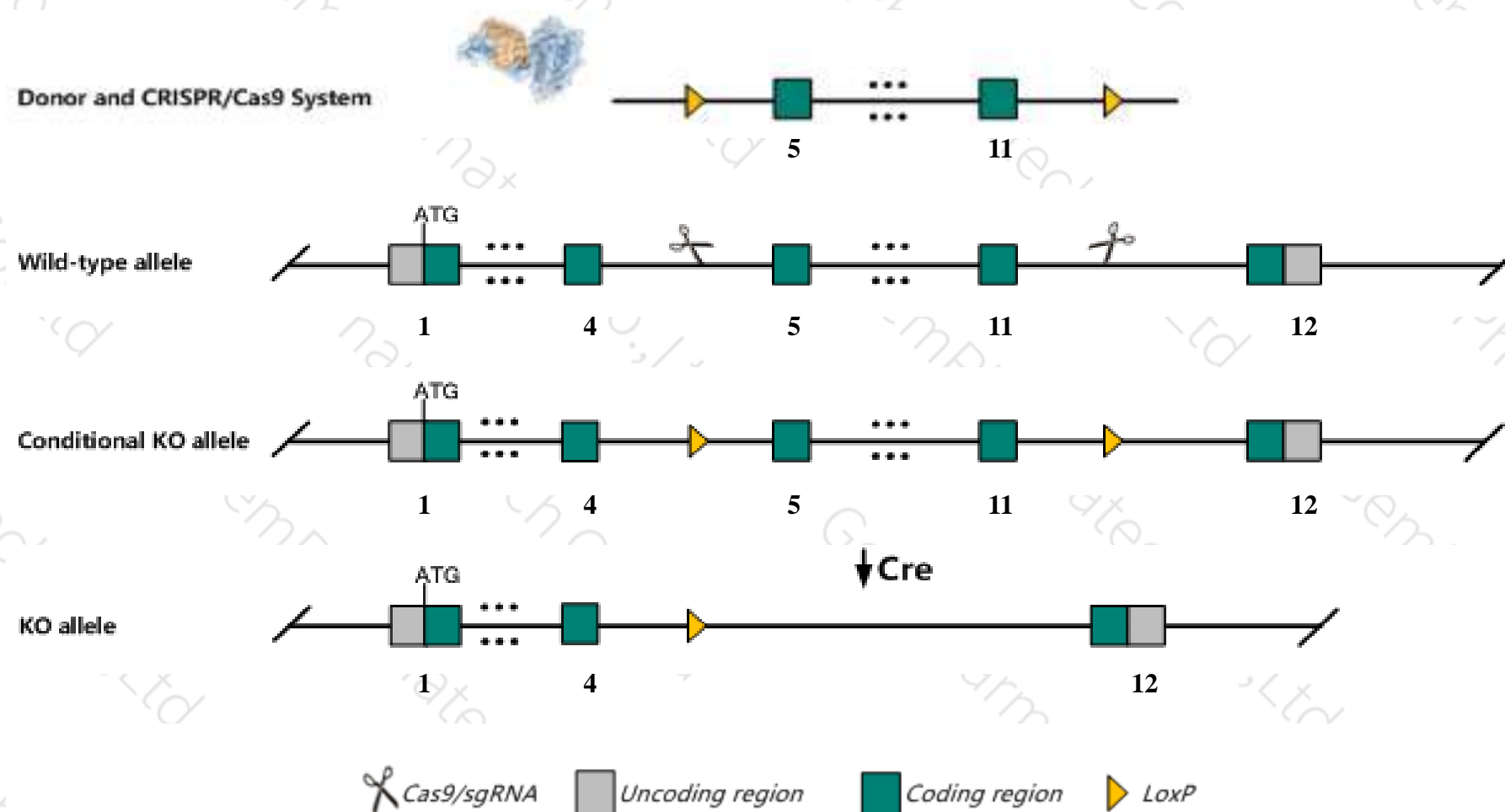
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Kptn* gene has 8 transcripts. According to the structure of *Kptn* gene, exon5-exon11 of *Kptn*-201(ENSMUST00000006178.4) transcript is recommended as the knockout region. The region contains 721bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kptn* 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 and cell types.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit increased body weight, increased susceptibility to bacterial infection and abnormal homeostasis.
- The *Kptn* 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)

Kptn kaptin [Mus musculus (house mouse)]

Gene ID: 70394, updated on 13-Mar-2020

Summary



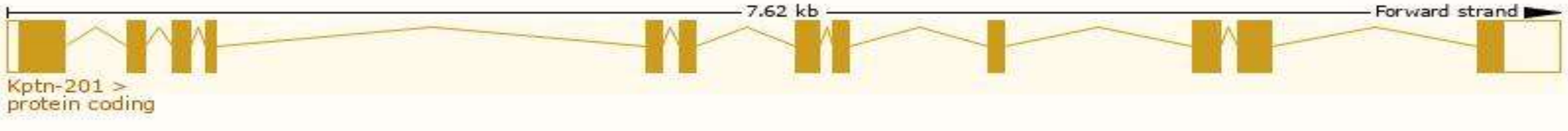
Official Symbol	Kptn provided by MGI
Official Full Name	kaptin provided by MGI
Primary source	MGI:MGI:1890380
See related	Ensembl:ENSMUSG00000006021
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2310042D10Rik, 2E4, C030013F01Rik
Expression	Ubiquitous expression in ovary adult (RPKM 13.4), subcutaneous fat pad adult (RPKM 11.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

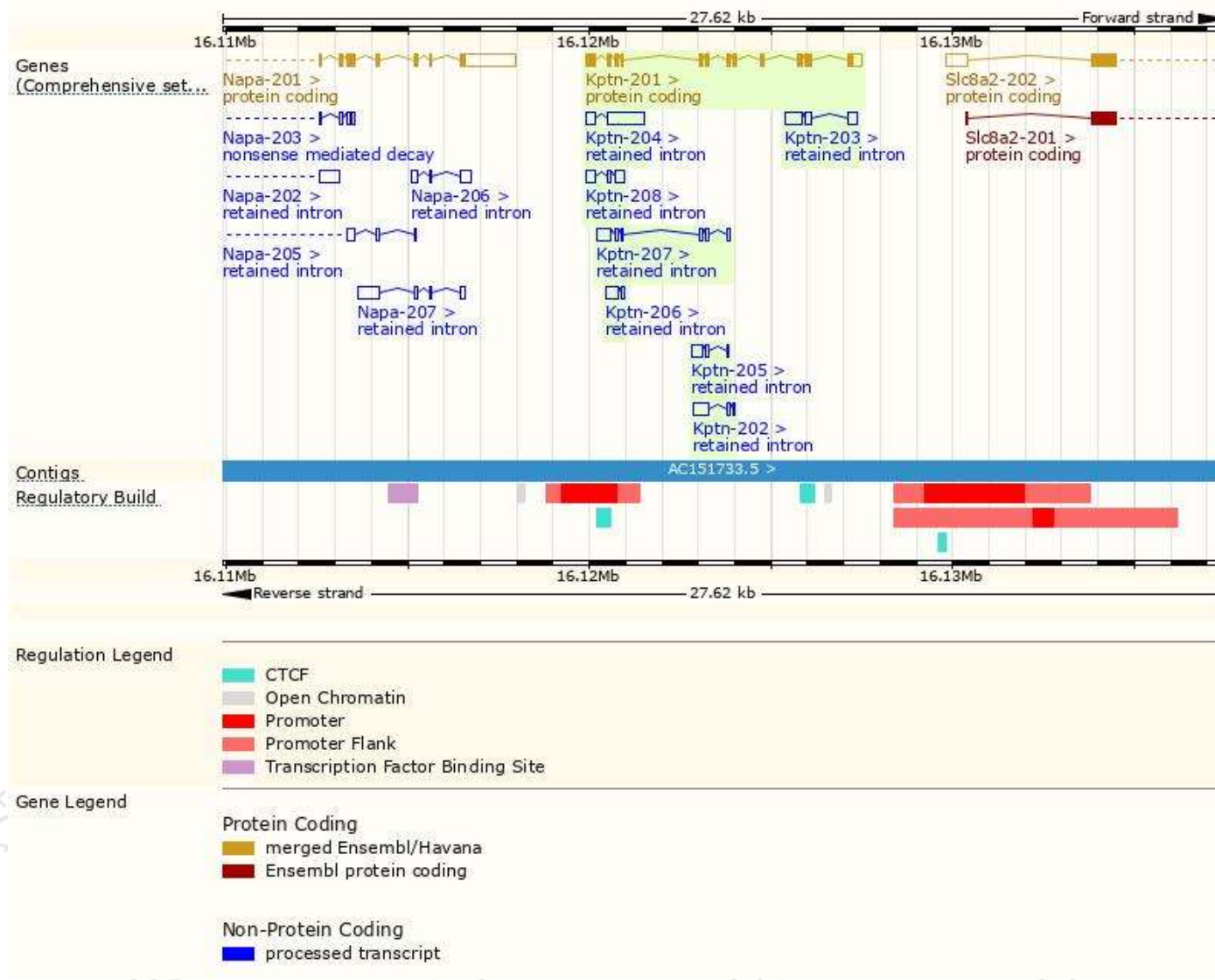
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kptn-201	ENSMUST00000006178.4	1630	430aa	Protein coding	CCDS20844	G3X8R1	TSL:1 GENCODE basic APPRIS P1
Kptn-204	ENSMUST00000130170.1	1322	No protein	Retained intron	-	-	TSL:1
Kptn-203	ENSMUST00000129080.1	863	No protein	Retained intron	-	-	TSL:2
Kptn-207	ENSMUST00000149388.1	723	No protein	Retained intron	-	-	TSL:5
Kptn-208	ENSMUST00000152044.1	597	No protein	Retained intron	-	-	TSL:2
Kptn-202	ENSMUST00000127584.1	554	No protein	Retained intron	-	-	TSL:2
Kptn-206	ENSMUST00000149255.1	440	No protein	Retained intron	-	-	TSL:3
Kptn-205	ENSMUST00000141430.1	426	No protein	Retained intron	-	-	TSL:3

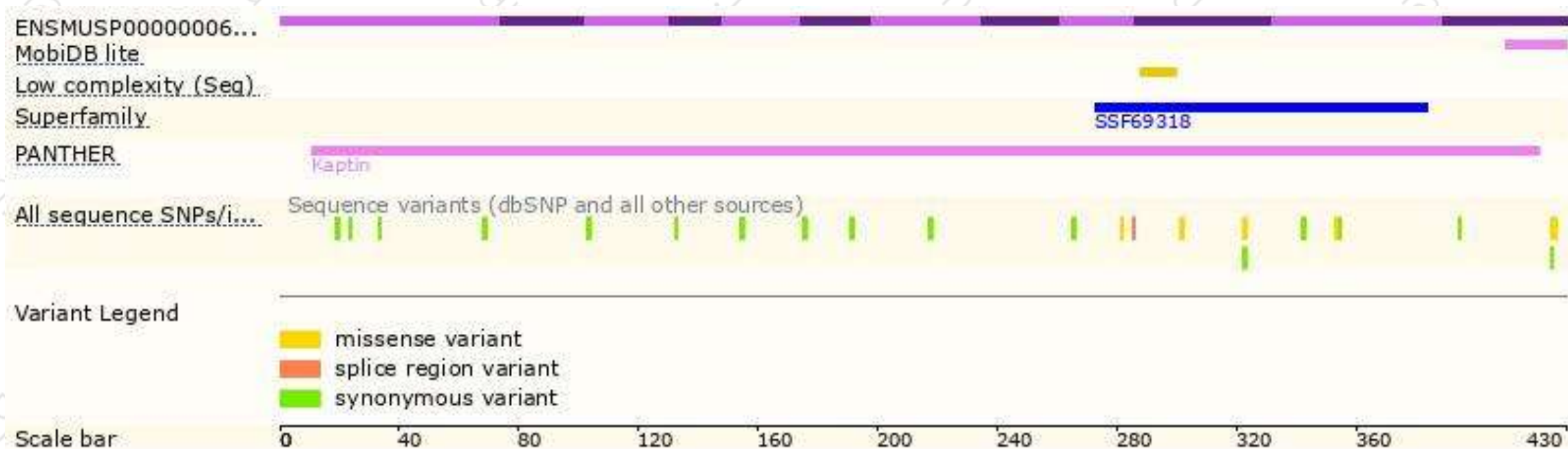
The strategy is based on the design of *Kptn-201* transcript,the transcription is shown below:



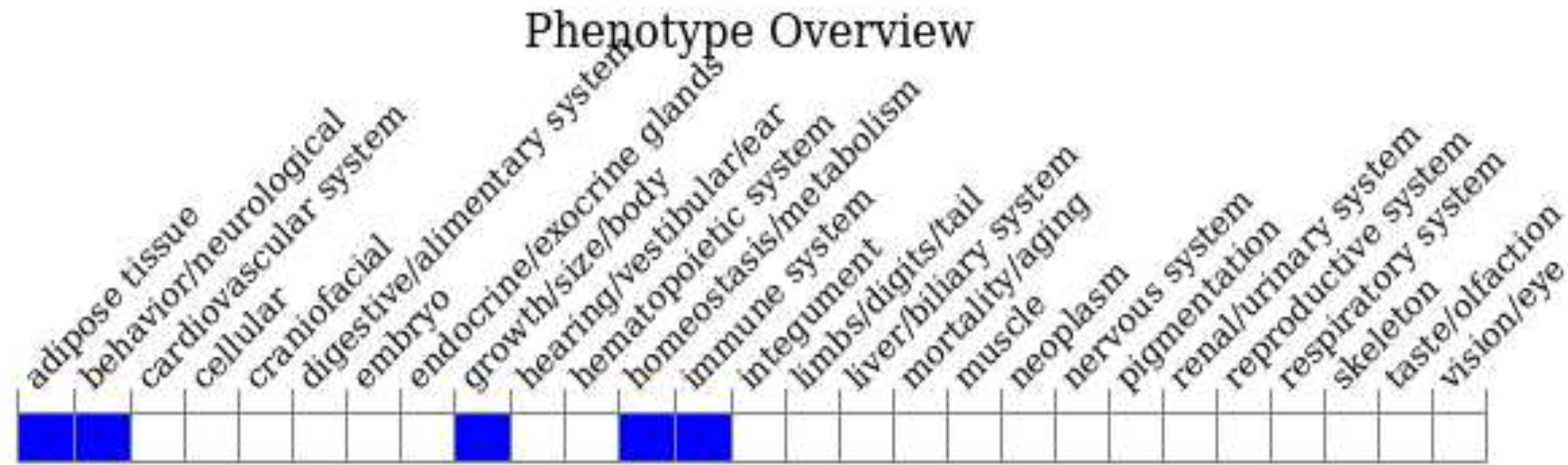
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, mice homozygous for a knock-out allele exhibit increased body weight, increased susceptibility to bacterial infection and abnormal homeostasis.

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

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